



# ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

"ವಿಜ್ಞಾನ ಅಭಿವೃದ್ಧಿ ಮತ್ತು ಉದ್ಯೋಗ"ರ ಅಡಿಯಲ್ಲಿ, ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ  
"ಜ್ಞಾನ ಸಂಗಮ", ಬೆಳಗಾವಿ-590018, ಕರ್ನಾಟಕ, ಭಾರತ

## Visvesvaraya Technological University

(State University of Government of Karnataka Established as per the VTU Act, 1994)

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### CIRCULAR

**Subject** What is new in the 2021 regulation governing the B.E./B.Tech. programs regarding...

- Reference**
1. JBOS proceeding no. 03, dated 28.02.2022
  2. 164<sup>th</sup> EC meeting held on 09.03.2022 proceeding no. 2.2.1

The following are the updates(new) in 2021 regulations governing B.E./B.Tech., programs uploaded on the VTU web portal @ <https://vtu.ac.in/en/be-btech/>

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| Point no.17, page no. 03                             | Letter Grade                                                                                             |
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| Points no. 24 and 25<br>210B1.2, page no. 06         | Academic Bank of Credits and multiple Entry and Exit<br>The prescribed number of credits for the program |
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| 210B13.2, page no. 37                                | Conversion of CGPA into Percentage marks                                                                 |
| 21PB14.0, page no. 38                                | Vertical progression                                                                                     |
| 210B15.4, page no.                                   | Award of Degree for an extraordinary student/s                                                           |

The Principals of all the Engineering Colleges coming under the ambit of the University are hereby informed to bring this information to the notice of the students and faculty concerned.

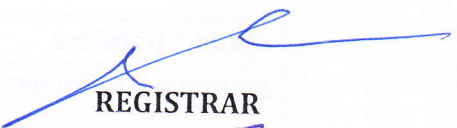
Sd/-  
REGISTRAR

To,

1. The Principals of all Affiliated/Constituent /Autonomous Engineering Colleges and all Schools of Architecture under the ambit of VTU Belagavi.
2. The Chairpersons of all Departments, Centres for PG Studies in Belagavi, Kalaburgi, Muddenahalli, and Mysore.

**Copy to:**

1. The Hon'ble Vice-Chancellor through the Secretary to VC VTU Belagavi
2. The Registrar (Evaluation) for information and the needful.
3. The Special Officer CNC section to upload the circular on the VTU web portal.
4. The Special Officer of Belagavi, Bengaluru, Gulbarga, and Mysuru zone for information

  
REGISTRAR





**Regulations Governing the Degree of Bachelor of  
Engineering/Technology (B.E./B.Tech.)  
Effective from the Academic Year 2021-22**

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### Definitions of Keywords

The following are the definitions/descriptions that have been followed for the different terms used in the Regulations of B.E./B.Tech. Programs:

- 1. Program:** This is an educational program in a particular stream/ branch of Engineering/branch of specialization leading to the award of the Degree. It involves events/activities, comprising of lectures/tutorials/laboratory work/fieldwork/outreach activities/project work/vocational training/viva-voce/ seminars/ internship/assignments/ presentations/ self-study, etc., or a combination of some of these.
- 2. Semester:** Refers to one of the two sessions of an academic year (vide: serial number 3), each session being of sixteen weeks' duration (with not less than 90 working days). The odd and even semesters shall be as per the University academic calendar.
- 3. Academic Year:** Refers to two consecutive semesters (odd followed by an even) sessions, including intervening periods.
- 4. Course:** Usually referred to as subject and is a component of a Program. All Courses may not carry the same weightage. Each Course will have course objectives and course outcomes. A Course may be designed to comprise lectures/ tutorials/ laboratory work/ fieldwork/ outreach activities/project work/ vocational training/ viva-voce/ seminars/ term papers/assignments/ presentations/ self-study components etc., or a combination of some of these.
- 5. Credit:** Refers to a unit or weightage by which the Coursework is measured. It represents the number of hours of instructions prescribed per week. One credit is equivalent to one hour of lecture or two hours of laboratory/practical Courses/ tutorials/ fieldwork etc., per week.
- 6. Choice Based Credit System (CBCS):** The education model refers to customizing the Coursework, through Core, Professional Elective, Open Electives, Skill-based ability Enhancement Courses, Non-Credit Mandatory Courses, and Internships to provide the necessary support for the students to achieve their goals.
- 7. Course Registration:** Refers to formal registration to Courses of study in every semester by every student under the supervision of a Faculty Advisor (also called Mentor, Counsellor, Class teacher, etc.), in the Institution to maintain the proper record. Registration to the University portal is mandatory.



- 8. Course Evaluation:** Represents the measurement of the impact of the teaching-learning process and offers an opportunity for improving the quality of learning in courses and teaching performance. Courses evaluation is done by adopting different methods such as tests, quizzes, assignments, etc., during the teaching-learning period at the end of some modules or chapters of syllabus contents and at the end of the semester. While the former part of the evaluation is called the Continuous Internal Evaluation (CIE) and the later part of the evaluation is called Semester End Evaluation (SEE).
- 9. Continuous Internal Evaluation (CIE)**(also known as formative assessment): Refers to the evaluation of students' performance in the course during the teaching-learning process. CIE shall be done by the faculty teaching course and evaluation components may include tests, assignments, group discussion, quizzes, course-specific projects, seminars, etc., conducted during the semester tenure with a weightage for different activities as specified by the University.
- 10. Semester End Examinations Evaluation (SEE)**(also called summative assessment): Refers to the examinations conducted by the University covering the entire Course Syllabus. For this purpose, Syllabi shall be modularized, and SEE questions shall be set from each module as specified by the University.
- 11. First Attempt:** Refers to some students who have studied in a current semester and have attended any one of the University examinations of that semester after satisfying attendance and CIE requirements of all the prescribed courses of that semester and registering for SEE. Such an attempt shall be considered as the first attempt. Even if students absent themselves for all the semester examinations after registering for SEE, such an attempt shall also be considered the first attempt.
- 12. Credit Representation:** Refers to the Credit Values for different academic activities considered, as per Table-1. Credits for the seminar, project phases, project viva-voce and internship shall be as specified in the Scheme of Teaching and Examinations.



**Table-1, Calculation of Credits**

| <b>Credit Values</b>                                                                                                    |                                               |                                                                   |                            |                          |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------|----------------------------|--------------------------|
| <b>Theory/Lectures (L)</b><br>(hours/week/Semester)                                                                     | <b>Tutorials (T)</b><br>(hours/week/Semester) | <b>Laboratory/<br/>Practical (P)</b><br>(hours/week<br>/Semester) | <b>Credits<br/>(L:T:P)</b> | <b>Total<br/>Credits</b> |
| 4                                                                                                                       | 0                                             | 0                                                                 | 4:0:0                      | 4                        |
| 3                                                                                                                       | 0                                             | 2                                                                 | 3:0:1                      | 4                        |
| 2                                                                                                                       | 2                                             | 2                                                                 | 2:1:1                      | 4                        |
| 3                                                                                                                       | 0                                             | 0                                                                 | 3:0:0                      | 3                        |
| 2                                                                                                                       | 2                                             | 0                                                                 | 2:1:0                      | 3                        |
| 2                                                                                                                       | 0                                             | 2                                                                 | 2:0:1                      | 3                        |
| 0                                                                                                                       | 0                                             | 6                                                                 | 0:0:3                      | 3                        |
| 2                                                                                                                       | 0                                             | 0                                                                 | 2:0:0                      | 2                        |
| 1                                                                                                                       | 0                                             | 0                                                                 | 1:0:0                      | 1                        |
| 0                                                                                                                       | 2                                             | 0                                                                 | 0:1:0                      | 1                        |
| 0                                                                                                                       | 1                                             | 1                                                                 | 0:0.5:0.5                  | 1                        |
| 0                                                                                                                       | 0                                             | 2                                                                 | 0:0:1                      | 1                        |
| <b>NOTE:</b> Activities like practical training, study tour, and participation in Guest lecturers do not carry Credits. |                                               |                                                                   |                            |                          |

**13. Non-Credit Mandatory Course (NCMC):** In the case of non-credit mandatory courses, students shall attend the classes during the respective semesters to satisfy the attendance requirements and as well as CIE requirements. In case, any student fails to register for the said course/fails to secure the minimum 40% of the prescribed CIE marks, he/she shall be deemed to have not satisfied. In such a case, the student has to fulfill the requirements during subsequent semester/s to appear for CIE. These Courses shall not be considered for CGPA calculation and vertical progression, but completion of the courses shall be mandatory for the award of degree.

**17. Letter Grade:** Course Letter Grade (or simply letter grade or grade) is an index of performance of a student in a said course and refers to a qualitative measure of achievement of a student in each course, based on the percentage range of marks secured in CIE and SEE put together or CIE alone. Grades are denoted by letters O, A, B, C, D, E, and F. The rubrics attached to letter grades are as follows:

**O** – Outstanding, **A+** – Excellent, **A** – Very Good, **B+** – Good, **B** – Above Average, **C** – Average,



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**P**- Pass and **F** – Fail. If a student remains absent for SEE of any of the course/s, the letter grade assigned to that course shall be **F**. If a student is not eligible for appearing, SEE due to non-comply of any of the course/s then the letter grade assigned against that course shall be **NE**

- 18. Grade Point (GP):** Refers to a numerical weightage allotted to each letter grade on a 10-point scale against a preconceived range of percentage of marks secured by students in a course as shown in Table 2.

**Table 2, Letter Grade and corresponding Grade Points on a typical 10 – Point scale**

| Letter Grade and corresponding Grade Points on a typical 10 – Point scale |                         |                        |                       |                   |                           |                     |                  |                  |
|---------------------------------------------------------------------------|-------------------------|------------------------|-----------------------|-------------------|---------------------------|---------------------|------------------|------------------|
| Letter Grade                                                              | <b>0</b><br>Outstanding | <b>A+</b><br>Excellent | <b>A</b><br>Very Good | <b>B+</b><br>Good | <b>B</b><br>Above Average | <b>C</b><br>Average | <b>P</b><br>Pass | <b>F</b><br>Fail |
| Grade Point                                                               | <b>10</b>               | <b>9</b>               | <b>8</b>              | <b>7</b>          | <b>6</b>                  | <b>5</b>            | <b>4</b>         | <b>0</b>         |
| % of Marks secured                                                        | 90-100                  | 80-89                  | 70-79                 | 60-69             | 55-59                     | 50-54               | 40-49            | 0-39             |

- 19. Passing Standards:** Refers to passing a Course only when GP is greater than or equal to **04**.
- 20. Credit Point:** This is the product of GP and number of credits for a Course i.e.,  
Credit points (CrP) = GP × Credits for the Course.
- 21. Semester Grade Point Average (SGPA):** Refers to the measure of a student's academic performance in a semester. It is the weighted average or weighted mean of the grade points obtained by a student in the various courses of any semester. It results in a number that lies between 0 and 10.
- 22. Cumulative Grade Point Average (CGPA):** This is a measure of the cumulative performance of a student of all semesters and is computed from the 2<sup>nd</sup> semester onwards. It is a measure of the overall cumulative academic performance of a student over the entire span of the academic program. CGPA is not an arithmetic mean a but weighted mean. It is also a number that lies between 0 and 10.
- 23. Grade Card:** Refers to the certificate showing the grades earned by a student. A grade card shall be issued to all the registered students after every semester-end examination. The grade card shall have the Program details (Course code, title, number of credits, grades secured, number of attempts, and alternate course taken instead of successive failure after 4 attempts) along with the SGPA of that semester and CGPA (except for the first semester) earned till that semester.



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- 24. Academic Bank of Credits (ABC):** The Academic Bank of Credits (ABC), is a national-level facility which will promote the flexibility of the curriculum framework and interdisciplinary/multidisciplinary academic mobility of students across the HEIs in the country with appropriate “credit transfer” mechanism.
- 25. Multiple Entry Multiple Exit:** The multiple entries and exit points in the academic programs offered at Higher Education Institutions (HEIs) would remove rigid boundaries and create new possibilities for students. There are occasions when learners have to give up their education mid-way for various reasons. To facilitate flexible learning within the stipulated period (eight years for regular students and 06 years for lateral entry students), multiple exist and entry options are given to the needy students. The student can exit from the program only at the end of the even semester/s (2<sup>nd</sup>, 4<sup>th</sup>, and 6<sup>th</sup> semester) and the entry option is provided to the students at the beginning of the odd semester/s (3<sup>rd</sup>, 5<sup>th</sup> and 7<sup>th</sup> semester).
- 26. University:** Visvesvaraya Technological University (VTU), Belagavi.





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|                |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>210B1.0</b> | <b>Title and Credits of the Program of Study.</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                | <b>210B1.1</b>                                    | The Program of study shall be called the degree of Bachelor of Engineering/Bachelor of Technology, abbreviated as B.E./B.Tech.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                | <b>210B1.2</b>                                    | <p><b>Prescribed Number of Credits for the Program</b></p> <p><b>(a)</b> The total number of credits to be earned by students admitted to the first semester of 04 years B.E./B.Tech., the program shall be <b>160</b>.</p> <p><b>(b)</b> The total number of credits to be earned by students admitted to the third semester of 04 years B.E./B.Tech., program under lateral entry scheme shall be <b>120</b>.</p> <p><b>(c)</b> A student shall be eligible to obtain an Undergraduate degree with <b>Honours / Minors</b>, if he/she earns minimum additional <b>18</b> credits, as specified by university norms from time to time regarding the earning of additional credits [To be read along with Regulations Governing the Award of Honors/ Minors in B.E./B.Tech., Degree Programs].</p> |
|                | <b>210B1.3</b>                                    | <p><b>(a) Definition of Credits:</b></p> <ol style="list-style-type: none"> <li>1-hour Lecture (L) per week per semester =1 Credit</li> <li>2 hours Tutorial / (T) per week per semester =1 Credit</li> <li>2 hours Practical/Laboratory/Drawing (P) per week per semester =1 Credit.</li> <li>Four-credit theory courses shall be designed for 50 hours of the Teaching-Learning process.</li> <li>Three-credit theory courses shall be designed for 40 hours of the Teaching-Learning process.</li> <li>Two-credit theory courses shall be designed for 25 hours of the Teaching-Learning process</li> <li>One credit theory course shall be designed for 15 hours of the Teaching-Learning process</li> </ol>                                                                                   |
| <b>210B2.0</b> | <b>Academic Eligibility for admission</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                | <b>210B2.1</b>                                    | <p><b>Admission to 1<sup>st</sup> year: Eligibility for candidates who have Passed Second PUC or equivalent</b></p> <ol style="list-style-type: none"> <li>As notified by the Government of Karnataka from time to time</li> <li>Those students, who have passed a qualifying examination other than</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |



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|                |                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                    | the PUC II examination of the Pre-University Education Board of Karnataka, have to obtain an eligibility certificate for seeking admission to 1 <sup>st</sup> year B.E./B.Tech. Degree Program from Visvesvaraya Technological University, Belagavi.                                                                                                                                                                                                                                                                                     |
|                | <b>210B2.2</b>                                     | <b>Admission to 2<sup>nd</sup> year (Lateral Entry): Eligibility for candidates who have Passed a 3-years Diploma in Engineering and B.Sc. Degree</b><br><br>I. As notified by the Government of Karnataka and university from time to time for admission to 3 <sup>rd</sup> -semester B.E./B.Tech., degree program<br><br>II. Those candidates who have completed Engineering Diploma from other than Karnataka state shall submit the Equivalence/ Eligibility Certificate issued from the Director of Technical Education, Karnataka. |
|                | <b>210B2.3</b>                                     | <b>Qualification earned from foreign countries:</b><br><br>With regard to the qualification earned from foreign countries, an equivalence certificate from the University/ Association of Indian Universities is mandatory for admission to B.E./B.Tech. Programs. In case of any dispute about the equivalence in qualification earned from foreign countries, the decision of the University in this regard shall be final and binding on all concerned.                                                                               |
| <b>210B3.0</b> | <b>Minimum and Maximum Duration of the program</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                | <b>210B3.1</b>                                     | Students admitted to first-semester B.E./B.Tech., shall complete the program within eight academic years from the year of the first admission, failing which they will not be eligible for the award of a degree<br><br>Students admitted to third semester B.E./ B.Tech., under the lateral entry category shall complete the program within six academic years from the year of the first admission, failing which they will not be eligible for the award of degree.                                                                  |
|                |                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



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| 210B4.0 | <b>Courses and Course Registration</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | 210B4.1                                | <p>There shall be the following types of Courses:</p> <p>(a) Humanities, Social Sciences, and Management Courses (<b>HSMC</b>): These are mandatory for all disciplines.</p> <p>(b) Basic Science Courses (<b>BSC</b>): Physics, Chemistry, and Mathematics. These are mandatory for all disciplines.</p> <p>(c) Engineering Science Courses (<b>ESC</b>): Materials, Workshop, Drawing, and Basics of Electrical/ Electronics/ Civil/ Mechanical/ Computer Engineering, etc. These are mandatory for all disciplines.</p> <p>(d) Professional Core Courses (<b>PCC</b>): These are the professional Core Courses, relevant to the chosen specialization/ branch. The core courses shall be compulsorily studied by students and it is mandatory to complete them to fulfill the requirements of a Program.</p> <p>(e) Professional Elective Courses (<b>PEC</b>): These are professional Electives, relevant to the chosen specialization/branch and can be chosen from the pool of courses. It shall be supportive to the discipline providing extended scope/enabling exposure to some other discipline /domain and nurturing student proficiency skills</p> <p>(f) Open Elective Courses (<b>OEC</b>): These are the Elective Courses from other technical areas and/ or from emerging fields. Students of other departments shall opt for these courses to fulfilling of eligibility and prerequisite mentioned in the syllabus.</p> <p>(g) Integrated Professional Core Courses (<b>IPCC</b>): It refers to Professional Theory Core Course Integrated with Practical of the same course. Credit for IPCC shall be 04 considering L: T: P as 3:0:1 or L:T:P as 2:1:1, (where L,T and P represents credits not hours per week)</p> <p>(h) Project Work: Mini-project and Project work carried out at the parent Institution or any university / Government recognized organization without affecting the regular class work.</p> |



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|  |                |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                | (i) Seminar: Each student has to present the seminar on specific topic chosen from the relevant field /list provided by the department under the supervision of a faculty coordinator.                                                                                                                                                                                                                            |
|  |                | (j) Internship ( <b>INT</b> ): The internship (a form of experimental learning) program not only helps fresh pass-outs in gaining professional know-how but also benefits corporate sectors. The internship also enhances the employability skills of the student passing out from Technical Institutions                                                                                                         |
|  |                | (k) Non-Credit Mandatory Courses ( <b>NCMC</b> ): These Courses are mandatory, without the benefit of a grade or credit, passing in each mandatory Course is required to qualify for the award of degree.                                                                                                                                                                                                         |
|  |                | (l) Ability Enhancement Courses ( <b>AEC</b> ): These courses are designed to help students to enhance their skills in communication, language, and personality development etc. They also promote a deeper understanding of courses like social sciences, ethics, culture, human behavior human rights, and the law. Ability Enhancement Courses are based upon the content that leads to Knowledge enhancement. |
|  |                | (m) Universal Human Values Courses ( <b>UHV</b> ): The courses which teach: a holistic perspective based on self-exploration about themselves (human being), family, society, and nature. Understanding (or developing clarity) of the harmony in the human being, family, society, and nature. These are mandatory for all disciplines                                                                           |
|  | <b>21OB4.2</b> | <b>Course Registration:</b><br>In order to maintain a proper academic record at the Institution, every student shall register for the Courses of a semester (Credit) under the supervision of a Faculty Advisor (also called Mentor, Counselor, class teacher, etc.,) at the beginning of each semester. The registration of courses in each semester with the University portal is mandatory.                    |



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|                | <b>21OB4.3</b>                | The minimum number of students registered to any professional Elective Course/Open Elective Course /Ability Enhancement course (from 3 <sup>rd</sup> semester onward) offered by the Departments shall not be less than ten. In such cases. If the number of registrants for the elective course is less than 10, the college must seek permission from the Registrar (Evaluation) within 15 days from the date of commencement of the semester as per the academic calendar of the University, if that professional Elective Course/Open Elective Course/Ability Enhancement course is to be offered in that college.                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                | <b>21OB4.4</b>                | A student shall exercise the option in respect of a higher semester professional Elective Course/Open Elective Course /Ability Enhancement course and register for the same at the end of the previous semester. However, the student may be permitted to opt for a change of Elective Course/s preferably within 15 days from the date of commencement of the semester as per the academic calendar of the University.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>21OB5.0</b> | <b>Attendance Requirement</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                | <b>21OB5.1</b>                | Every prescribed course shall be considered as a unit for the calculation of attendance. All students are required to attend all the lectures, tutorials, practicals, and other prescribed curricular and co-curricular activities, and thus the attendance is 100%. However, the candidate has to put in a minimum attendance of 85% in each course with a provision for condoning up to 10% of the attendance by the Vice-Chancellor on the specific recommendations of the Principal of the college where the candidate is studying, based on medical grounds, participation in NSS/NCC/Red cross/National level Republic Day and Independence Day Parade/participation in University/State/ National/ International levels sports and cultural activities, seminars, workshops, paper presentation, etc., of significant value. The supporting documents for condoning the shortage of attendance shall be submitted through the office of the Principal along with the recommendations to the office of the Registrar (Evaluation). |



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|                | <b>21OB5.2</b>    | <p>a) The basis for the calculation of attendance shall be the period prescribed by the University by its academic calendar of events and as notified by the Registrar.</p> <p>b) In case of late admissions, approved by competent authority (KEA/DTE/VTU), to I semester (for the regular scheme) and III semesters (for lateral entry scheme) of Engineering Program, the attendance shall be reckoned from the date of admission to the Program.</p>                                                                      |
|                | <b>21OB5.3</b>    | The Course Instructor/ Mentor/Class-teacher or the College office shall inform the students as well as their parents /guardians about the attendance status every month. Students who are facing a shortage of attendance shall be mentored to make up for the shortage. The principal shall also notify every month, the list of candidates who are falling short of required attendance.                                                                                                                                    |
|                | <b>21OB5.4</b>    | A student who does not satisfy the attendance requirement in one or more Courses (including bridge courses for lateral entry students) shall not be eligible to appear for the Semester End Examinations (SEE) of that course(s). The grade card for such courses shall be marked as NE (not eligible). The candidate shall be required to repeat that course/s whenever that course/s offered next.                                                                                                                          |
|                | <b>21OB5.5</b>    | <p>If a student fails to satisfy the attendance requirement of the course/s of the semester, he/she will not be permitted to appear for SEE of that course/s. However, the student will be allowed to appear for the Semester End Examination (SEE) for other courses of the semester.</p> <p>The student will repeat the course/s in which he/she falls short of attendance only, whenever the course/s is offered next.</p> <p>These courses of shortage of attendance will not be considered for vertical progression.</p> |
| <b>21OB6.0</b> | <b>Internship</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                | <b>21OB6.1</b>    | <p><b>Internship:</b></p> <p>The internship is an extended period of work experience undertaken by</p>                                                                                                                                                                                                                                                                                                                                                                                                                        |



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university/Institute students looking to supplement their degree with professional development. The students are allowed to prepare themselves for the workplace and develop practical skills.

The Internship shall be completed during the period specified in the Scheme of Teaching and Examinations. There will be three internships:

- 1) **Inter/Intra Institutional Internship:** (In the case of the students admitted to 1<sup>st</sup>-year B.E./B.Tech. program) All the students admitted to engineering programs shall have to undergo a mandatory summer internship of 03 weeks during the intervening semester period of the II and III semesters. The internship shall include Inter / Intra Institutional activities (refer to Annexure-IV). CIE shall be carried out during the Internship period/III semester and prescribed marks shall be included in the IV semester grade cards.

**Inter/Intra Institutional Internship: (In case of students admitted under Lateral Entry):** All the students admitted to engineering programs under the lateral entry category shall have to undergo a mandatory internship of 03 weeks during the intervening semester period of the III and IV semesters. The internship shall include Inter / Intra Institutional activities (refer to Annexure-IV). CIE shall be carried out during the Internship period/IV semester and prescribed marks shall be included in the IV semester grade cards.

**Inter /Intra Institutional Internship will have only CIE and no SEE.**

- 2) **Innovation/Societal/Entrepreneurship-based Internship:**  
During the intervening period of IV and V semester the Internship of 04 weeks period shall be carried out in industries /Govt. organization/NGO/MSME. Focus may be given to Rural Internship/Innovative activities and Entrepreneurship (Social/Industrial). CIE shall be carried out during the Internship



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|  | <p>period/V semester and prescribed marks shall be included in the VI semester grade cards. <b>Innovation/Societal/Entrepreneurship based, will have only CIE and no SEE.</b></p> <p><b>3) Research Internship/Industry Internship of 24 weeks duration:</b><br/>At the beginning of the IV academic year, students can opt for VII semester course work or VII semester Internship depending on the opportunities available for enrolling to either Research Internship or Industry Internship. With reference to this, both VII and VIII semesters shall be in progress simultaneously. Research Internship / Industry Internship shall be carried out at Industry / government organizations, non-governmental organizations (NGOs)/ Micro, Small &amp; Medium Enterprises (MSME) /Research and development organizations/Organizations of National or international repute/Institution Research Centers / Innovation and Incubation Centres/Start-ups /entrepreneur cells. The institution shall encourage students to take up (i) interdisciplinary Research Internship or Industry internship and (ii) rural internship, a work-based activity carried out to learn practical experiences in rural areas, for the upliftment of living standards. In case students want to undergo an internship at his/her family business, he/she shall be permitted to provide; a declaration by a parent that is submitted directly to the Principal of the Institution. With the consent of the internal guide and Principal of the Institution, students shall be allowed to carry out the internship at their hometown (within or outside the state or abroad), provided favourable facilities are available for the internship and the student remains regularly in contact with the internal guide.</p> <p><b>University shall not bear any cost involved in carrying out the internship by students.</b> However, students can receive any financial assistance extended by the organization.</p> <p>University Viva-Voce examination shall be conducted at the end of</p> |
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the internship period. Research Internship /Industry Internship shall be considered as head of passing and shall be considered for the award of the degree. Those who do not complete the internship shall be declared fail and shall have to complete it during subsequent University examinations after stratifying the internship requirements during subsequent semesters.

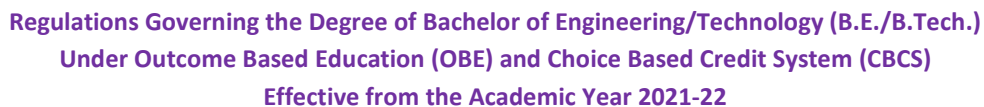
**Responsibilities of Department and Guides:**

1. The Department/college shall nominate department coordinator /staff member/s to facilitate, guide, and supervise students under internship.
2. The students shall report the progress of the internship to the Guide at regular intervals and seek his/her advice. The Guide shall maintain the progress record/diary of the candidates undergoing internship.
3. After the completion of the Internship, students shall submit a report with a completion certificate to the Head of the Department with the approval of internal Guides.
4. There shall be 100 marks for CIE for Inter/Intra Institutional Internship and Innovation/Societal /Entrepreneurship based Internship. For Research /industry internship 100 marks for CIE and 100 marks for SEE. The minimum requirement of CIE and SEE marks shall be 40% and 35% of the maximum marks respectively. In total, the student has to secure 40% of the course maximum marks i.e., the sum of the CIE and SEE marks prescribed for the course.
5. The internal Guide and one senior faculty shall be the internal examiners for CIE Inter/Intra Institutional Internship and Innovation/Societal /Entrepreneurship based Internship.
6. For Research /Industry Internship, External Guide for the Internship shall be the external examiner for SEE. Examination for internship shall be conducted at the college and the date shall be fixed in consultation with the external Guide. The Examiners shall jointly award the SEE marks.
7. In case, the external Guide expresses his/her inability to conduct the Examination, the Principal /examination Chief Superintendent of the



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|                |                          | Institute appointed by the University shall appoint a senior faculty of the Department to conduct the Examination along with the internal Guide.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>21OB7.0</b> | <b>Technical Seminar</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                | <b>21OB7.1</b>           | <p><b>Technical Seminar:</b> Technical Seminar is one of the heads of passing.</p> <ol style="list-style-type: none"> <li>Each student has to present the seminar on a specific topic chosen from the relevant field /list provided by the department under the supervision of a faculty coordinator.</li> <li>The Head of the Department/designated coordinator for technical seminar shall make arrangements for the conduct of seminars through a committee of faculty members of the Department. The committee constituted for the purpose of the Head of the Department, shall award the CIE marks for the seminar. The committee shall consist of three senior faculty members of the Department and the senior-most among them is to act as the Chairperson. <b>There is no SEE for the seminar.</b></li> </ol> |
| <b>21OB8.0</b> | <b>21OB8.1</b>           | <p><b>Mini-Project:</b> A Mini Project is a laboratory-oriented course that will provide a platform to students to enhance their practical knowledge and skills by the development of small systems/applications</p> <p>Based on the ability/abilities of the student/s and recommendations of the mentor, a single disciplinary or a multidisciplinary Mini-project can be assigned to an individual student or a group having not more than 4 students.</p> <p><b>There is only CIE and no SEE for Mini-Project.</b></p>                                                                                                                                                                                                                                                                                             |
|                | <b>21OB8.2</b>           | <p><b>Project Work:</b> Based on the ability/abilities of the student/s and recommendations of the mentor, a single disciplinary or a multidisciplinary Major-project can be assigned to a group having not more than 4 students. The main project work needs to be taken up within the institute/ research laboratory/industry. It is desirable, that the outcome of the project work may be published /patented.</p>                                                                                                                                                                                                                                                                                                                                                                                                 |



## Final Draft Regulations 2021



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|  | <p>Two assignments each of <b>10 Marks</b></p> <ul style="list-style-type: none"><li>• First assignment at the end of 4<sup>th</sup> week of the semester</li><li>• Second assignment at the end of 9<sup>th</sup> week of the semester</li></ul> <p><b>CIE for the practical component of IPCC</b></p> <ul style="list-style-type: none"><li>• On completion of every experiment/program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day. The <b>15 marks</b> are for conducting the experiment and preparation of the laboratory record, the other <b>05 marks shall be for the test</b> conducted at the end of the semester.</li><li>• The CIE marks awarded in the case of the Practical component shall be based on the continuous evaluation of the laboratory report. Each experiment report can be evaluated for 10 marks. Marks of all experiments' write-ups are added and scaled down to 15 marks.</li><li>• The laboratory test (<b>duration 03 hours</b>) at the end of the 15<sup>th</sup> week of the semester /after completion of all the experiments (whichever is early) shall be conducted for 50 marks and scaled down to 05 marks.</li></ul> <p>Scaled-down marks of write-up evaluations and tests added will be CIE marks for the laboratory component of IPCC for <b>20 marks</b>.</p> <ul style="list-style-type: none"><li>• The minimum marks to be secured in CIE to appear for SEE shall be the 12 (40% of maximum marks) in the theory component and 08 (40% of maximum marks) in the practical component. The laboratory component of the IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included. The maximum of 05 questions to be set from the practical component of IPCC, total marks of all questions should not be more than the 25 marks.</li></ul> <p>The theory component of the IPCC shall be for both CIE and SEE.</p> |
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| 210B9.1c            | <p><b>Theory Course with 01 credit</b></p> <p>Three Tests (preferably in MCQ pattern with 20 questions) each of <b>20 Marks (duration 01 hour)</b></p> <ol style="list-style-type: none"> <li>1. First test at the end of 5<sup>th</sup> week of the semester</li> <li>2. Second test at the end of the 10<sup>th</sup> week of the semester</li> <li>3. Third test at the end of the 15<sup>th</sup> week of the semester</li> </ol> <p>Two assignments each of <b>10 Marks</b></p> <ol style="list-style-type: none"> <li>1. First assignment at the end of 4<sup>th</sup> week of the semester</li> <li>2. Second assignment at the end of 9<sup>th</sup> week of the semester</li> </ol> <p>Quiz/Group discussion/Seminar, any two of three suitably planned to attain the COs and POs for <b>20 Marks (duration 01 hours)</b></p> <p>The sum of total marks of three tests, two assignments, and quiz /seminar/ group discussion will be out of 100 marks and shall be <b>scaled down to 50 marks</b></p> |
| 210B9.1d            | <p><b>Theory Course with 02 credits</b></p> <p><b>CIE will same as 1 credit theory course for the 1<sup>st</sup> and 2<sup>nd</sup> semester;</b> however, for <b>higher</b> semesters depending upon the type of the course, the CIE pattern may be MCQ type (100 questions) or the same as other core theory courses.</p> <p><b>CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.</b></p> <p>At the beginning of the semester, the instructor/faculty teaching the course has to announce the methods of CIE for the course.</p>                                                                                                                                                                                                                                                                                                                                                                                         |
| 210B9.2<br>210B9.2a | <p><b>Engineering Graphics/ Drawing /Field Works:</b></p> <p><b>Engineering Graphics /Drawing / Engineering Visualization Course</b></p> <ol style="list-style-type: none"> <li>1. The CIE marks awarded in the case of Drawing shall be based on the weekly evaluation of class work (sketching and computer-aided drawing). Each drawing will be evaluated for marks as mentioned module-wise in the syllabus. Marks for all the drawing sheets are</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



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|  | 210B9.2b | <p>added and scaled down to <b>30 marks</b>.</p> <p>2. One class test similar to SEE will be conducted after completion of the syllabus for 100 marks and scaled down to <b>20 marks</b>.</p> <p>3. CIE marks (<b>out of 50</b>) scored by the student shall be the sum of class work evaluation and test marks.</p> <p>The CIE marks awarded for higher semester Drawings/ Design Drawings offered by various branches shall be based on the evaluation of the sheets and one test in the ratio 80:20.</p> <p><b>Continuous Evaluation(CIE) of Field Work</b></p> <p>Surveying Practice / Socio-Economic survey/ Marketing survey/traffic survey/ environmental survey. CIE marks will be split into two components 80% of maximum marks (40 marks) are given for fieldwork report evaluation and 20% of maximum marks (10 marks) for internal assessment test evaluation.</p> <p>Fieldwork evaluation includes attendance, data collection through survey, use of data for design drawing, and report. The split-up of marks for the report shall be decided by the faculty member who is guiding them for the design drawing and report. The criteria for split-up of marks shall be done to achieve the course outcomes. The report evaluation shall be carried out for 100 marks and scored marks shall be scaled down to 40 marks.</p> <p>The assessment shall be through a presentation of the report followed by the viva-voce. This test shall be conducted by the fieldwork project guide and fieldwork coordinator. If the fieldwork coordinator happens to be the same faculty then, HOD or senior faculty member will conduct the test with the guide. A test similar to SEE will be conducted for 100 marks and marks scored by the student will be scaled down to 10 marks.</p> <p>The sum of the report and test marks will be total CIE marks for fieldwork.</p> |
|  | 210B9.3  | <p><b>Practical Courses:</b></p> <p>CIE marks for the practical course is <b>50 Marks</b>.</p> <p>The split-up of CIE marks for record/ journal and test are in the ratio <b>60:40</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



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- Each experiment to be evaluated for conduction with observation sheet and record write-up. Split up of marks for the evaluation of the journal/write-up for hardware/software experiments designed by the faculty who is handling the laboratory session and shall be made known to students at the beginning of the practical session. (Split-up of marks for CIE is as suggested in Annexure-I)
- Record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.
- Total marks scored by the students shall be scaled down to 30 marks (60% of maximum marks).
- Weightage to be given for neatness and submission of record/write-up on time.
- Department shall conduct 02 tests for 100 marks, the first test shall be conducted after the 8<sup>th</sup> week of the semester and the second test shall be conducted after the 14<sup>th</sup> week of the semester.
- In each test, test write-up, conduction of experiment, acceptable result, and procedural knowledge will carry a weightage of 60% and the rest 40% for viva-voce.
- The suitable split up of marks can be designed to evaluate each student's performance and learning ability (Split-up of marks is as suggested in Annexure-I).
- The average of 02 tests is scaled down to **20 marks** (40% of the maximum marks).

**The Sum of scaled-down marks scored in the report write-up/journal and average marks of two tests is the total CIE marks scored by the student.**

Internal tests for laboratory courses with software experiments will be conducted for 100 marks

Observation, write-up of procedure/ Algorithm/program, and execution of experiment will be assessed for 80 marks and Viva-voce for 20 marks.



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|  |                | Scored marks out of 100 is scaled down to 50 marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|  | <b>210B9.4</b> | <p><b>Internship:</b></p> <p>The Internship shall be taken up during the period specified in the Scheme of Teaching and Examinations.</p> <p>The Department/ College shall nominate faculty member/s to facilitate, Guide, and supervise students under an internship.</p> <p>The students shall report the progress of the internship to the Guide in regular intervals and seek his/her advice. The Guide shall maintain the progress record of the candidates undergoing internship.</p> <p><b>Duration of Internships</b></p> <ul style="list-style-type: none"><li>• Inter/Intra Institutional Internship 03 weeks</li><li>• Innovation /Societal /Entrepreneurship based Internship 04 weeks</li><li>• Industry / Research Internship 24 weeks</li></ul> <p>There shall be only a CIE of 100 marks for Inter/Intra Institutional Internship and Innovation /Societal /Entrepreneurship based Internship.</p> <p>Inter/Intra Institutional Internship and Innovation /Societal /Entrepreneurship based Internship (refer 210B6.1, part B point 4 and 5). However, Research / Industry internship will have both CIE and SEE components (refers to 210B6.1, part B point 6 to 9).</p> <p><b>Report evaluation</b> for Research / Industry internships shall be evaluated for 50% maximum marks – The split-up of marks suggested for report evaluation shall be based on the</p> <ul style="list-style-type: none"><li>• Report formatting (20% of marks of CIE for report)</li><li>• presentation of the outcomes in the report (40% of marks for CIE)</li></ul> |



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|  |         | <p>for report) and</p> <ul style="list-style-type: none"> <li>• Technical content of the report (40% of marks for CIE for report)<br/><i>(Weightage may be given for paper publication in reputed journal/refereed journal/ Conferences/Product developed/ Patent filed –only for Industry/Research Internship).</i></li> </ul> <p><b>Viva-Voce conducted</b> for 50% of marks of CIE. The split-up of marks suggested are</p> <ul style="list-style-type: none"> <li>• For a demonstration of (soft) skills/Engineering Knowledge gained (50% of marks of CIE for Viva-voce).</li> <li>• The question-answer session will be checked for the understanding of the fundamentals and concepts (40% of CIE marks for Viva-voce)</li> <li>• Clarity in answering the questions (10% of CIE marks for Viva-voce)</li> </ul> <p><i>Viva-voce will be conducted by the Mentor /guide and Head of the department /one of the senior faculty assigned by the head of the department</i></p> |
|  | 210B9.5 | <p><b>Technical Seminar:</b></p> <p><b>The Technical Seminar performance evaluation shall be through CIE only.</b> The Technical Seminar is one of the heads of passing. The maximum marks prescribed for CIE shall be 100. The marks awarded for Technical Seminar shall be based on the evaluation of the Seminar Report, Presentation skill, and Question and Answer session in the ratio of 50:25:25.</p> <p>Technical Seminar is one of the heads of passing.</p> <p>The Head of the Department shall make arrangements for the conduct of seminars through a committee of faculty members of the Department. The <b>committee</b>, constituted for the purpose by the Head of the Department, shall award the CIE marks for the seminar. The committee shall consist of three senior faculty members of the Department and the senior-most acting as the Chairperson.</p> <p><b>Split up of Marks suggested</b></p>                                                           |



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|         |  | <p><b>Report marks to be allotted by the seminar guide/s</b></p> <ul style="list-style-type: none"> <li>• Formatting of the report (10 marks)</li> <li>• Literature survey (20 Marks) and</li> <li>• Technical content of the report (20 marks)</li> </ul> <p><b>Seminar Presentation marks to be allotted by the committee: (25 marks)</b></p> <p><b>Viva-Voce (Question answer session): 25 marks</b></p> <ul style="list-style-type: none"> <li>• Understanding of fundamentals and concepts (15 marks)</li> <li>• Clarity in answering the questions (10 Marks)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 210B9.6 |  | <p><b>Mini – Project:</b> (also refer 210B8.1 page 15)</p> <p><b>The Mini-Project shall be under CIE only.</b> The maximum marks prescribed for CIE shall be 100. The CIE marks awarded for Mini-Project, shall be based on the evaluation of the Mini-Project Report, Project Presentation skill, and Question and Answer session in the ratio of 50:25:25. <b>The marks awarded for the Mini-Project report shall be the same for all the batch mates.</b></p> <p>50 marks of CIE for the report shall be evaluated by the faculty guide /mentor who is guiding the mini-project.</p> <p>The Head of the Department shall make arrangements for the conduct of viva-voce evaluation of the mini-project. The committee shall consist of a guide/mentor and two senior faculty members of the Department. This committee shall evaluate Mini-project Work for 50 marks considering project presentation and question-answer session.</p> <ul style="list-style-type: none"> <li>• Project presentation: 25 marks</li> <li>• Question and answer session:25 marks</li> </ul> |
| 210B9.7 |  | <p><b>Project Work:</b> The project work shall be evaluated considering both CIE and SEE; the maximum mark for CIE is 100.</p> <p>The maximum marks prescribed for CIE shall be 100. The CIE marks awarded for Project Work shall be based on the evaluation of the Project Report, Project Presentation skill, and Question and Answer session in the ratio of 50:25:25. <b>The marks awarded for the Project report shall be the same for all the batch mates.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



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|                | <p>50 marks of CIE for the report shall be evaluated by the faculty guide /mentor who is guiding the project work.</p> <p>The Head of the Department shall make arrangements for the conduct of viva-voce evaluation of the project work. The committee shall consist of a guide/mentor and two senior faculty members of the Department. This committee shall evaluate Project Work for 50 marks considering project presentation and question-answer session.</p> <ul style="list-style-type: none"> <li>• Project presentation: 25 marks</li> <li>• Question and answer session: 25 marks</li> </ul> <p>Split-up of marks to be followed for evaluation is suggested in Annexure-II</p>                                                                                                                                                                                                                                                                                               |
| <b>21OB9.8</b> | <p>The candidate shall write tests, assignments/unit-tests /written quizzes in Blue-Books, which shall be preserved by the Principal/ Head of the Department for at least 3 years after the announcement of University results and shall be made available for verification as per the direction of the Registrar (Evaluation).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>21OB9.9</b> | <p><b>Maximum and Minimum CIE and SEE Marks:</b></p> <p>The maximum CIE marks shall be 50. To appear for the SEE, the minimum CIE marks to be secured in all the courses shall be <b>40 % of the maximum marks.</b></p> <p>Inter/Intra Institutional Internship and Innovation /Societal /Entrepreneurship based Internship, Technical Seminar, Mini-Project Works will have only CIE component, maximum CIE marks shall be 100. Minimum CIE marks to be secured shall be 40% of the maximum marks, to qualify in these courses.</p> <p>For Research Internship/ Industry Internship /Major Project the maximum CIE marks shall be 100. To appear the SEE, the minimum CIE marks to be secured shall be 40% of the maximum marks i.e., 40 out of 100 marks.</p> <p><b>Maximum and Minimum SEE Marks:</b></p> <p>The maximum SEE marks for Research /Industry Internship, Major Project Work is 100, and minimum SEE marks to secure shall be 35% of the maximum marks i.e. 35 marks.</p> |



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|  |                 | <p>For remaining all the courses mentioned in the scheme of teaching and examination maximum SEE marks are 50 and minimum SEE marks to secure shall be 35% of the maximum marks i.e. 18marks</p> <p>No SEE component for Inter/Intra Institutional Internship and Innovation/Societal /Entrepreneurship based Internship, Technical Seminar and, Mini Project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|  | <b>210B9.10</b> | Any corrections or overwriting of CIE marks on the blue book/drawing sheet laboratory record etc., where CIE marks are awarded, shall bear the signature(s) of concerned Teacher(s) and the Head of the Department.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|  | <b>210B9.11</b> | CIE marks shall reach the University before the commencement of examinations as per the notification from the office of the Registrar (Evaluation) from time to time. After submission of CIE marks to the University, any request under any circumstances for change of CIE marks shall not be considered.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|  | <b>210B9.12</b> | <p>i. Students satisfying the attendance requirement but failing to secure the minimum percentage of CIE marks, in any course/s, shall not be eligible for the SEE, conducted by the University and they shall be considered as fail in that Course /those Courses and marked as NE in the grade cards against this course/s. However, they can appear for University examinations conducted for other Courses of the same semester and backlog course/s if any.</p> <p>ii. Students who have satisfied the attendance requirement but not the CIE requirements can be permitted to register afresh and appear for SEE after satisfying the CIE requirements in the same Course(s) when offered during the next immediate semester/s or later.</p> <p>iii. Each appearance to SEE or absence after completing CIE and attendance requirements to complete a course shall be treated as an attempt.</p> <p>iv. The student shall be permitted to register for total courses not exceeding 28 credits. These 28 credits include the courses of the regular semester and backlogs. The registration of these additional credits includes the courses having a shortage of attendance and the courses whose CIE requirements are not fulfilled. A student has to pay the</p> |



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|  |                 | prescribed fee as notified by the University from time to time.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|  | <b>210B9.13</b> | CIE marks of those students, who come under 210B9.12 (i) and (ii), shall also be sent to the Registrar (Evaluation) along with other course CIE Marks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|  | <b>210B9.14</b> | <p>i. The final list, incorporating corrections (if any), of CIE marks awarded to the students in the Theory/Practical/Internship/ Technical Seminar / Mini – Project Work/Major-Project Work shall be displayed on the notice board of the college much before the closure of the semester.</p> <p>ii. The college/institution shall enter the CIE marks of each semester in the format of the University online CIE marks portal and submit a certified copy of the same to the University Examination Section within the stipulated date notified by University. Every page of the CIE marks sheet (hardcopy) shall bear the signatures of the concerned Teacher/Teachers, Head of the Department, and Principal.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|  | <b>210B9.15</b> | <p><b>Moderation Committee for CIE;</b></p> <p>Moderation of assessment is an organized procedure that ensures the use of valid assessment methods and consistent application of criteria, to provide fair academic judgment and reliable outcomes in the form of marks or grades. It assures appropriate designing and implementation of assessment activities along with the generation of valid and reliable results.</p> <p>There shall be a Moderating Committee for Internal Assessments in every Department, which shall be chaired by the Head of Department and two senior faculty members to be nominated by the Principal. This Committee shall be responsible for the entire process of Internal Assessment in the Department, including redressal of grievances if any.</p> <p><b><i>Guideline for the moderation Committee-</i></b></p> <p>Moderation may be conducted after each test or after the tests in case there is a large number of fail grades or higher letter grades, or when large numbers of students who have received the same grade or clustering of students on letter grades, or when there are discrepancies between marks allocated to individual students in different courses,</p> |



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|                 |                                                                   | <ul style="list-style-type: none"> <li>Split-up of marks used for each of the different types of assessment in the course to be checked</li> <li>Checking of the questions whether it maps with course outcomes.</li> <li>Checking of the level of difficulty of questions paper i.e is difficulty level on the extremes, very easy or otherwise.</li> <li>Whether the assessment modes are used to cover the entire syllabus or not.</li> <li>Checking the manner of awarding the marks, i.e has correction been at the extremes, liberal or tough.</li> </ul> <p>Moderation should not be restricted to just assessment but also includes the assessment design (scheme of evaluation).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>21OB10.0</b> | <b>Semester End Examination (SEE) Marks and Passing standards</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                 | <b>21OB10.1</b>                                                   | <p>a. University examination for all Courses under SEE shall be conducted for a maximum of 100 Marks. The marks secured by the students for 100 marks shall be proportionately <b>scaled down</b> to a maximum of 50 marks to add the same with the CIE marks for the award of the letter grade.</p> <p>b. The University examinations for all the Programs of study shall be conducted at the end of each semester.</p> <p>c. Students having no backlog course/s, may not have more than one examination on the same day. However, students having backlog course/s may face a situation where they may have</p> <ol style="list-style-type: none"> <li>Two examinations scheduled at the same time of the day,</li> <li>To take two examinations on the same day, one during the morning session and the other in the afternoon session, and</li> <li>Examinations on consecutive days.</li> </ol> <p>d. As changing the examination dates is not an option, the examination timetable shall not be modified/ altered/ adjusted in any of the above three cases. In the first case, the students shall select any one of the clashing courses and in the second and third cases, the students shall manage the examinations as per their decision.</p> <p>e. For all theory Courses /drawing Courses of the Program, the <b>maximum</b></p> |



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|  | <p><b>SEE marks</b> shall be 50, the minimum SEE marks to be secured shall be 35 % of the maximum marks i.e., 18 marks</p> <p><b>f.</b> For Practical/Fieldwork/ the maximum SEE marks shall be 50, the minimum SEE marks to be secured shall be 35 % of the maximum marks i.e., 18 marks. Inter/Intra Institutional Internship, Innovation /Societal /Entrepreneurship based Internship, Technical Seminar and Mini-Project are not having any SEE component.</p> <p><b>g.</b> For 24 weeks of Research / Industry Internship /Major Project the maximum SEE marks shall be 100, the minimum SEE marks to be secured shall be 35% of the maximum marks i.e., 35 marks.</p> <p><b>h. Students who satisfy the conditions (e), (f), and (g) above, and obtain any grade from O to P in a course shall be considered to have passed that course.</b></p> <p><b>i. A student shall be declared fail if he/she</b></p> <ul style="list-style-type: none"><li>• Fails to satisfy the conditions (h) above</li><li>• Absents himself/herself to the University examination.</li><li>• Is held guilty of examination malpractice and for any other reasons and declared the performance of any course/s as null and void by the competent authority.</li><li>• The course/s in which student/s fail to satisfy attendance and CIE requirement (NE courses) are also considered as F only.</li></ul> <p><b>j.</b> If a student secures an F grade in any of the Courses, he/she shall reappear for that Course(s) during the subsequent SEE. The CIE marks awarded to the student at the first attempt in the concerned Course(s) shall be carried forward. Revised CIE marks are considered only in cases NE (not eligible to appear for SEE due to non-comply of attendance and CIE) cases.</p> <p><b>The sum total of CIE and SEE marks must be 40% of the maximum marks prescribed for a course as per the scheme of teaching and examination.</b></p> |
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| 210B10.1a | <p><b>Theory Course with 3 Credits</b></p> <p>Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the course(duration 03 hours)</p> <ol style="list-style-type: none"> <li>1. The question paper will have ten questions. Each question is set for 20 marks.</li> <li>2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), <b>should have a mix of topics</b> under that module.</li> </ol> <p>The students have to answer 5 full questions, selecting one full question from each module.</p> |
| 210B10.1b | <p><b>Integrated Professional Core Courses (IPCC):</b>Theory Integrated with Practical Course</p> <p>SEE for the theory part (Duration 03 hours) is the same as that mentioned in serial no. 02 (<b>questions mentioned in the SEE paper shall include questions from the practical component</b>).</p>                                                                                                                                                                                                                                                                                                                       |
| 210B10.1c | <p><b>Theory Course with 1 Credit</b></p> <p>SEE paper shall be set for 50 questions, each of 01 mark. The pattern of the question paper is MCQ (multiple choice questions). The time allotted for SEE is <b>01 hour</b></p>                                                                                                                                                                                                                                                                                                                                                                                                  |
| 210B10.1d | <p><b>Theory Course with 2 Credits</b></p> <p>SEE paper will be set for 100 questions each of 01 mark. The pattern of the question paper is MCQ (multiple choice questions). The time allotted for SEE is <b>120 minutes</b>. Marks scored are scaled down to 50 Marks.</p> <p>The suggested question paper pattern is MCQ for the 1<sup>st</sup> and 2<sup>nd</sup> semester however, <b>for higher</b> semester/s depending on the type of the course SEE may be a written examination, a pattern similar to other theory courses as mentioned in clause 210B10.1a</p>                                                      |
| 210B10.1e | <p><b>Engineering Graphics and Drawing(Laboratory Course)</b></p> <p>SEE shall be conducted and evaluated for maximum marks 100. Marks</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |



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|  |                  | <p>obtained shall be accounted for SEE final marks, reducing it by 50%</p> <ol style="list-style-type: none"> <li>1. SEE will be conducted by the two examiners of same institute one act as Internal Examiner and other act as External Examiner.</li> <li>2. Question paper shall be set jointly by both Internal and External Examiner and made available for each batch as per schedule. Examiners may refer question bank.</li> <li>3. Evaluation shall be carried out jointly by both the examiners as per the scheme.</li> </ol> <p>Scheme of Evaluation: To be defined by the examiners jointly as per VTU norms</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  | <b>210B10.1f</b> | <p><b>Fieldwork</b></p> <p><b>SEE for fieldwork</b> Conducted by the Internal and External examiners appointed by University.</p> <p>Report and design drawing evaluation and viva-voce are in the ratio 60:40.</p> <p>Fieldwork will be jointly evaluated by the Internal and External examiners.</p> <p>The duration of SEE is 03 hours.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|  | <b>210B10.1g</b> | <p><b>Practical Course</b></p> <p>SEE marks for the practical course shall 50 Marks.</p> <p>SEE shall be conducted jointly by the two examiners of the same institute one act as internal and another as external examiner. Examiners are appointed by the University.</p> <ul style="list-style-type: none"> <li>• All laboratory experiments are to be included for practical examination.</li> <li>• Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. <b>OR</b> based on the course requirement, a split-up of marks for evaluation shall be decided jointly by internal and external examiners.</li> <li>• Students can pick one question (experiment) from the questions lot prepared by the internal /external examiners jointly.</li> <li>• Evaluation of write-up/ conduction procedure and result/viva will be conducted jointly by Internal and external examiners.</li> <li>• General split-up of marks for SEE mentioned are procedure / writeup- 20%, Conduction and result in -50%, Viva-voce 30% of maximum</li> </ul> |



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|  |                  | <p>marks. SEE for the practical course shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, split-up of the marks shall be decided by the examiners)</p> <ul style="list-style-type: none"> <li>Change of experiment is allowed only once and 20% Marks allotted to the procedure/write-up part to be made zero (Evaluation is to be carried out for 80% of total maximum marks).</li> </ul> <p>The duration of SEE is 03 hours.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|  | <b>21OB10.1h</b> | <p><b>Research /Industry Internship</b></p> <p>SEE shall be conducted by the Internal and external examiners approved by the university. The internal examiner shall be the guide for SEE. The external Guide for Internship shall be the external examiner for SEE. Examination for internship shall be conducted at the college and the date shall be fixed in consultation with the external Guide. The Examiners shall jointly award the SEE marks.</p> <p>In case the external Guide expresses his inability to conduct the Examination at the last moment, the Principal /Chief Superintendent appointed by the university for the concerned examination of the Institute shall appoint a senior faculty of the Department to conduct the Examination along with the internal Guide.</p> <p>Split up of marks for evaluation may be the same as suggested for CIE or Internal and external examiners shall devise split up of marks for SEE and the same may be submitted to the University along with evaluation marks.</p> |
|  | <b>21OB10.1i</b> | <p><b>Project Work:</b></p> <p>As project work is evaluated for 200 marks (CIE: 100 marks, SEE:100 marks), the marks awarded in SEE for 100 marks must take as it is to decide the letter grade along with the CIE marks also awarded for 100 marks. SEE for Project Work will be conducted by the two examiners one internal and one external examiner appointed by University. SEE marks for the project shall be awarded based on the quality of report and presentation skill, participation in the question and answer session in the</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



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|  |                 | <p>ratio 50:25:25 as per the University norms jointly by the examiners.</p> <p>Split up marks to be followed are suggested for CIE or Internal and external examiners shall decide the split-up of marks for SEE and the same may be submitted to the University along with evaluation marks</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|  | <b>21OB10.2</b> | <p><b>Rejection of Result:</b></p> <p>A student may, at his/her desire, can reject the total performance of a semester (including CIE marks) or reject only the result of his/her performance in University examinations (SEE) of a semester. The rejection is permitted only once during the entire Program of study.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  | <b>21OB10.3</b> | <p>Students who desire to reject the SEE results of a semester shall reject the total performance (irrespective of the earned Course grades) in all the Courses of the semester either rejecting or retaining the CIE marks. However, rejection of the performance of the VIII semester project shall not be permitted.</p> <p>Students who desire to reject the total SEE performance of an odd or even semester including CIE marks, have to repeat that odd or even semester of the prevailing scheme by taking <b>readmission</b> during the subsequent academic year/s. They shall also be governed by <b>readmission and Maximum duration clauses</b> (21OB14.1-7 and 21OB3.1)</p> <p>(i) If the rejection of SEE results excluding CIE marks is of the odd semester, students shall be allowed to take admission to the immediate next even semester.</p> <p>(ii) If the rejection of SEE results excluding CIE marks is of even semester, then students shall be allowed to take admission to the next odd semester (applicable only from 3<sup>rd</sup> semester onwards as per clause no. 21OB14.1-1).</p> <p>(iii) Readmission to odd/even semester shall not be considered as fresh admission and therefore students shall continue to have the same University Seat Number, which was allotted earlier. The maximum duration of the Program shall be counted with reference to the</p> |



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|                 |                                       | <p>University Seat Number (USN).</p> <p>(iv) Applications for rejection of results excluding CIE and approval to reappear for University examinations shall be sent to the Registrar (Evaluation) through the Principal of the College within 30 days from the date of announcement of the results, with prescribed fee as notified by the university from time to time. Late submission of applications shall not be accepted for any reason.</p> <p>(v) Application for rejection of results including CIE and approval for readmission shall be sent to the Registrar through the Principal of the College within 30 days from the date of the announcement of the results with prescribed fee as notified by the university from time to time. Late submission of application shall not be accepted for any reason.</p>                                                                                              |
|                 | <b>21OB10.4</b>                       | <p>Registration for SEE is compulsory if the student/s has satisfied the attendance and CIE requirement of ODD /EVEN semester.</p> <p>In case, the students fail to register for SEE of the odd semester after satisfying the attendance and CIE requirements of the semester, they shall be permitted to move to an even semester of that academic year. However, such students have to register for odd semester examinations conducted at the end of the academic year for all the semesters and registration shall be considered for the first attempt.</p> <p>In case, students fail to register for odd semester SEE after completing successfully the even semester, they shall not be permitted to move to the higher odd semester of the subsequent academic year. Irrespective of student appearing for SEE, he/she has to register for SEE of odd and even semesters before completing the academic year.</p> |
|                 | <b>21OB10.5</b>                       | <p>Students who opt for rejection of results of University examination shall be eligible for the award of the degree and Minor Degree but not for the award of <b>ranks and Honors degree</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>21OB11.0</b> | <b>Multiple Entry and Exit Option</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                 | <b>21OB11.1</b>                       | <b>Entry 1:</b> (at 1 <sup>st</sup> semester) A program of study leading to entry into the first                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



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|  |                 | <p>year of the Bachelor's degree is open to those who have met the entrance requirements, including specified levels of attainment at the secondary level of education specified in the program admission regulations at clause no. 210B2.1</p> <p><b>Exit 1:</b> The exit option is given to the student at the end of year 1 (after the 2<sup>nd</sup> semester). The student has to complete all academic requirements of 1<sup>st</sup> year of the undergraduate program and earned requisite credits of 1<sup>st</sup> and 2<sup>nd</sup> semester and recommendation of the counselling team of the Institute.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|  | <b>210B11.2</b> | <p><b>Entry 2: (at 3<sup>rd</sup> semester)</b> A program of study leading to the second year of the Bachelor's degree is open to those who have met the entrance requirements, including specified levels of attainment, in the program admission regulations clause no. 210B2.2. Admission to a program of study is based on the evaluation of documentary evidence (including the academic record) of the applicant's ability to undertake and complete a Bachelor's degree program.</p> <p>This option is open to those who have left after completion of the 1<sup>st</sup> year of the program and want to join back for the continuation of their study subject to the condition of a maximum duration of 8 years from the date of 1<sup>st</sup> admission.</p> <p>Student opting for multiple entries a 3<sup>rd</sup>-semester level has to undergo a mandatory Summer Internship-I (21INT49) of 03 weeks during the intervening period of semester III and IV. CIE shall be conducted in the 3<sup>rd</sup> semester and prescribed credits earned for the internship shall be entered into the grade card of the IV semester.</p> <p><b>Exit 2:</b> The exit option is given to the student at the end of year 2 (after the 4<sup>th</sup> semester). The student has to complete all academic requirements to complete the two years of the undergraduate program and earned requisite credits of 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> semesters and recommendation of the counselling team of the Institute</p> |



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|                 |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|                 | <b>210B11.3</b> | <p><b>Entry 3.</b> This option is open to those who have left after completion of the 2<sup>nd</sup> year of the program and want to join back for the continuation of their study subject to the condition of a maximum duration of 8/6 years from the date of 1<sup>st</sup> admission.</p> <p>A program of study leading to the Bachelor's degree is open to those who have met the entrance requirements, including specified levels of attainment. Admission to a program of study is based on the evaluation of documentary evidence (including the academic record) of the applicant's ability to undertake and complete a Bachelor's degree program.</p> <p>Students opting for multiple entries at the 5<sup>th</sup>-semester level have to undergo mandatory Summer Internship-II (21INT69) of 04 weeks during the intervening period of semesters V and VI. CIE shall be conducted in the 5<sup>th</sup> semester and prescribed credits earned for the internship shall be entered into the grade card of VI semesters.</p> <p><b>Exit 3.</b> (after 6<sup>th</sup> semester) On successful completion of three years, the relevant degree shall be awarded. The student has to complete all academic requirements to complete the three years of the undergraduate program and earned requisite credits of 1<sup>st</sup> to 6<sup>th</sup> semester and recommendation of the counselling team of the Institute.</p> |
|                 | <b>210B11.3</b> | <p><b>Counselling Team:</b></p> <p>The students who choose to drop out (exit) undergo counselling to understand why they are making such decisions. The exit option is given to students only after the recommendation of the counselling team constituted by the Principal of the Institute.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>210B12.0</b> | <b>Grading</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                 | <b>210B12.1</b> | <p>The University adopts an absolute grading system wherein the marks are converted to grades, and every examination result shall be declared in terms of Semester Grade Point Average (SGPA) considering all the courses that appeared in that Semester End Examinations including backlog</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



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|                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | course/s or arrear papers (refers to courses other than the current semester courses that have not yet been completed) and Cumulative Grade Point Average (CGPA). The CGPA will be calculated for up to an academic session semester, except for the first semester. |                                                                           |       |               |         |       |      |  |  |  |              |   |    |   |    |   |   |   |   |             |           |           |      |               |         |      |      |             |    |   |   |   |   |   |   |   |                    |        |       |       |       |       |       |       |      |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------|---------------|---------|-------|------|--|--|--|--------------|---|----|---|----|---|---|---|---|-------------|-----------|-----------|------|---------------|---------|------|------|-------------|----|---|---|---|---|---|---|---|--------------------|--------|-------|-------|-------|-------|-------|-------|------|
| 210B12.2                                                                  | <p>The grading system with the letter grades and the assigned range of marks under the absolute grading system shall be as given below:</p> <table><tr><th colspan="9">Letter Grade and corresponding Grade Points on a typical 10 – Point scale</th></tr><tr><th rowspan="2">Letter Grade</th><th>0</th><th>A+</th><th>A</th><th>B+</th><th>B</th><th>C</th><th>P</th><th>F</th></tr><tr><th>Outstanding</th><th>Excellent</th><th>Very Good</th><th>Good</th><th>Above Average</th><th>Average</th><th>Pass</th><th>Fail</th></tr><tr><th>Grade Point</th><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>0</td></tr><tr><th>% of Marks secured</th><td>90-100</td><td>80-89</td><td>70-79</td><td>60-69</td><td>55-59</td><td>50-54</td><td>40-49</td><td>0-39</td></tr></table> <p>If a student remains absent for SEE of any of the courses, the letter grade assigned in the grade card to that course shall be <b>F</b>. If a student is not eligible to appear for SEE due to non-comply of any of the course/s then letter grade assigned against that course/s shall be <b>NE</b>.</p> <p>In the case of all the courses of the program, the maximum CIE marks shall be 50 and the maximum SEE marks shall be 50. The minimum CIE marks secured shall be <b>40%</b> of maximum marks, i.e. 20 out of 50 marks for passing. The minimum SEE marks to be secured shall be <b>35 %</b> of the maximum marks i.e., 18 out of 50marks for passing. In total, the student has to secure <b>40 % of the course maximum marks i.e.,</b> the sum of the CIE and SEE marks prescribed for the Course.</p> |                                                                                                                                                                                                                                                                      | Letter Grade and corresponding Grade Points on a typical 10 – Point scale |       |               |         |       |      |  |  |  | Letter Grade | 0 | A+ | A | B+ | B | C | P | F | Outstanding | Excellent | Very Good | Good | Above Average | Average | Pass | Fail | Grade Point | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 0 | % of Marks secured | 90-100 | 80-89 | 70-79 | 60-69 | 55-59 | 50-54 | 40-49 | 0-39 |
| Letter Grade and corresponding Grade Points on a typical 10 – Point scale |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |                                                                           |       |               |         |       |      |  |  |  |              |   |    |   |    |   |   |   |   |             |           |           |      |               |         |      |      |             |    |   |   |   |   |   |   |   |                    |        |       |       |       |       |       |       |      |
| Letter Grade                                                              | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | A+                                                                                                                                                                                                                                                                   | A                                                                         | B+    | B             | C       | P     | F    |  |  |  |              |   |    |   |    |   |   |   |   |             |           |           |      |               |         |      |      |             |    |   |   |   |   |   |   |   |                    |        |       |       |       |       |       |       |      |
|                                                                           | Outstanding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Excellent                                                                                                                                                                                                                                                            | Very Good                                                                 | Good  | Above Average | Average | Pass  | Fail |  |  |  |              |   |    |   |    |   |   |   |   |             |           |           |      |               |         |      |      |             |    |   |   |   |   |   |   |   |                    |        |       |       |       |       |       |       |      |
| Grade Point                                                               | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 9                                                                                                                                                                                                                                                                    | 8                                                                         | 7     | 6             | 5       | 4     | 0    |  |  |  |              |   |    |   |    |   |   |   |   |             |           |           |      |               |         |      |      |             |    |   |   |   |   |   |   |   |                    |        |       |       |       |       |       |       |      |
| % of Marks secured                                                        | 90-100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 80-89                                                                                                                                                                                                                                                                | 70-79                                                                     | 60-69 | 55-59         | 50-54   | 40-49 | 0-39 |  |  |  |              |   |    |   |    |   |   |   |   |             |           |           |      |               |         |      |      |             |    |   |   |   |   |   |   |   |                    |        |       |       |       |       |       |       |      |



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|                 |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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|                 | <b>210B12.3</b>                     | A student obtaining Grade F in a Course/s shall be considered to fail in that course/s and is required to reappear for the corresponding course/s in the subsequent SEE. Whatever the letter grade secured by the student in his /her reappearance shall be awarded. The number of attempts taken to clear courses/s shall be indicated in the grade card.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>210B13.0</b> | <b>Computation of SGPA and CGPA</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                 | <b>210B13.1</b>                     | <p><b>Computation of SGPA and CGPA</b></p> <p>The following expressions shall be used to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) respectively:</p> <p><b>SGPA</b></p> $= \frac{\sum [\text{CourseCredits} \times \text{GradePoints}] \text{ for all the Courses applied in that semester}}{\sum [\text{CourseCredits}] \text{ for all the Courses applied in that semester}}$ <p><b>CGPA</b></p> $= \frac{\sum [\text{CourseCredits} \times \text{GradePoints}] \text{ for all Courses excluding those with F grades until that semester}}{\sum [\text{CourseCredits}] \text{ for all Courses excluding those with F grades until that semester}}$ <p>The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the grade cards. SGPA and CGPA calculation: An illustrative example for one academic year is shown in Annexure-III.</p> |
|                 | <b>210B13.2</b>                     | <p><b>Conversions of CGPA into Percentage of marks and Class Equivalence</b></p> <p>There is no formula for the conversion of CGPA into the percentage of marks. However, the following formula for conversion of the CGPA on a 10-point scale into the percentage of marks (M) for employment / higher studies, etc may be used;</p> <p>Percentage of marks secured, <math>M = \text{CGPA Earned} \times 10</math></p> <p>Illustration for a CGPA of 8.20;</p> <p>Percentage of marks secured <math>M = 8.20 \times 10</math></p> <p style="text-align: center;"><math>= 82.0 \%</math></p>                                                                                                                                                                                                                                                                                                               |
|                 | <b>210B13.3</b>                     | <p><b>Class Equivalence:</b></p> <p>Subsequent to the conversion of final CGPA, after successful completion of the Program, into the <b>percentage of marks (M)</b>, a graduating student is</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |



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|  |  | <p>reckoned to have passed in</p> <p>(i). First Class with Distinction (FCD) if <math>M \geq 70</math></p> <p>(ii). First Class (FC) if <math>60\% \leq M &lt; 70\%</math></p> <p>(iii). Second Class (SC) if <math>50\% \leq M &lt; 60\%</math></p> <p>(iv). Pass Class (P) if <math>40\% \leq M \leq 50\%</math></p> |
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| <b>210B14.0 Vertical progression</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>210B14.1</b>                      | <p>All the below clauses are subject to a maximum duration of eight (for Regular Students) / six years (for Lateral Entry Students) as applicable.</p> <ol style="list-style-type: none"> <li>1) In case of students admitted to the first year: <ol style="list-style-type: none"> <li>(a) Students have to fulfill the attendance and CIE requirement to appear for SEE of course/s of 1<sup>st</sup> year (refer to clause no. 210B5.4)</li> <li>(b) Students having not more than four F grades in the 1<sup>st</sup> and 2<sup>nd</sup> semesters of the first year of the program shall be eligible to move to the 3<sup>rd</sup> semester (2<sup>nd</sup> year) of the program. These courses include courses marked as NE as per clause no. 210B12.2 and 210B10.1i</li> <li>(c) The students who fail to satisfy CIE and attendance requirement has to repeat the courses whenever offered next and become eligible for the 2<sup>nd</sup> year. (refer to clause no. 210B9.9 and 210B5.1)</li> </ol> </li> <li>2) Obtaining CIE: From the (3<sup>rd</sup> semester) second year onwards the student who obtains the required attendance for the course, but not the required CIE marks is allowed to move forward to the next semester. However, the student has to mandatorily obtain the required CIE in the subsequent semester. Obtaining minimum CIE marks for the course is mandatory. It may also be noted that the student shall not be permitted to appear for SEE in such courses until he/she obtains the required CIE.(refer to clause no.210B9.9)</li> <li>3) Carryover of backlog courses: From 3<sup>rd</sup> semester onwards the student/s who obtains required attendance, CIE, and appears for university examinations but fails (F Grade) to pass a course/s is allowed to move forward to the next semester (odd /even) irrespective of a number of F</li> </ol> |



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|  |  | <p>grades. However, for the award of degree, the student has to pass in all courses as per applicable scheme and regulations and earn the prescribed credits. This is subject to a permitted maximum duration. <b>It may also be noted that the student will be given admission to the IV year (7<sup>th</sup> semester/8<sup>th</sup> semester) provided he/she passes all courses of 1<sup>st</sup> and 2<sup>nd</sup> semesters.</b></p> <p>4) From the second year onwards there shall be no restriction from promotion from an even to next odd semester (or odd to next even semester) even if the student has not satisfied the attendance requirement in one or more courses (including bridge courses for lateral entry students) shall not be eligible to appear for the Semester End Examination (SEE) of that course(s). The student shall be required to repeat that course whenever offered next.</p> <p>5) Permitted Maximum credits for registration: The student shall be permitted to register for total courses not exceeding 28 credits. These 28 credits include the courses of the regular semester and backlogs. The registration of these additional credits includes the courses having a shortage of attendance and the courses whose CIE requirements are not fulfilled. A student has to pay the prescribed fee as notified by the University from time to time.</p> <p>6) <b>Successive Failures:</b></p> <p>a) If a student fails to pass a Course even <b>after four attempts</b>, that course is deemed to be exempted for him/her. Then, the student may choose a course of his / her choice with the same number of credits from the pool of courses suggested by the concerned Board of Studies. The course so selected should not have been studied by the student or to be studied in higher semester/s. The faculty advisor shall guide/advise the student in this regard. The college has to make arrangements for the registration and conduction of CIE for the selected course.</p> <p>b) This provision is given only for two courses (one at a time) during the entire maximum duration of a course.</p> |
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|  |  | <p>7) This provision is <b>optional</b>; the student/s can continue appearing for SEE with the same course without opting for a change of course as mentioned in clause 210B14.1-6a.</p> <p><b>Readmission:</b></p> <ol style="list-style-type: none"> <li>Students who are temporarily discontinuing the program and getting readmitted or rejoin to the eligible semester are subject to a maximum duration of eight (for Regular students) / six (for lateral Entry students) years as applicable.</li> <li>The permission for readmission is only on request through the Principal and is not treated as a matter of right. Such students shall not claim any benefits based on the readmission.</li> <li>Students who take re-admission to any semester of the existing scheme from another scheme, as a repeater/fresher because of various reasons, shall attend and complete all the remaining semester/s of the program adhering to the regulations of the prevailing scheme and shall complete additional Course/s, if any, as per the decision of equivalence committee in concurrence with concerned Board of Studies on establishing the equivalence between two schemes. Such a candidate shall not be eligible for the award of rank.</li> <li>Readmission to odd/even semester shall not be considered as fresh admission and therefore students shall <b>continue to have the same University Seat Number</b>, which was allotted at the time of admission to the program. The maximum duration of the Program shall be counted with reference to the USN (University Seat Number) allotted during admission to the program.</li> </ol> <p><b>8) Permitted Maximum credits for registration:</b></p> <p>The student shall be permitted to register for total courses not exceeding 28 credits. These 28 credits include the courses of the regular semester and backlogs. The registration of these additional credits includes the courses having a shortage of attendance and the courses whose CIE requirements are not fulfilled. A student has to pay the prescribed fee as notified by the University from time to time..</p> |
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|                 | <b>210B14.2</b>                                                    | <ol style="list-style-type: none"> <li>1) The candidates who have temporarily discontinued the Program of study or changed the scheme of study from one to another because of various reasons or transferred with credits from the autonomous college of VTU /other University to non-autonomous constituent/affiliated college of VTU, shall be eligible for the award of degree provided the credits earned at that stage are equal to or greater than the credits decided by the University in the individual cases.</li> <li>2) In case, the forecasted or estimated credits are going to be less than that of the credits prescribed by the University on the completion of all the semesters of the program under the prevailing scheme, the candidate shall register for a course or courses not studied earlier and make up the credits which are equal to or greater than the university prescribed credits.</li> <li>3) In case of any difficulty, Vice-Chancellor shall decide on individual cases, which shall be final.</li> </ol>                                                                                       |         |                   |                                     |   |                                                         |            |   |                                                                 |           |   |                                                                    |           |
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| <b>210B15.0</b> | <b>Award of Degree</b>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |                   |                                     |   |                                                         |            |   |                                                                 |           |   |                                                                    |           |
|                 | <b>210B15.1</b>                                                    | <p><b>B.E./B.Tech. degree</b></p> <ol style="list-style-type: none"> <li>(a) Students shall be declared to have completed the Program of B.E. / B.Tech. degree and is eligible for the award of degree provided the students have undergone the stipulated Course work of all the semesters under the Scheme of Teaching and Examinations and have earned the prescribed number of credits <b>within the permitted maximum duration</b>.</li> <li>(b) <b>For the award of degree, completion of bridge courses, if any, as applicable is compulsory.</b></li> <li>(c) <b>Mandatory Earning of Activity points:</b></li> </ol> <table border="1"> <thead> <tr> <th>Sl. No.</th><th>Students Category</th><th>Activity points prescribed by AICTE</th></tr> </thead> <tbody> <tr> <td>1</td><td>Regular students admitted to the 4 years Degree program</td><td><b>100</b></td></tr> <tr> <td>2</td><td>Students entering 4 years Degree programs through lateral entry</td><td><b>75</b></td></tr> <tr> <td>3</td><td>Students transferred from other Universities to the fifth semester</td><td><b>50</b></td></tr> </tbody> </table> | Sl. No. | Students Category | Activity points prescribed by AICTE | 1 | Regular students admitted to the 4 years Degree program | <b>100</b> | 2 | Students entering 4 years Degree programs through lateral entry | <b>75</b> | 3 | Students transferred from other Universities to the fifth semester | <b>50</b> |
| Sl. No.         | Students Category                                                  | Activity points prescribed by AICTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                   |                                     |   |                                                         |            |   |                                                                 |           |   |                                                                    |           |
| 1               | Regular students admitted to the 4 years Degree program            | <b>100</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |                   |                                     |   |                                                         |            |   |                                                                 |           |   |                                                                    |           |
| 2               | Students entering 4 years Degree programs through lateral entry    | <b>75</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |                   |                                     |   |                                                         |            |   |                                                                 |           |   |                                                                    |           |
| 3               | Students transferred from other Universities to the fifth semester | <b>50</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |                   |                                     |   |                                                         |            |   |                                                                 |           |   |                                                                    |           |



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|  |                 | <p>The Activity Points earned shall be reflected on the student's eighth semester Grade Card.</p> <p><b>(i)</b> AICTE Activity Points (non-credit) have no effect on SGPA/CGPA</p> <p>In case a student fails to earn the prescribed activity Points before the commencement of 8<sup>th</sup>-semester examinations, the Eighth Semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth Semester Grade Card.</p> <p><b>(ii)</b> The Guidelines and suggestive activities under Activity points are listed in Annexure -VII</p>                                                                                                                                                                                                   |
|  | <b>210B15.2</b> | <p><b>B.E./B.Tech. (Honors) degree</b></p> <p><b>(a)</b> A student shall be declared to have completed the Program of B.E./ B.Tech., degree and shall be eligible to get undergraduate B.E./B.Tech., degree with Honours, provided.</p> <ul style="list-style-type: none"> <li>• <b>(a.1)</b> the student has undergone the stipulated Course work of all the semesters under the same Scheme of Teaching and Examinations and has earned the prescribed number of credits, i.e. 160 credits for I semester admitted students and 120 for III semester admitted students as per 210B15.1</li> <li>• <b>(a.2)</b> has earned additional 18 or more credits through University-approved online Courses.</li> <li>• <b>(a.3)</b> satisfied the Regulations Governing the Award of Honors at B.E./B.Tech. Degree Programs – Guidelines – Annexure-V</li> </ul> |
|  | <b>210B15.3</b> | <p><b>3. B.E./B.Tech. with Minor degree</b></p> <p><b>a)</b> A student shall be declared to have completed the Program of B.E./ B.Tech. Degree and shall be eligible to get undergraduate B.E./B.Tech., degree with minors, provided.</p> <ul style="list-style-type: none"> <li>• <b>(a.1)</b> The student has undergone the stipulated Course work of all the semesters under the same Scheme of Teaching and Examinations and has earned the prescribed number of credits, i.e. 160 credits for I</li> </ul>                                                                                                                                                                                                                                                                                                                                            |



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|--|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                 | <p>semester admitted student and 120 for III semester admitted student</p> <ul style="list-style-type: none"> <li>• <b>(a.2)</b>Has earned additional 18 or more credits through a University-approved courses list submitted by the board of studies. For Guidelines refer to Annexure-VI</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  | <b>21OB15.4</b> | <p><b>Award of Degree for an Extraordinary Student:</b></p> <p>The University through college can offer a fast-track degree for an extraordinary student. The same is done by offering courses of his / her choice to fulfill the requirement of the program in three and half years. However, the degree shall be awarded on completion of 04 years. However, the course completion letter may be issued jointly by University and Institute immediately after completion of the program, notwithstanding the minimum duration.</p> <p>Aspirant students have to register with University through the Principal of the college at the 5<sup>th</sup>-semester level, with the prescribed registration fee as fixed by the University from time to time. A special provision to registering for more credits other than regular semester credits shall be made only after registration.</p> <p>The extraordinary student is one with a CGPA <math>\geq 9</math> in 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> semesters and maintains the same in all the semesters. Otherwise, his/her registration will stand canceled automatically.</p> |
|  | <b>21OB15.5</b> | <p><b>(1) Noncompliance of CGPA <math>\geq 5.00</math> at the end of the Program</b></p> <p><b>(A)</b> Students, who have completed all the courses of the Program but do not have a CGPA <math>\geq 5.00</math> at the end of the Program, shall not be eligible for the award of the degree.</p> <p><b>(B)</b> In the cases of 21OB14.5 (A), students shall be permitted to appear again for SEE in course/s [other than Internship, Technical seminar, Project (Mini and Main), and Laboratories] of any Semester/s without the rejection of CIE marks for any number of times, subject to the provision of the maximum duration of the Program to make up the CGPA equal to or greater than 5.00 for the award of the Degree.</p> <p><b>(C)</b> In case the student earns improved grade/s in all the reappeared</p>                                                                                                                                                                                                                                                                                                                            |



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|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <p>course/s, the CGPA shall be calculated considering the improved grade/s. If it is <math>\geq 5.00</math>, the students shall become eligible for the award of the degree. If <math>CGPA &lt; 5.00</math>, the students shall follow the procedure laid down in 210B14.5(B).</p> <p><b>(D)</b> In case the students earn improved grade/s in some course/s and the same or lesser than the previously earned pass grade/s in the other reappeared course/s, the CGPA shall be calculated considering the improved grade/s and the pass grades earned before the reappearance. If it is <math>\geq 5.00</math>, the student shall become eligible for the award of the degree. If <math>CGPA &lt; 5.00</math>, the students shall follow the procedure laid down in 210B14.5(B)</p> <p><b>(E)</b> In case the student earns improved grade/s in some courses and fails in the other reappeared course/s, the CGPA shall be calculated by considering the improved grade/s and the previously earned pass grade/s of the reappeared course/s in which the student has failed. If it is <math>\geq 5.00</math>, the student shall become eligible for the award of the degree. If <math>CGPA &lt; 5.00</math>, the student shall follow the procedure laid in 210B14.5(B).</p> <p><b>(F)</b> In case the student fails (i.e., earns F grade) in all the reappeared course/s, pass grade/s of the course/s earned by the students before reappearance shall be retained. In such cases, the student shall follow the procedure laid in 210B14.5(B).</p> <p><b>(G)</b> The student shall obtain written permission from the Registrar (Evaluation) to reappear in SEE to make up the CGPA equal to or greater than 5.00.</p> <p><b>(2) Noncompliance of Mini-project</b></p> <p>The mini-project shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up/complete the mini-project shall be declared fail in that course and shall have to complete the same during subsequent University examinations after satisfying the Mini-project requirements.</p> <p><b>(3) Noncompliance of Major-project</b></p> |
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|-----------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                                           | <p>The Project Work shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up/complete the Major-project shall be declared fail in that course and shall have to complete the same during subsequent University examinations after satisfying the Major-project requirements.</p> <p><b>(4) Noncompliance of Internship</b></p> <p>All the students of B.E./B.Tech. shall have to undergo mandatory internship as per 210B 6.1. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up/complete the internship shall be declared fail in that Course and shall have to complete the same during subsequent University examinations after satisfying the internship requirements.</p>                                                                                                                                                                                                                                                                                                                       |
| <b>210B16.0</b> | <b>Award of Prizes, Medals, and Ranks</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                 | <b>210B16.1</b>                           | For the award of Prizes and Medals, the conditions stipulated by the Donor shall be considered subject to the provisions of the statutes framed by the University for such awards.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                 | <b>210B16.2</b>                           | <p><b>(1)</b> For the award of rank in a Specialization of Bachelor of Engineering/ Technology, the CGPA secured by the students from III to VIII semesters shall be considered.</p> <p><b>(2) The additional credits earned for the award of Honours / Minors degree</b> shall not have any bearing for the Rank declaration.</p> <p><b>(3)</b> A student shall be eligible for a rank at the time of award of the degree of Bachelor of Engineering/ Technology, provided that the student,</p> <ol style="list-style-type: none"> <li>a) <b>(i)</b> Has passed all the Courses of I to VIII semester in the first attempt only in case of Candidates admitted to I year.</li> <li><b>(ii)</b> Has passed all the Courses <b>(including bridge courses)</b> of III to VIII semester in the first attempt only in case of Candidates admitted under lateral entry scheme.</li> <li>b) Is not a repeater in any semester because of rejection of result of a semester/ shortage of attendance <b>/temporarily discontinued and rejoined/readmitted etc.</b></li> <li>c) Has completed all the Courses/semesters of the same Scheme of</li> </ol> |



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|-----------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                                                                                                                                  | <p>Teaching and Examinations without any break/discontinuity.</p> <p>d) Has completed all the semesters (I to VIII for regular/III to VIII for lateral entry) in VTU constituent college or in any VTU affiliated non-autonomous college.</p> <p>e) Has not been transferred from any autonomous institution affiliated to VTU or from any other University.</p> <p><b>(4)</b> The total number of ranks awarded shall be 10% of the total number of students who appeared in the VIII semester subject to a maximum of 10 ranks in a specialization.</p> <p><b>(5)</b> For an award of ranks in a specialization, a minimum of 10 students should have appeared in the VIII semester examination.</p> <p><b>Illustration:</b></p> <p>a) If 1228 students appeared for the VIII semester in Electronics and Communication Engineering Program, the number of ranks to be awarded for Electronics and Communication Engineering shall be 10.</p> <p>b) If 90 students appeared for the VIII semester in Biomedical Engineering, the number of ranks to be awarded for Biomedical Engineering will be 09.</p> <p>c) In case of a fractional number of ranks, it is rounded to a higher integer only when the first decimal place is greater than or equal to 5.</p> |
|                 | <b>21OB16.3</b>                                                                                                                  | Ranks shall be awarded based on the merit of the students as determined by CGPA. If two or more students get the same CGPA, the tie shall be resolved by considering the number of times a student has obtained a higher SGPA. If it is not resolved even at this stage, the number of times a student has obtained higher grades like S, A, B, etc., shall be taken into account to decide the order of the rank.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>21OB17.0</b> | <b>Change of College: Transfer of students: The Regulations Governing the Change of College shall be followed (Annexure-IX).</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>21OB18.0</b> | <b>Change of Branch: The Regulations Governing the Change of Branch shall be followed (Annexure-X)</b>                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>21OB19.0</b> | <b>Applicability and Power to Modify</b>                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                 | <b>21OB19.1</b>                                                                                                                  | The regulations governing the degree of Bachelor of Engineering/Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |



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|  |                 |                                                                                                                                                                                                                                                                                                            |
|--|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                 | of Visvesvaraya Technological University shall be binding on all concerned.                                                                                                                                                                                                                                |
|  | <b>210B19.2</b> | <p>i) Notwithstanding anything contained in the foregoing, the University shall have the power to issue directions/ orders to address any difficulty.</p> <p>ii) Nothing in the foregoing may be construed as limiting the power of the University to amend, modify or repeal any or all of the above.</p> |



## ANNEXURE-I

**Split-up of Marks for evaluation of Practical** for 50 CIE marks and 50 SEE marks.

### **Split-up of Marks for evaluation of Laboratory work:**

- Laboratory in-charge faculties will follow rubrics given in Tables below which is set by the Department for evaluation of laboratory programs.
- In the case of Practical, the IA marks shall be based on the laboratory observation, records, Viva, and one/two practical tests.
- Continuous Evaluation in every lab session will be done with the format mentioned in the Table to evaluate the PO9 (Individual and teamwork) and PO10 (Communication).

Rubrics used for continuous Evaluation of **laboratory courses** with **hardware experiments**

| Record                                                                                                                                                                                                                                                                                      |                    |                                                                                           | Lab Internal Assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------|
| <p>Split-up: <b>60% (30 Marks) of Maximum CIE marks (50M).</b></p> <p>Each experiment is to be evaluated for conduction with an observation sheet and record write-up (<b>50 marks per experiment</b>). The record should contain all the listed/specified experiments in the syllabus.</p> |                    |                                                                                           | <p>Split-up: <b>40% (20 Marks) of Maximum CIE marks (50M). One/Two tests of 10 Marks each.</b> The department may conduct 01 or 02 tests and the average of the two tests may be considered if two tests are conducted. Each <b>test of 50 marks</b> is averaged to 10 marks in the final CIE.</p> <p>In each test, conduction of experiment and acceptable result with viva-voce will carry a weightage of 60% per experiment, with the rest 40% for procedural knowledge and regularity of the student.</p> |                    |         |
| Rubrics per experiment                                                                                                                                                                                                                                                                      | Marks distribution | Remarks                                                                                   | Rubrics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Marks distribution | Remarks |
| Circuit                                                                                                                                                                                                                                                                                     | 3                  | Evaluation of Record write-up to include weightage for submission on time, neatness, etc. | Write-up                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10                 |         |
| Design                                                                                                                                                                                                                                                                                      | 3                  |                                                                                           | Conduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 25                 |         |
| Procedure                                                                                                                                                                                                                                                                                   | 4                  |                                                                                           | Results & Viva                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 15                 |         |
| Conduction                                                                                                                                                                                                                                                                                  | 10                 |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |         |
| Viva                                                                                                                                                                                                                                                                                        | 10                 |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |         |
| Record write-up                                                                                                                                                                                                                                                                             | 20                 |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |         |
| Total Marks                                                                                                                                                                                                                                                                                 | 50                 |                                                                                           | Total Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 50                 |         |

Split-up of Marks used for continuous Evaluation of **laboratory courses** with **software experiments**

| Split up of Marks | Methodology / Process Steps per Experiment                                          | Marks |
|-------------------|-------------------------------------------------------------------------------------|-------|
| #R1               | Observation, Write up of Procedure / Algorithm/ Program and Execution of experiment | 20    |
| #R2               | Viva – Voce (Questions & Answers on relevant Experiment /Topic)                     | 10    |
| #R3               | Record writing                                                                      | 20    |
|                   | Total Marks for each experiment                                                     | 50    |
| #R4               | Internal Test                                                                       |       |
|                   | (i) Write-up of Procedure/Program/Algorithm                                         | 10    |
|                   | (ii) Conduction/Execution                                                           | 25    |
|                   | (iii) Viva-Voce                                                                     | 15    |
|                   | Total Marks                                                                         | 50    |

## ANNEXURE-II

**Split-up of marks for evaluation of Project work** for 100 CIE marks and 100 SEE marks (total 10 credits).

| Split up                                                       | Rubrics                     |                                                                      | Marks |
|----------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------|-------|
| <b>Report<br/>(50 Marks)</b>                                   | Content Development         | Abstract/ Synopsis Write-up                                          | 10    |
|                                                                |                             | Selection of Topic/ Relevance of the subject to concerned discipline | 5     |
|                                                                |                             | Problem Identification                                               | 5     |
|                                                                |                             | Objectives and Methodology                                           | 5     |
|                                                                | Problem-Oriented Exposition | Breadth of Literature Survey (Papers/Sites/Sources Surveyed)         | 10    |
|                                                                |                             | Documentation/ Systematic Approach                                   | 10    |
|                                                                |                             | Results (with inference, Conclusions, etc.)                          | 5     |
| <b>Project Presentation Skill<br/>(25 Marks)</b>               |                             | Quality of preparation of presentation                               | 5     |
|                                                                |                             | Communication Skills                                                 | 5     |
|                                                                |                             | Technical knowledge and awareness                                    | 5     |
|                                                                |                             | Individual involvement                                               | 10    |
| <b>Question and Answer Session (Viva- Voce)<br/>(25 Marks)</b> |                             | Questions relating to fundamentals and concepts                      | 10    |
|                                                                |                             | The clarity in answering the questions                               | 5     |
|                                                                |                             | The understanding ability of the questions asked                     | 5     |
|                                                                |                             | Attitude towards the question asked                                  | 5     |
|                                                                |                             | Total Marks                                                          | 100   |

**AICTE Examination Reform Policy (2018) for RUBRICS to be followed for various evaluations enclosed**

### ANNEXURE-III

#### SGPA and CGPA Calculations

| (a) SGPA and CGPA Calculations: An Illustrative Example for one academic year                                                                                                         |                |         |           |                         |                           |                                                                        |      |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|-----------|-------------------------|---------------------------|------------------------------------------------------------------------|------|------|
| Semester<br>(Odd :I,<br>Even: II)                                                                                                                                                     | Course<br>Code | Credits | Grade     | Grade<br>Points<br>(GP) | Credit<br>Points<br>(CrP) | SGPA, CGPA                                                             |      |      |
| I                                                                                                                                                                                     | XX11           | 3       | B         | 8                       | 3x8=24                    | $SGPA = \frac{101}{20}$<br>$= 5.05$                                    |      |      |
| I                                                                                                                                                                                     | XX12           | 3       | Absent(F) | 0                       | 3x0=00                    |                                                                        |      |      |
| I                                                                                                                                                                                     | XX13           | 3       | A         | 9                       | 3x9=27                    |                                                                        |      |      |
| I                                                                                                                                                                                     | XX14           | 3       | F         | 0                       | 3x0=00                    |                                                                        |      |      |
| I                                                                                                                                                                                     | XX15           | 3       | D         | 6                       | 3x6=18                    |                                                                        |      |      |
| I                                                                                                                                                                                     | XX16           | 1       | E         | 5                       | 1x5=05                    |                                                                        |      |      |
| I                                                                                                                                                                                     | XX17           | 1       | A         | 9                       | 1x9=09                    |                                                                        |      |      |
| I                                                                                                                                                                                     | XX18           | 2       | D         | 6                       | 2x6=12                    |                                                                        |      |      |
| I                                                                                                                                                                                     | XX19           | 1       | D         | 6                       | 1x6 = 06                  |                                                                        |      |      |
| Total                                                                                                                                                                                 |                | 20(14*) | Total     |                         | 101                       |                                                                        |      |      |
| (14*): Total credits of the semester excluding the credits of the courses under F grade. Considered for the calculation of CGPA of the two consecutive semesters under consideration. |                |         |           |                         |                           |                                                                        |      |      |
| II                                                                                                                                                                                    | XX21           | 3       | C         | 7                       | 3x7=21                    | $SGPA = \frac{178}{26}$<br>$= 6.85$                                    |      |      |
| II                                                                                                                                                                                    | XX22           | 3       | B         | 8                       | 3x8=24                    |                                                                        |      |      |
| II                                                                                                                                                                                    | XX23           | 3       | D         | 6                       | 3x6=18                    |                                                                        |      |      |
| II                                                                                                                                                                                    | XX24           | 3       | E         | 5                       | 3x5=15                    |                                                                        |      |      |
| II                                                                                                                                                                                    | XX25           | 3       | A         | 9                       | 3x9=27                    |                                                                        |      |      |
| II                                                                                                                                                                                    | XX26           | 1       | F         | 0                       | 1x0=00                    | $CGPA$<br>$= \frac{(101 + 178)}{14 + 25}$<br>$= \frac{279}{39} = 7.15$ |      |      |
| II                                                                                                                                                                                    | XX27           | 1       | B         | 8                       | 1x8=08                    |                                                                        |      |      |
| II                                                                                                                                                                                    | XX28           | 2       | A         | 9                       | 2x9=18                    |                                                                        |      |      |
| II                                                                                                                                                                                    | XX29           | 1       | B         | 8                       | 1x8=08                    |                                                                        |      |      |
| <b>I semester</b>                                                                                                                                                                     |                |         |           |                         |                           |                                                                        |      |      |
| I                                                                                                                                                                                     | XX12           | 3       | D         | 6                       | 3x6=18                    |                                                                        |      |      |
| I                                                                                                                                                                                     | XX14           | 3       | C         | 7                       | 3x7=21                    |                                                                        |      |      |
| Total                                                                                                                                                                                 |                | 26(25*) | Total     |                         | 178                       |                                                                        |      |      |
| (25*): Total credits of the semester excluding the credits of the courses under F grade. Considered for the calculation of CGPA of the two consecutive semesters under consideration. |                |         |           |                         |                           |                                                                        |      |      |
| (b) CGPA Calculation of the Program: An Illustrative Example                                                                                                                          |                |         |           |                         |                           |                                                                        |      |      |
| Semester                                                                                                                                                                              | I              | II      | III       | IV                      | V                         | VI                                                                     | VII  | VIII |
| Credits of the semester                                                                                                                                                               | 20             | 20      | 20        | 20                      | 20                        | 20                                                                     | 24   | 16   |
| SGPA                                                                                                                                                                                  | 5.0            | 6.73    | 9.20      | 6.86                    | 8.18                      | 7.73                                                                   | 9.18 | 9.40 |
| ΣCrP                                                                                                                                                                                  | 100            | 175     | 220       | 165                     | 204                       | 185                                                                    | 184  | 169  |
| $CGPA = \frac{[100 + 175 + 220 + 165 + 204 + 185 + 184 + 169]}{160} = \frac{[1402]}{160} = 8.76$                                                                                      |                |         |           |                         |                           |                                                                        |      |      |
| For Lateral Entry Students                                                                                                                                                            |                |         |           |                         |                           |                                                                        |      |      |
| $CGPA = \frac{[220 + 165 + 204 + 185 + 184 + 169]}{120} = \frac{[1127]}{120} = 9.39$                                                                                                  |                |         |           |                         |                           |                                                                        |      |      |

**ANNEXURE-IV**  
**Visvesvaraya Technological University, Belagavi.**  
**Mandatory Internship Guidelines**  
(For 2021 -22 Scheme)

**1.0 Introduction**

The rise in global competition has prompted organizations to devise strategies to have a talented and innovative workforce to gain a competitive edge. Developing an internship policy is an impactful strategy for creating a future talent pool for the industry. The internship (a form of experiential learning) program helps fresh pass-outs in gaining professional know-how and benefits corporate sectors. The internship also enhances the student's employability skills passing out from Technical Institutions. [\[AICTE Internship Policy.pdf page 4\]](#)

The following list provides a brief illustrative overview of the knowledge, skills, work habits, and character traits commonly associated with 21<sup>st</sup>-century skills and to be acquired by graduates:

- (1) Critical thinking, problem-solving, reasoning, analysis, interpretation, synthesizing information.
- (2) Scientific literacy and reasoning, the scientific method.
- (3) Research skills and practices, interrogative questioning.
- (4) Creativity, artistry, curiosity, imagination, innovation, personal expression.
- (5) Information and communication technology (ICT) literacy, media and internet literacy, data interpretation, and analysis, computer programming.
- (6) Oral and written communication, public speaking and presenting, listening.
- (7) Economic and financial literacy, entrepreneurialism.
- (8) Global awareness, multicultural literacy, humanitarianism.
- (9) Environmental and conservation literacy, ecosystems understanding.
- (10) Civic, ethical, and social-justice literacy.
- (11) Leadership, teamwork, collaboration, cooperation, facility in using virtual workspaces.
- (12) Perseverance, self-direction, planning, self-discipline, adaptability, initiative.
- (13) Health and wellness literacy, including nutrition, diet, exercise, and public health and safety.

The internship experience will augment the outcome-based learning process and inculcate various attributes mentioned above in a student in line with the graduate

attributes defined by the NBA and NEP 2020.

Following are the intended **objectives** of internship training;

- (i) Expose Technical students to the industrial environment, which cannot be simulated in the classroom and hence create competent professionals in the industry.
- (ii) Provide possible opportunities to learn, understand and sharpen the real-time technical/managerial skills required at the job.
- (iii) Get exposed to the current technological developments relevant to the subject area of training.
- (iv) Use the experience gained from the industrial internship in discussions held in the classrooms.
- (v) Create conditions conducive to the quest for knowledge and its applicability on the job.
- (vi) Learn to apply Technical knowledge in real industrial situations.
- (vii) Gain experience in writing reports in Technical works/projects.
- (viii) Expose students to the engineer's responsibilities and ethics.
- (ix) Familiarize with various materials, processes, products, and applications along with relevant aspects of quality control and safety measures.
- (x) Promote academic, career, and/or personal development.
- (xi) Expose the students to future employers.
- (xii) Make students available to industry for employment.
- (xiii) Understand the psychology of the workers and their habits, attitudes, and approach to problem-solving.
- (xiv) Understand the social, economic, and administrative considerations that influence the working environment of industrial organizations.

**Internship training helps the institute to:**

- (a) Build and enhance industrial relations.
- (b) Make the placement process easier.
- (c) Improve institutional credibility & branding.
- (d) Improve the teaching-learning process.
- (e) Expose of Staff to Industrial process.
- (f) Serve humankind.

### **1.1 Internships prescribed by VTU for B.E./B.Tech programs**

To derive the benefits of an internship, VTU has introduced three (03) internships at three stages of the B.E./B.Tech program. These internships are scheduled as under (Table -1);

| <b>Table -1 Internships prescribed for B.E./B.Tech programs starting from the academic year 2021 - 22</b> |                                                                                                                               |                               |                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sl No</b>                                                                                              | <b>Particular</b>                                                                                                             | <b>Duration of Internship</b> | <b>Schedule</b>                                                                                                                                                                                                                                                        |
| 1                                                                                                         | <b>Internship – I:</b> Referred to as Inter/Intra Institutional Internship<br><b>Prescribed Credits: 02</b>                   | 03 Weeks                      | <b>(i)</b> During the intervening vacation of II and III semesters for students admitted to the I semester.                                                                                                                                                            |
|                                                                                                           |                                                                                                                               |                               | <b>(ii)</b> During the intervening vacation of III and IV semesters for lateral entry Diploma students admitted to III semester.                                                                                                                                       |
| 2                                                                                                         | <b>Internship – II:</b> Referred to as Innovation/Societal/ entrepreneurshipbased Internship<br><b>Prescribed Credits: 03</b> | 04 Weeks                      | During the intervening vacation of IV and V semesters for all students.                                                                                                                                                                                                |
| 3                                                                                                         | <b>Internship-III:</b> Referred to as Research Internship /Industry Internship<br><b>Prescribed Credits: 15</b>               | 24 Weeks                      | During the IV year of the programs. As VII and VIII semesters are swappable, Research Internship /Industry Internship earmarked for VIII semester can be taken up first during the beginning of IV year or after completing the VII semester coursework or vice versa. |

### **1.2 Internship Obligations**

All the internships are mandatory and are to be completed by earning a letter grade ranging from S to E. A candidate who does not take up the internship or does not complete or fails in the assessment shall have to complete subsequently subject to the provisions of the Regulation governing the programs. Each internship shall be considered ahead of passing and considered for vertical progression to higher odd semesters.

### **1.3 Internship Supervision**

The internship shall be carried out under the supervision of a faculty mentor. The faculty mentor/guide should,

- (i) Serve as a teacher, mentor, trainer, critic, leader, and boss.
- (ii) Provide sufficient time to guide the internes.
- (iii) Play a vital role, along with the Training and Placement Officer, in providing internship opportunities for the students. [Report and Recommendation of Task Force on Internship in Engineering and Diploma, Task Force Chair Prof Karisiddappa, Hon'ble Vice-Chancellor, VTU, Belagavi]
- (iv) Exhibit qualities such as leadership, strong communication skills, and patience.
- (v) Provide a letter of recommendation in due consultation with students and the organization (if possible) where the internship is intended to be carried out, endorsed by the authority (Principal/Institution Internship Coordinator).

A Faculty must supervise the internship activities even during the intervening period between odd and even semesters irrespective of the vacation period. Each Faculty shall supervise not more than 15 students. Often, the supervision may be by an external expert. Depending on the activity taken up by the students, the internship shall be carried out individually or in batches having not more than two or three students.

Faculty Mentor, along with the external expert, shall scrupulously evaluate the work of an individual student or students of a batch and maintain the relevant documents for verification by the Local Inspection Committee appointed by the University. For the allotment of CIE marks, the institutions shall prepare the rubrics for each activity offered by the institution. The marks shall be allotted by the faculty in consultation with an external expert if any.

For all activities conducted by the institution, the attendance of the students shall be maintained by the Faculty and present the same when desired by the Local Inspection Committee appointed by the University.

### **1.4 Internship – I involving Intra and Inter Institute Activities. Scheduled during the intervening period of II and III semesters for students admitted to I year and during the intervening period of III and IV semester for students admitted under lateral entry quota.**

While intra activities are within the institution, inter activates shall be between neighboring institutions. Intra and Interactivities are the activities that are an impetus to learning techniques. It adds to comprehensive growth of mind and associated

activities.

As the students are at the verge of learning technical aspects and have a limited time period of internship, it is preferable to expose students to polygonal activities instead of one type of activity. Therefore, activities completed by the students shall not be one type of activity but can be few within the internship time period. In this regard, Intra and Inter Institute activities shall be completed under the supervision of a Faculty on a self-learning basis.

The Faculty has to kindle the latent abilities of the students, encourage, guide, supervise and shape them to achieve the desired result. Therefore, a learning agenda in the form of specific learning objectives and outcomes shall be prepared prior to the start of the internship.

Whatever the activity/activities that are/are done under Intra and Inter Institute activities, should ignite the inquisitiveness to learn, enhance the knowledge, thinking ability and imagination, planning, application of mind, execution ability, innovation attitude, listening and understanding, vocabulary, personal expression, public speaking, written communication, oral presentation of the subject matter, acquire leadership qualities and teamwork requirements, responsiveness, ethics, etc.

#### **1.4.1 List of Activities**

- (1) Activities concerned with the works of Indian scholars like Charaka and Susruta, Aryabhata, Bhaskaracharya, Chanakya, Madhava, Patanjali, Panini and Thiruvalluvar, among numerous others. (Reference NEP 2020, page 04)
- (2) Activities such as training with higher Institutions or Soft skill training organized by Training and Placement Cell of the respective institutions.
- (3) Contribution at incubation/ innovation /entrepreneurship cell of the institute.
- (4) Participation in conferences/ workshops/ competitions etc.
- (5) Learning at Departmental Lab/Tinkering Lab/ Institutional workshop.
- (6) And working for consultancy/ research project with-in the institute. [Serial numbers 2 to 6, AICTE Internship Policy.pdf page 8]
- (7) Learning MS Word, Excel, Microsoft equations, MS drawing tools, MS Power point, etc.
- (8) Coding.
- (9) Mini-projects using commercially available assembled electronic products.
- (10) Debates, quizzes, and group discussions: On technical topics already studied (both in Kannada and English).

- (11) Essay competitions: Both in Kannada and English on technical topics already studied.
- (12) Survey and study of published literature on the assigned topic: Technical paper survey, Preparation of synopsis. Exposure to technical paper publications.
- (13) Athletics and Sports.
- (14) Photography.
- (15) Cultural activities; Drama, Dance,
- (16) Short film production: Contemporary aspects, Technical aspects etc.
- (17) Music Competition (Vocal and Instrumental): Classical – Indian and western, Sugama-Sangeetha (Bhava Geethegalu), Folk songs, film songs etc.
- (18) Internship in Disaster Management. [AICTE APH 2021-22 pdf page166]
- (19) Solar energy connected activities that help common man. [AICTE APH 2021-22 pdfpage166]
- (20) Working with Smart City Administration.
- (21) Hackathon (it is a design sprint-like event in which computer programmers and others involved in software development, including graphic designers, interface designers, project managers, and others, often including domain experts, collaborate intensively on software projects).
- (22) Industrial Safety, Fire Safety, Electrical Safety, Chemical Process Safety, Food Safety etc.

## **1.5 Documents to be submitted by Students for Internship Evaluation**

### **1.5.1 Student's Diary**

The main purpose of writing a daily diary is to cultivate the habit of documenting and to encourage the students to search for details. It develops the students' thought process and reasoning abilities. The students shall record in the daily training diary the day to day account of the observations, impressions, information gathered and suggestions given, if any, and activities carried out. It should contain the sketches and drawings related to the observations made by the students. The daily training diary should be signed after every day or at least twice a week by the Faculty/ in charge of the section (external expert) where the student has been working.

The student's Diary should be submitted by the students along with attendance record.

It shall be evaluated on the basis of the following criteria:

- (i) Regularity in the maintenance of the diary.
- (ii) Adequacy and quality of information recorded.

- (iii) Drawings, sketches, and data recorded.
- (iv) Thought process and recording techniques used.
- (v) Organization of the information.

### 1.5.2 Internship Report

After completion of the Internship, the student shall prepare, with daily diary as a reference, a comprehensive report in consultation with the evaluators to indicate what he has observed and learned in the training period along with the internship outcomes. The training report should be signed by the Evaluator.

The Internship report shall be evaluated on the basis of the following criteria and/or other relevant criteria pertaining to the activity completed.

- Originality.
- Adequacy and purposeful write-up.
- Organization, format, drawings, sketches, style, language etc.
- Variety and relevance of learning experience.
- Practical applications relationships with basic theory and concepts taught in the course.

### 1.5.3 Assessment Rubrics for Intra and Inter Institute Activities

| <b>Table – 1 Intra and Inter Institute Activities and Assessment Rubrics</b><br>[Ref: AICTE Internship Policy.pdf page 9 and allied]<br><b>Scheduled during the intervening period of II and III semesters (Period 03 weeks)</b><br><b>Prescribed credits: 01</b> |                                                  |                        |                                                             |                                                      |                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------|-------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------|
| Sl No                                                                                                                                                                                                                                                             | Sub Activity Head                                | Performance/ Appraisal | Assessment Rubrics (Allotted marks decide the letter grade) | Proposed Document as Evidence                        | Evaluated by                                                                     |
| 1                                                                                                                                                                                                                                                                 | Inter/ Intra Institutional Workshop/ Training.   | Excellent              | 80 to 100                                                   | (i) Student's Diary and (ii) Internship Report along | (i) Institute Faculty together with External Expert if any.<br><br>(ii) Training |
|                                                                                                                                                                                                                                                                   |                                                  | Good                   | 79 to 60                                                    |                                                      |                                                                                  |
|                                                                                                                                                                                                                                                                   |                                                  | Satisfactory           | 59 to 40                                                    |                                                      |                                                                                  |
| 2                                                                                                                                                                                                                                                                 | Working for consultancy/Research project.        | Excellent              | 80 to 100                                                   |                                                      |                                                                                  |
|                                                                                                                                                                                                                                                                   |                                                  | Good                   | 79 to 60                                                    |                                                      |                                                                                  |
|                                                                                                                                                                                                                                                                   |                                                  | Satisfactory           | 59 to 40                                                    |                                                      |                                                                                  |
| 3                                                                                                                                                                                                                                                                 | Festival (Technical / Business / Others) Events. | Excellent              | 80 to 100                                                   |                                                      |                                                                                  |
|                                                                                                                                                                                                                                                                   |                                                  | Good                   | 79 to 60                                                    |                                                      |                                                                                  |
|                                                                                                                                                                                                                                                                   |                                                  | Satisfactory           | 59 to 40                                                    |                                                      |                                                                                  |
| 4                                                                                                                                                                                                                                                                 | Contribution in                                  | Excellent              | 80 to 100                                                   |                                                      |                                                                                  |

|                                                                                                                          |                                                                     |              |           |                                                                |                                                                                                                         |  |  |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------|-----------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--|--|
|                                                                                                                          | Incubation/ Innovation/ EntrepreneurshipCell.                       | Good         | 79 to 60  | with the certificate issued from relevant authorized Authority | and Placement Officer.<br><br><b>(iii)</b> Physical Education Officer or the concerned in charge Officer of theActivity |  |  |
|                                                                                                                          |                                                                     | Satisfactory | 59 to 40  |                                                                |                                                                                                                         |  |  |
| 5                                                                                                                        | Learning at Departmental Lab/Tinkering Lab/ Institutional workshop. | Excellent    | 80 to 100 |                                                                |                                                                                                                         |  |  |
|                                                                                                                          |                                                                     | Good         | 79 to 60  |                                                                |                                                                                                                         |  |  |
|                                                                                                                          |                                                                     | Satisfactory | 59 to 40  |                                                                |                                                                                                                         |  |  |
| 6                                                                                                                        | Other than the above fiveactivities                                 | Excellent    | 80 to 100 |                                                                |                                                                                                                         |  |  |
|                                                                                                                          |                                                                     | Good         | 79 to 60  |                                                                |                                                                                                                         |  |  |
|                                                                                                                          |                                                                     | Satisfactory | 59 to 40  |                                                                |                                                                                                                         |  |  |
| <b>Note:</b> The total CIE marks shall be the sum of marks allotted to successfully completed activities by the student. |                                                                     |              |           |                                                                |                                                                                                                         |  |  |
|                                                                                                                          |                                                                     |              |           |                                                                |                                                                                                                         |  |  |

## **1.6 Internship - II involving Innovation/ Societal /Entrepreneurship. Scheduled during the intervening period of IV and V semester**

During the intervening period of IV and V semesters, students shall be ready for industrial experience. Therefore, they shall choose to undergo an Internship involving Innovation / Entrepreneurship related activities. Students may choose to work on innovation or entrepreneurial activities or both resulting in start-up or undergo internship with industry/ NGO's/ Government organizations/ Micro/ Small/ Medium enterprises to make themselves ready for the industry. In case students want to undergo an internship at his/her family business, he /she shall be permitted provided, a declaration by a parent is submitted directly to the Principal of the institution. [AICTE Internship Policy, Pdf page 8]

With the consent of the internship guide and Principal of the institution, students shall be allowed to carry out the internship at their hometown (within and outside the state), provided favorable facilities are available. [Report and Recommendation of Task Force on Internship in Engineering and Diploma, Task Force Chair Prof Karisiddappa, Hon'ble Vice-Chancellor, VTU, Belagavi]

In case, students wish to take both Innovations, and Entrepreneurship internships, they shall be permitted to take up both. Internship – II period, in such cases, can extend marginally by a few days, provided it will not interfere with the academic calendar of the higher semester.

### **1.6.1 Innovation**

Innovation refers to a new or improved product or process or a combination thereof that differs marginally or significantly from the unit's previous product.

An innovation center is a place where students are encouraged to implement the innovative ideas formed through imagination, brainstorming sessions, design thinking and associated activities to bring them to reality. It is a place, where creative minds are shaped.

### **1.6.2 Entrepreneurship**

Entrepreneurship refers to setting up a new business or business, taking on financial risks in the hope of profit.

It involves investment to undertake production along with arranging inputs like land, labor, material and capital, introducing new techniques and products, identifying new sources for the enterprise, etc.

### **1.6.3 Incubation Center:**

An organized unit designed for innovation as well as to accelerate the growth and success of new entrepreneurial companies through mentorship and an array of business support resources and services that could include physical space, capital, coaching, common services, and networking connections.

### **1.6.4 Startup**

An entity that develops a business model based on either product innovation or service innovation and makes it scalable, replicable, and self-reliant. [\[Gazette Notification No. G.S.R. 127\(E\) dated February 19, 2019\]](#)

An entity shall be considered as a Startup,

- (i) Up to a period of ten years from the date of incorporation/ registration, if it is incorporated as a private limited company (as defined in the Companies Act, 2013) or registered as a partnership firm (registered under section 59 of the Partnership Act, 1932) or a limited liability partnership (under the Limited Liability Partnership Act, 2008) in India.
- (ii) Turnover of the entity for any of the financial years since incorporation/ registration has not exceeded one hundred crore rupees.
- (iii) Entity is working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation.

Provided that an entity formed by splitting up or reconstruction of an existing business shall not be considered a Startup. [\[startup\\_policy\\_2019.pdf 10\]](#)

### **1.6.5 Places of Innovation/Entrepreneurial Activities**

Students shall carry out Innovation or Entrepreneurial activities or both at the Incubation Center and Entrepreneurship Cell of the parent institution or elsewhere such as ATAL Incubation Centers [A flagship of Atal Innovation Mission (AIM), NITI Aayog for promoting the culture of innovation and entrepreneurship in India], institutes of national importance, public sector units, IT companies, government organizations, and non-governmental organizations, industries including MSME, etc.

Institutes should deter students to opt for internships at places established for commercial benefits.

### 1.6.6 Assessment Rubrics for Innovation / Entrepreneurship Activities

Once the internship begins, the students are required to maintain diary/journal and submit a report every week to the guide. These reports (which can also be submitted by email) should summarize the activities in which the student was involved during the previous week period. At the end of the internship, each student is required to submit the hard copy of the consolidated diary/journal and report for evaluation. The report should clearly indicate the learning and achievements of the internship.

| Table – 2 Innovation / Societal/Entrepreneurship Activities and Assessment Rubrics                                       |                                                                                  |                        |                                                             |                                                                                                                                                                                                                                                                            |                                                             |  |  |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--|--|
| [Ref: AICTE Internship Policy.pdf page 9 and allied]                                                                     |                                                                                  |                        |                                                             |                                                                                                                                                                                                                                                                            |                                                             |  |  |
| Scheduled during the intervening period of IV and V semester (Period 04 weeks)                                           |                                                                                  |                        |                                                             |                                                                                                                                                                                                                                                                            |                                                             |  |  |
| Prescribed credits: 03                                                                                                   |                                                                                  |                        |                                                             |                                                                                                                                                                                                                                                                            |                                                             |  |  |
| Sl No                                                                                                                    | Sub Activity Head                                                                | Performance/ Appraisal | Assessment Rubrics (Allotted marks decide the letter grade) | Proposed Document as Evidence                                                                                                                                                                                                                                              | Evaluated by                                                |  |  |
| 1                                                                                                                        | Participation in innovation-related completions for e.g. Hackathons etc.         | Excellent              | 80 to 100                                                   | (i) Student’s Diary and (ii) Internship Report or the activity report along with Certificate or Declaration from relevant Authorised Authority. Wherever, only Certificate is issued, Assessment shall be at the institute as per (i) and (ii) to decide the letter grade. | (i) Institute Faculty together with External Expert if any. |  |  |
|                                                                                                                          |                                                                                  | Good                   | 79 to 60                                                    |                                                                                                                                                                                                                                                                            |                                                             |  |  |
|                                                                                                                          |                                                                                  | Satisfactory           | 59 to 40                                                    |                                                                                                                                                                                                                                                                            |                                                             |  |  |
| 2                                                                                                                        | Development of new product/ Business Plan/ registration of start-up              | Excellent              | 80 to 100                                                   |                                                                                                                                                                                                                                                                            |                                                             |  |  |
|                                                                                                                          |                                                                                  | Good                   | 79 to 60                                                    |                                                                                                                                                                                                                                                                            |                                                             |  |  |
|                                                                                                                          |                                                                                  | Satisfactory           | 59 to 40                                                    |                                                                                                                                                                                                                                                                            |                                                             |  |  |
| 3                                                                                                                        | Work experience at the family business (Declaration by Parent)                   | Excellent              | 80 to 100                                                   |                                                                                                                                                                                                                                                                            | (ii) Training and Placement Officer.                        |  |  |
|                                                                                                                          |                                                                                  | Good                   | 79 to 60                                                    |                                                                                                                                                                                                                                                                            |                                                             |  |  |
|                                                                                                                          |                                                                                  | Satisfactory           | 59 to 40                                                    |                                                                                                                                                                                                                                                                            |                                                             |  |  |
| 4                                                                                                                        | Internship with Industry/ Govt. / NGO/ PSU/ Any Micro/ Small/ Medium enterprise. | Excellent              | 80 to 100                                                   |                                                                                                                                                                                                                                                                            |                                                             |  |  |
|                                                                                                                          |                                                                                  | Good                   | 79 to 60                                                    |                                                                                                                                                                                                                                                                            |                                                             |  |  |
|                                                                                                                          |                                                                                  | Satisfactory           | 59 to 40                                                    |                                                                                                                                                                                                                                                                            |                                                             |  |  |
| <b>Note:</b> The total CIE marks shall be the sum of marks allotted to successfully completed activities by the student. |                                                                                  |                        |                                                             |                                                                                                                                                                                                                                                                            |                                                             |  |  |

## **1.7 Research Internship /Industry Internship scheduled during 4<sup>th</sup> year of B.E./B.Tech Programs (Duration: 24 weeks)**

Research Internship /Industry Internship of sufficient duration encourages students early on in their career. Its main goal is to give them an opportunity to improve their analytical and technical skills in an international environment. An internship can be in an industry or at an appropriate workplace. [ AICTE Model Curriculum January 2018, Vol. I UG.pdf page 67]

Research internships and industrial internships have different purposes and come with their set of benefits. A prior experience in any field is always preferred over a fresh start. Therefore, one of them can be selected depending on the interest the students have. Internships pose unexpected challenges and make students think appropriately, tackle difficulties with ease, and act in a scholarly way to get past the hurdles and practical constraints. An internship is always beneficial however good or bad it is.

Internships not only enhance one's learning but also identify him/her as someone who has the commitment to approaching a project and completing it with or without guidance. The internship learning is an impetus to professional development.

While a research internship is a stepping stone to higher studies, an industry internship is a pathway for a placement. Those who are self-motivated and interested in search of new things that are original and unique can choose a research internship. Those who are interested in the real industry- experience and aspire to get a job soon after graduation can choose an industry internship.

### **1.7.1 Research Internships (Also known as dissertation internship)**

Research internships are focused research projects that push students' intellectual abilities beyond those driven by the classroom. Often, research internships typically help solve problems that are usually part of major research projects. It involves a short theoretical or experimental research project supervised by a researcher.

The research internships, under the advice of a faculty supervisor, can be one's own selected project or a project on which a Researcher is researching or a new project/real-world project offered by an organization. The research area may be pertaining to single or multidisciplinary fields such as science, technology, engineering, mathematics, management, and business studies. Research internships can be carried out either individually or in teams (not exceeding 3 or 4 students).

Research internship opportunities, before graduation, may be in a laboratory of college,

a research institute, or a company's R and D department. Apart from fixed working hours of the day of an organization, the researcher can devote sufficient time for other research-related activities for early and successful completion of the Research Internship.

### **1.7.2 Voluntary Selection of Research Internship Topic**

Often, students may have the opportunity to select a topic for a research internship. Those who are opting for a research internship of their choice should have a clear description of the proposed project and must be prepared to take up coursework (if necessary) and work in laboratories. In such cases, the proposal should have contents as to what is going to be done instead of what has already been done by the proposer and demonstrate scientific insight.

### **1.8 Necessary Skills for Research Internship and Industrial Internship**

For the internships to progress without hurdles and for successful completion, the Researchers should maintain a harmonious relationship with the guide/s, administrators, co-workers and others, and strictly adhere to the rules and regulations of the workplace. The other skills required or acquirable during the Internship are,

- 1 Good Communication skills.
- 2 Attention to detail.
- 3 Planning and scheduling.
- 4 Documentation.
- 5 Critical thinking.
- 6 Data collection.
- 7 Data analysis.
- 8 Ability to maintain quality, safety and/or infection control standards.
- 9 Appreciating the ethical issues.

**1.9 Responsibilities of an Intern** (student or trainee who does a job to gain work experience) Interns,

- (i) shall assist the researcher in an ongoing research project or work collaboratively in designing a new project of mutual interest.
- (ii) Shall engage in literature survey and getting an insight of the research work at the initial stages.
- (iii) shall compile data, sort, file, implement ideas with minimal guidance and assist write papers.

- (iv) Shall become familiar with a number of tools [meters (Electrical and Electronics, mechanical, computer, etc.) used in data collection, software's, graphic software, Statistical Package for the Social Sciences (SPSS) software [IBM's statistical software platform], etc.
- (v) Shall attain skills with Microsoft Word Office, Excel, PowerPoint, Outlook etc.
- (vi) Shall give mid – term oral presentation to a committee for review and feedback.
- (vii) Shall attend discussions, meetings, symposiums, classroom lecturers, etc., to learn new scientific techniques, design experiments, analyse results, and formulate the different hypotheses.
- (viii) Shall learn writing reports and be able to correspond independently.
- (ix) shall manage time effectively.
- (x) Keep a track of the progress of the project.
- (xi) Shall develop integrative thinking.

## **2.0 Research internship Outcomes**

- (i) Generating technical paper/s and publishing in refereed journal/s.
- (ii) Possibility of acquiring intellectual ownership and patent.
- (iii) Build a prototype for an idea on which the research was carried out.
- (iv) File patent/s.
- (v) Add academic knowledge to the field.
- (vi) Enhanced ability in arranging meetings, presentations, seminars, trainings, etc.
- (vii) Improved conscientiousness and ethics

## **2.1 Research internships Benefits**

- (i) Are a great way to pursue an academic career in teaching and research, as a Research Scientist at an R and Organization, Company, Industry sector, etc.
- (ii) Establish professional networks for a future career.
- (iii) Pave the way to join a research team and work alongside leading experts in the field.
- (iv) Introduces to new ideas through interaction with like-minded students and others.
- (v) Develop research skills and knowledge in a specific area of interest.
- (vi) Provide opportunities for growth, achievement, and personal development.
- (vii) Offer an opportunity to publish a research paper that will boost the

resume while applying for Post Graduate Studies.

### **3.0 Industrial Internships**

The gap between the theoretical knowledge obtained in the classrooms and the practical skills required in the actual workplace scenarios is fast growing. This has put forth varied challenges to graduating students when it comes to job placements. As institutes cannot have relevant facilities to expose students to a real-time industrial environment, an industrial internship is an appropriate solution.

The main objective of the industry internship is to ensure that the intern is exposed to a real job world environment and gain practical experience. Often, it may be a practical exposure to the theory that has been learned during the academic period. The industry internship helps students understand of the analytical concepts and tools, hone their skills in the real-life situations and build confidence in applying the skills learned.

#### **3.1 Industry Internship Benefits**

- (i) Offers knowledge and experience.
- (ii) Have ample opportunities to attend seminars, symposiums, workshops, etc. This in turn provides an opportunity to establish rapport with professionals and pioneers in their respective fields for further growth.
- (iii) Have wide scope to publish paper/s in journals.
- (iv) Good recommendation letter/s that increase prospectus for further internships, higher studies, and placements.
- (v) Helps to acquire team spirit, motivated acts, techniques to resolve conflicts, etc.
- (vi) Helps to develop a lot of leadership skills.
- (vii) Increases the prospect of placement in the same concern, provided the intern has exhibited a clear understanding of basics and successfully completed the internship.
- (viii) Fosters to substantiate the issues with facts and figures.

For AICTE Internship opportunities refer to <https://internship.aicte-india.org/>

### **4.0 Evaluation Procedure of 21INT82 Research Internship and Industry Internship**

The students pursuing the course 21INT82 shall submit the diary recordings of day-to-day activities and monthly reports to the concerned guide, reporting progress achieved in the course and seeking guidance to proceed with the internship. The interns should provide all the details to the guide so that he/she can discuss with the employer to make the internship successful.

The guides should be in touch with their interns and keep track of everything connected

with the internship. The guide should know the interns internship tasks, duties, responsibilities, and potential projects. The evaluation of interns and their internship progress should be honest and constructive.

The hardcopy or softcopy of the diary maintained by the internes must be signed at least once in a month by the guide.

With reference to intern's feedback, the guides should propose changes in campus activities so that they are helpful to the internship.

Illustrations, drawings, photos, forms, samples, classified materials, etc., are to be included in the report only after obtaining the consent of the concerned authorities and should indicate the source of all such material. The final report, should be also be submitted to the place where internship was carried out. The report should avoid a tone that is predominantly cynical or unduly critical of the employer or of those with whom the student intern worked. The content of the report must be of interns own work.

#### **4.1 Continuous Internal Evaluation**

The guides should evaluate the internes using the following as well as any other appropriate methods;

- (i) Punctuality of intern.
- (ii) Conduct and character.
- (iii) Tactfulness and politeness with colleagues and the public.
- (iv) Attitude regarding professionalism.
- (v) Inquisitiveness and eagerness to learn.
- (vi) Research attitude.
- (vii) Problem-solving techniques.
- (viii) Innovation mind-set.
- (ix) Time management and meeting the deadline.
- (x) Receptiveness to feedback and critiques.
- (xi) Ability to work in a team as a member.
- (xii) Ability to work without supervision.
- (xiii) Supervisory skills and leadership skills.
- (xiv) Judgement and decision-making skills.
- (xv) Writing skills, oral communication skills, technical communication skills, computerskills, analysis skills and business writing skills.
- (xvi) Appropriateness of technical skills.

- (xvii) Familiarization to writing technical papers, standards, codes, etc.
- (xviii) Reading Behavioural attitude.
- (xix) Outcomes.
- (xx) Successes and failures experienced.

#### 4.1.1 Recommendation letter

The guide must state whether the intern,

- (i) Exceeded the expectations of the internship.
- (ii) Met the expectations of the internship.
- (iii) Did not meet the expectations of the internship.
- (iv) Did work to a satisfactory level.
- (v) Did an unsatisfactory internship.

At the end, the guide should issue a recommendation letter.

#### 4.1.2 Assessment of CIE marks

**(i) Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the internship, shall be based on the evaluation of the diary, report, presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the internship report shall be the same for all the batch mates.

**(ii) Interdisciplinary:** The CIE marks awarded for the internship, shall be group-wise size at the institution level with the participation of all guides of the internship. Participation of external guide/s, if any, is desirable.

The CIE marks awarded for the internship, shall be based on the evaluation of the diary, report, presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the internship report shall be the same for all the batch mates.

#### 4.1.3 Assessment of SEE marks

**(i) Single discipline:** Contribution to the internship and the performance of each group member shall be assessed individually in semester-end examination (SEE) conducted at the department.

Marks shall be awarded based on the evaluation of the diary, report, presentation skill and question and answer session in the ratio 50:25:25.

**(ii) Interdisciplinary:** Contribution to the internship and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belong to. Marks shall be awarded based on the evaluation of the diary, report, presentation skill and question and answer session in the ratio 50:25:25.

## **Summer Internship – I & II**

In view of the myriad different types of activities involved, it may be difficult in general to fix rubrics for each activity by the University. Also, because of the choice available for activities to execute individually or in small groups, the burden in conducting the SEE for Summer Internship – I & II would be enormous to BOE as well as Examination Section.

In view of the foregoing, it is preferable to consider Summer Internship – I & II for only CIE, very much similar to the course 21XXS81 Technical Seminar (01 credit).

## **Intricacies in implementation of VIII semester Research /Industry Internship**

The model curriculum includes the internship for students of six months' duration at different stages of the program. [AICTE Internship Policy.pdf page 04]

Research /Industry Internship earmarked for VIII semester is swappable during the 2 terms of IV year period. Conventionally, VIII semesters will be completed after completing VII semester. However, with swapping the students will have the choice of completing IV year in a conventional way or can complete the first VIII semester and later VII semester.

Research/Industry Internship (21INT82) – At the End of the sixth / Seventh semester (in two cycles to accommodate all the students of the University) Research/Industrial Internship shall be carried out – Based on industrial/Govt./NGO/MSME/Rural Internship/Innovation/Entrepreneurship. All the students admitted shall have to undergo a mandatory internship of 24 weeks during the vacation of VI/VII semesters. A University Viva-Voce examination shall be conducted during VII/VIII semester and the prescribed credit shall be included in VII/VIII semester. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take up/complete the internship shall be declared fail and shall have to Complete during subsequent University examination after satisfying the internship requirements.

for 24 weeks and can be taken up first during the beginning of IV years and complete the VII semester after completing the Research /Industry Internship or after completing the VII semester or vice versa.





**Visvesvaraya Technological University**  
"Jnana Sangama", Belagavi - 590 018, Karnataka State

**Dr. A S. Deshpande** B.E. M.Tech., Ph.D.,  
**REGISTRAR**

Phone : (0831) 2498100  
Fax : (0831) 2405467

Ref: VTU/BGM/OS-Aca/2020-21/ 369

Date : - 3 JUN 2020

**NOTIFICATION**

**Sub: Regulations Governing the Degree of the Award of 'Honours' at B.E./ B.Tech. Degree Programmes - reg...**

**Ref: Executive Council Resolution. No.2.2.1 dt: 27<sup>th</sup> May, 2020**

Pursuant to the aforesaid Executive Council Resolution, the **"Regulations Governing the Degree of the Award of 'Honours' at B.E./ B.Tech. Degree Programmes** are hereby notified.

These Regulations are applicable for the following students:

1. Admitted to I semester/I year from the academic year 2018-19 (i.e. USN XXX18XXXXX)
2. Admitted to III semester/II year from the academic year 2019-20 (i.e. USN XXX19XX4XX)
3. These Regulations are uniformly applicable to Affiliated, Autonomous and Constituent Colleges under VTU

You are hereby directed to bring the same to the notice of all the concerned and to follow them scrupulously.

**Encl: as above**

**BY ORDER**

**REGISTRAR**

**To,**

**The of Principals of All Engineering (Affiliated/ Autonomous/ Constituent) Colleges under the ambit of VTU, Belagavi**

**Copy to:**

1. Hon'ble Vice-Chancellor through the Secretary to VC, VTU, Belagavi for kind information
2. The Registrar (Evaluation), VTU, Belagavi
3. The Regional Directors (I/C) of all the Regional Offices of VTU for circulation
4. The Computer Network Centre, VTU, Belagavi- to upload on VTU website
5. PS to Registrar, VTU, Belagavi
6. All the concerned Special Officer and Case-workers of Academic Section, VTU, Belagavi

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
**"Jnana Sangama", Belagavi**



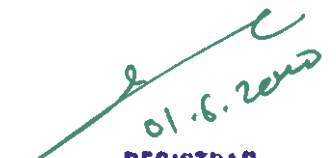
**VTU Regulations Governing the Award of 'Honours'**  
**at B.E./B.Tech. Degree Programmes**  
**(Applicable to 2018 - 19 batch and onwards)**

**May 2020**

*01.6.2020*  
**REGISTRAR**  
**Visvesvaraya Technological University,**  
**BELAGAVI - 590 018.**

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**REGISTRAR**  
 Jyotiveswaraya Technological University,  
 BELAGAVI - 590 018.

## Introduction:

### (a) Honours Degree

An increasingly interconnected global economy (the economies of the world's individual countries considered together as a single economic system.) as the result of globalization is creating collaborative opportunities and competitive pressures requiring broadly educated engineers and business professionals. Also, the next generation engineers have to practice an interdisciplinary approach to problem solving.

The objectives of decorating the students with superior academic ability with Honours(Honours: British, Honors: US) are to

- Encourage the advanced levels of study and multidisciplinary learning,
- Specialize in a focused area of their interest,
- Learn new skills and methodologies pertaining to their area of interest,
- Enable personal creativity,
- Cultivate a sustaining interest in advanced education and research,
- Enhance professional development, and
- Provide opportunities to gain recognition at the time of graduation for advanced, distinguished work as an undergraduate.

The Bachelor of Engineering degree with Honours earned with experiences, both inside and outside the classroom, will enhance, after graduation, all types of opportunities as professional engineers in the competitive world.

To encourage and groom engineering students during their engineering programme to become self-motivated independent investigators, critical thinkers, problem solvers, good communicators, team players, effective managers, life-long learners, as well as economically, environmentally and socially aware AICTE has introduced a scheme wherein each student has to earn **18 or more** additional credits through Massive Open Online Courses (MOOCs).

To cater the engineering skill requirements of the next-generation due to continuously changing expectations of the industry, society, and global stakeholder community owing to technology growth and globalization, VTU intends to prepare graduates equipped with interdisciplinary knowledge.

To embody the intentions of AICTE, VTU has instituted the award of Bachelor of Engineering /Technology degree with Honours from 2018 – 19 batch.

### (b) SWAYAM(<https://swayam.gov.in/about>, © 2019 SWAYAM.)

Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) is India's national MOOC portal to provide the best teaching-learning resources to all, including the most disadvantaged. It is a programme initiated by the Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality.

SWAYAM offers at free of cost the best quality courses developed by the following nine National Coordinators.

(1) All India Council for Technical Education(AICTE), (2) National Programme on Technology Enhanced Learning(NPTEL), (3) University Grants Commission(UGC), (4)

Consortium for Educational Communication(CEC), (5) National Council of Educational Research and Training(NCERT), (6) National Institute of Open Schooling(NIOS), (7) Indira Gandhi National Open University(IGNOU), (8) Indian Institute of Management (IIMB), Bangalore, and (9) National Institute of Technical Teachers Training and Research(NITTTR).

### (c) National Programme for Technology Enhanced Learning (NPTEL)

National Programme on Technology Enhanced Learning (NPTEL), funded by the Ministry of Human Resource Development, Government of India is an online E-learning model for furthering technical knowledge. The online courses in engineering, technology, science, arts and humanities are designed and executed by IIT Bombay, IIT Delhi, IIT Guwahati, IIT Kanpur, IIT Kharagpur, IIT Madras, IIT Roorkee, and Indian Institute of Science (IISc), Bengaluru.

There are primarily two types of courses, web-based and video-based. The former consists of lecture notes while the latter has segmented videos based on each topic within the course. Students can register for the online courses as per dates in an academic calendar published by each institute (i.e., 7 IIT's and IISc) participating in NPTEL. There are 4week, 8week, as well as 12week courses offered twice a year (January – June, July – December). Students can register/join for any number of courses, however only a maximum of four (04) examinations can be written per semester/session. Students can sign up (register) for the course/s every time the course/s are offered. Joining a course is free and has no pre-requisites, no age limit, and no entrance criteria to enrol. Not all courses on NPTEL are available for certification.

A separate portal "<https://onlinecourses.nptel.ac.in/explorer>" exists to handle certified courses. Clicking of the above given-link and the resulting nptel – Swayam under [swayam.gov.in](https://swayam.gov.in) > NPTEL leads to <https://swayam.gov.in/NPTEL> course catalogue to display, as illustrated below, the courses upcoming (Enrolment open) and Ongoing (Enrolment closed). [Illustration is as available on 18 May 2020]



A basic course in number theory

Prof. Shripad Garge IIT Bombay

**NPTEL**

12 Weeks (Starts: 20-07-2020)

Exam Date: 18 Oct, 2020

Enrollment Ends: 27 Jul, 2020



Advance Aircraft Maintenance

Prof. A.K. Ghosh, Prof. Vipul Mathur

IIT Kanpur

**NPTEL**

8 Weeks (Starts: 17-08-2020)

Exam Date: 18 Oct, 2020

Enrollment Ends: 17 Aug, 2020



Advanced Concrete Technology

Prof. Manu Santhanam IIT Madras

**NPTEL**

12 Weeks (Starts: 20-07-2020)

Exam Date: 18 Oct, 2020

Enrollment Ends: 27 Jul, 2020

The link - <https://onlinecourses.nptel.ac.in> can be used to enrol/register for NPTEL online course/courses. After enrolling to a course, watching videos and submission of weekly

assignments, students can get a certificate from the IITs/IISc by appearing in-person to the proctored (proctor refers to invigilate) certification examination (for a nominal fee of about Rs.1000.00/-) and Passing the examination with a consolidated score of 40% or above. 25 % of the final marks come from the assignments and 75 % from the final examination. The examination score is 75 % of the proctored certification examination score out of 100. The final score is the sum of the average assignment score and examination score.

Students will be eligible for a certificate only if average assignment score  $\geq 10/25$  and Examination Score  $\geq 30/75$ . The students will not get the certificate if one of the 2 criteria is not met, even if the Final score  $\geq 40/100$ .

A Certificate will have a student name, photograph, and the score in the final examination with the breakup. It will have the logos of NPTEL and IIT/IISc. It will be e-verifiable at [nptel.ac.in/noc](http://nptel.ac.in/noc). Only the e-certificate will be made available. Hard copies will not be dispatched.

The availability NPTEL course/s, of course, keeps on changing as it depends on the request made by the number of institutions, requirement of the respective course, faculties [subject matter experts (SMEs)] and various other factors.

The NPTEL courses are also part of a lifelong learning process.

  
  
**REGISTRAR**  
**Visvesvaraya Technological University,**  
**BELAGAVI - 590 018.**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
**Jnana Sangama, Belagavi**

**VTU Regulations governing the award of 'Honours' at  
 B.E./B.Tech. Degree Programmes**

**18UG HONRS 1.0 Preamble**

These Regulations governing the award of 'Honours' at B.E. / B.Tech., degree programmes have been framed in pursuance of the provisions for this qualification in AICTE model curriculum for undergraduate programmes in Engineering and Technology, Vol. I and II, January 2018 and in the UGC Notification on the Specification of Degrees, March 2014. These provisions aim at facilitating the award of higher qualifications and recognition to well-performing undergraduate students of the University on their acquiring additional credits in the same time period for the programmes. In adopting these provisions, the University has taken steps to ensure that the quality and standard of the Degree awards are not compromised in any way and they continue to be maintained at a high level.

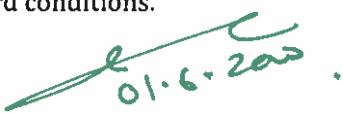
**18UG HONRS2.0 Short title, Applicability and Commencement**

- (a) These Regulations shall be called 'VTU Regulations Governing the award of 'Honours' at B.E./B.Tech. Degree Programmes, 2019.
- (b) These Regulations shall be applicable to all B.E./B.Tech. Degree Programmes being conducted by the University and Autonomous Colleges under the University.
- (c) These Regulations shall come into force from the date of their notification by the University.

**18UG HONRS3.0 Definitions**

In these Regulations, unless the context requires otherwise or it is specified so defined:

- (a) 'Academic Senate (AS)', 'Executive Council (EC)' mean the respective Authorities of the University.
- (b) 'AICTE' means the All India Council for Technical Education established at New Delhi by an act of Parliament in 1987.
- (c) 'Coursework' means the courses prescribed for the relevant programme, which the candidate shall successfully complete in the specified time period for the Degree award.
- (d) 'e - Resources' mean learning material saved electronically in online storage platforms/ devices for using any - where and any-time accessed online or after being downloaded from the relevant sources.
- (e) 'Honours' means a higher recognition awarded to a well performing UG student on earning the specific extra credits after satisfying the relevant Degree award conditions.

  
**REGISTRAR**  
 Visvesvaraya Technological University,  
 BELAGAVI - 590 018.

- (f) 'Intake' means the number of students sanctioned for admission in a year to a Programme/ Department / College as the case may be.
- (g) 'MOOCs' mean Massive Open Online Courses in a variety of disciplines available at both introductory and advanced levels, accessible from e-resources in India and abroad.
- (h) 'Principal' means the executive head of an affiliated / constituent / autonomous college under the University.
- (i) 'Registrar' and 'Registrar (Evaluation)' mean respectively the Registrar and Registrar (Evaluation) of the University.
- (j) 'UGC' means the University Grants Commission established at New Delhi by an act of Parliament in 1956.
- (k) 'University' means the Visvesvaraya Technological University (VTU) with its headquarters at Belagavi.
- (l) 'Vice-Chancellor' means the Vice-Chancellor of the University.

#### **18UG HONRS 4.0 Eligibility Criteria for Registration**

Every student of the University intending to register for the 'Honours' qualification shall fulfil the following academic requirements:

- (a) Registration to 'Honours' qualification shall start from fifth semester onwards.
- (b) The Registrants shall have obtained a grade  $\geq D$  in all the courses in the first attempt only, in the semesters until this stage.
- (c) The Registrants shall have obtained a CGPA  $\geq 8.50$  at the end of the fourth semester.
- (d) The lateral entry Diploma students shall have completed Additional Mathematics I and II during 3rd and 4th semesters in first attempt only.
- (e) The lateral entry B.Sc students shall have completed Engineering Graphics and Design, and Civil Engineering and Mechanics of First-Year Engineering Programme, by the end of IV semester in first attempt only.

#### **18UG HONRS 5.0 Registration Procedure**

- (a) Any student meeting the eligibility criteria specified above and intending to register for the Honours qualification shall apply to the University through the Principal of his/her College in the prescribed form along with the prescribed application fees within 15 working days after notification by the University.
- (b) There shall be no limit on the intake of students for registration for the Honours qualification. All the applicants fulfilling the eligibility shall be free to register for the Honours qualification.
- (c) The Registrar shall notify the registration, or otherwise, of the student/s within the next 15 working days on the University Notice Boards with copies to the Colleges concerned.
- (d) If registered, the students shall pay a one-time non-refundable registration fee as prescribed by the University to confirm the registration.

**18UG HONRS 6.0 Additional Coursework**

- (a) In addition to the courses prescribed by the University to be completed successfully in the remaining semesters, that is, fifth to eight for the relevant Degree award, each student registered for the Honours qualification shall have to take up the coursework as notified by the university from NPTEL and other platforms and complete each coursework successfully irrespective of the number of attempts, with a final score (Online assignments: 25% + Proctored exam: 75%) leading to NPTEL Elite (60 to 75 %) / Elite + Silver (76 to 89 %) / Elite-Gold (≥ 90 %) certificate, within the minimum prescribed duration for the award of degree. [To be read with 18UG HONRS 6.0 (c)]
- (b) Students shall be permitted to drop the registered coursework/s and select alternative coursework/s in case they cannot appear for proctored examination/s or complete the examination as per 18UG HONRS 6 (a).
- (c) The University shall announce the BOS approved list of MOOCs (chosen from NPTEL/SWAYAM/other platforms) corresponding to each engineering programme. The University shall have the freedom to review and approve additional online platforms from time to time.
- (d) (i) Students shall choose, online courses totaling to **18 or more credits** from the bouquet of approved online courses as defined in 6(a).  
(ii) Students shall select, in consultation with the concerned Faculty Advisor, the MOOCs such that the content/syllabus of them are not similar to that of the programmes first to eighth semesters core courses, professional electives or open electives that the student chooses at later semesters of the programme.  
In case of violations, the credits earned by the students in such course/s shall not be considered for the summation of prescribed 18 or more credits and hence for the award of Honours degree.
- (e) The students shall earn the credits by only appearing in person to the proctored examination conducted by NPTEL/SWAYAM/other platform. No autonomous or non-autonomous colleges under the University can conduct examination and award credits in lieu of NPTEL/SWAYAM/other platform to accrue 18 or more credits for the award of Honours degree.
- (f) The method of assessment shall be as per the NPTEL online platform.
- (g) The credit equivalence for online NPTEL courses shall be determined based on the following table.

| <b>Table: Assigned credits</b> |                  |
|--------------------------------|------------------|
| Online course duration         | Assigned credits |
| 04 weeks                       | 01               |
| 08 weeks                       | 02               |
| 12 weeks                       | 03               |

**18UG HONRS 7.0 Award of Honours Qualification**

All the students who successfully complete the online courses as prescribed under 18UG HONRS 6.0 and submit their certificates to the University through Principal of their respective colleges against the notification issued by the Registrar (Evaluation) in time before closure of eighth semester as per calendar shall be eligible for the 'Honours' qualification.

*01.6.2020*

**REGISTRAR**  
**Visvesvaraya Technological University,**  
**BELAGAVI - 590 018.**

- (a) The Principals of the colleges under VTU shall submit the list of students who are eligible for the award of Honours degree along with the total credit earned by each student and the corresponding MOOC certificates to the University, programme wise, together with the CIE marks of 8th semester.

The list shall be validated by the Faculty Advisor of the students under consideration and endorsed by the Head/Chairperson of the Department.

- (b) Those students who cannot/do not submit the certificates on or before the last date prescribed by the University shall not be considered for the award of "Honours" qualification, irrespective of the number of credits earned by them. However, they shall be awarded only B.E./B.Tech. Degree.
- (c) The 'Honours' qualification shall be suffixed to the respective degrees and shown in the Degree certificates as a recognition of higher achievement by the student concerned.
- (d) The CGPA earned by the students shall be only on the basis of students' performance in the various semester level examinations conducted by the University/ Autonomous colleges, as the case may be.
- (e) (i) Students shall maintain a grade  $\geq D$  in all the courses of fifth to eight semesters in first attempt only.  
 (ii) Students failing to maintain a grade  $\geq D$  in all the courses of fifth to eight semesters in first attempt only shall discontinue the attempt to earn additional credits.  
 (iii) Students not having a CGPA  $\geq 8.50$  at the end of programme shall not be eligible for the award of Honours even if they have satisfied the additional credits consideration prescribed for Honours degree.  
 (iv) The Principals of respective colleges shall submit to the University the list of such students who fail to satisfy 18UG HONRS 7.0 (e) (i) from time to time.  
 (v) The Registrar shall notify the list of deregistered students from time to time.
- (f) (i) The Honours degree shall be awarded only if the CGPA at end of the B.E. / B.Tech. programme is equal to or greater than 8.50.  
 (ii) Additional credits earned through NPTEL shall not be considered for CGPA of B.E. / B.Tech. programme as well as rank declaration.
- (g) All the students fulfilling 18UG HONS 6 (b) and (c) and 18UG HONS 7 (e) (i) and (f) shall be entitled to receive their transcripts indicating both the achievements of the student concerned.
- (h) The award of the Honours degree shall be recommended by the Academic Senate and approved by the Executive Council of the University.

#### **18UG HONRS 8.0 Repeal and Savings**

- (a) Notwithstanding anything contained in these Regulations, the provisions of any guidelines, orders, rules or regulations in force at the University shall be inapplicable to the extent of their inconsistency with these Regulations.

- (b) The University shall issue such orders / instructions, and prescribe such format / procedure, as it may deem fit to implement the provisions of these Regulations.

**18UG HONRS 9.0 Interpretation**

- (a) Any question as to the interpretation of these Regulations shall be decided by the Vice-Chancellor, whose decision shall be final and binding.
- (b) The University shall have the powers to issue clarifications to remove any doubt, difficulty or anomaly which may arise during the implementation of the provisions of these Regulations.



  
01.6.2020.  
**REGISTRAR**  
Visvesvaraya Technological University,  
BELAGAVI - 590 018.



# VISVESVARAYA TECHNOLOGICAL UNIVERSITY “Jnana Sangama”, Belagavi



## VTU Regulations Governing the Award of ‘Minor’ at B.E./B.Tech. Degree Programmes

(Applicable to 2022-23 batch and onwards)



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## REGULATIONS GOVERNING THE AWARD OF 'MINOR AT B.E./B.TECH DEGREE PROGRAMS

### Preamble:

To enhance employability skills and impart deep knowledge in emerging areas that are usually not being covered in the Undergraduate Degree credit framework, AICTE has come up with the concept of 'Minor Degree' in emerging areas. The concept of a Minor Degree is discussed in the Approval Process Handbook (APH) for the academic session 2022-23 page no. xxiv issued by AICTE. A minor Degree will carry 18 to 20 credits in addition to the credits essential for obtaining the Under Graduate Degree in Major Discipline (i.e. 160 credits usually).

The **Bachelor of Engineering /Bachelor of Technology (B.E./B. Tech.) with Minor** program focuses on the fundamental principles of multiple Engineering disciplines, critical & analytical thinking, and the ability to develop a distinctive approach to interdisciplinary problems.

### Objectives

The key objectives of offering B.E./B.Tech with Minor programs are:

- To enable students to pursue an allied academic interest in contemporary areas
- To expand the domain knowledge of the students in one of the other branches of engineering.
- To provide an academic mechanism for fulfilling the multidisciplinary demands of industries.
- To increase the employability of undergraduate students keeping in view better opportunities in interdisciplinary areas of engineering & technology.
- To offer knowledge in the areas which are identified as emerging technologies/thrust areas of Engineering.
- Provides an opportunity for students to become entrepreneurs and leaders by taking a business/management minor.
- Provides an opportunity to Applicants to pursue higher studies in an interdisciplinary field of study.
- To increase the overall scope of the undergraduate degrees

### Minor Courses Syllabus

The BoS of the University shall prepare a syllabus for courses to be included in the curriculum for minor courses to offer between fourth to eight semesters for all branches. The eligible list of programs for various minor baskets shall be submitted by the BoS of the University.

The BOS concerned shall identify as many tracks as possible in the areas of emerging technologies and industrial relevance/demand. For example, the minor tracks can be the fundamental courses in CSE, ECE, EEE, CE, ME etc or industry tracks such as Artificial Intelligence (AI), Machine Learning (ML), Data

|                                                                                                                                                           |      |                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Science (DS), Robotics, Electric vehicles, Robotics, VLSI etc.                                                                                            |      |                                                                                                                                                                                                        |
| The list of disciplines/branches eligible to opt for a particular industry-relevant minor specialization shall be clearly mentioned by the respective BoS |      |                                                                                                                                                                                                        |
| <b>22UGMINER1.0</b>                                                                                                                                       |      | <b>Short Title, Applicability, and Commencement:</b>                                                                                                                                                   |
|                                                                                                                                                           | 1.1  | These Regulations shall be called “VTU Regulations Governing the Award of B.E/ B. Tech program with Minor Degree.                                                                                      |
|                                                                                                                                                           | 1.2  | These Regulations shall apply to all B.E/ B. Tech. Programs are being conducted by the University and the autonomous college under the University.                                                     |
|                                                                                                                                                           | 1.3  | These Regulations shall come into force from the date of their notification by the University.                                                                                                         |
| <b>22UGMINER2.0</b>                                                                                                                                       |      | <b>Definitions:</b>                                                                                                                                                                                    |
|                                                                                                                                                           | 2.1  | In these Regulations, unless the context requires otherwise or it is specifically do defined:                                                                                                          |
|                                                                                                                                                           | 2.2  | ‘Academic Senate (AS)’, ‘Board of studies (BOS)’, ‘Executive Council (EC)’, mean the respective Authorities of the University.                                                                         |
|                                                                                                                                                           | 2.3  | ‘ <b>AICTE</b> ’ means the All India Council for Technical Education established in New Delhi by an Act of Parliament in 1987.                                                                         |
|                                                                                                                                                           | 2.4  | ‘ <b>Coursework</b> ’ means the Courses prescribed for the Minor program. Which the candidate shall complete in the specified period for the Degree award.                                             |
|                                                                                                                                                           | 2.5  | ‘ <b>E-resources</b> ’ means learning material saved electronically in online storage platforms/devices for use anywhere/any time accessed online or after being downloaded from the relevant sources. |
|                                                                                                                                                           | 2.6  | ‘ <b>Minor</b> ’ means a recognition award to a well-performing UG student on earning the specified extra credits after satisfying the relevant Degree award conditions.                               |
|                                                                                                                                                           | 2.7  | ‘ <b>Principal</b> ’ means the executive head of an affiliated/ constituent/ autonomous college under the university.                                                                                  |
|                                                                                                                                                           | 2.8  | <b>Registrar and ‘Registrar (Evaluation)’</b> mean respectively the Registrar and Registrar (Evaluation) of the University.                                                                            |
|                                                                                                                                                           | 2.9  | <b>UGC</b> ’ means the University Grants Commission established in New Delhi by an Act of Parliament in 1956.                                                                                          |
|                                                                                                                                                           | 2.10 | ‘ <b>University</b> ’ means the Visvesvaraya Technological University (VTU) with its headquarters at Belagavi.                                                                                         |
|                                                                                                                                                           | 2.11 | ‘ <b>Vice Chancellor</b> ’ means the Vice-Chancellor of the University.                                                                                                                                |

|                          |     |                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>22UGMINOR<br/>3.0</b> |     | <b>Eligibility Criteria for Registration :</b>                                                                                                                                                                                                                                                                                                                                                            |
|                          | 3.1 | A student can opt for B.E./ B.Tech., degree with a Minor program if she/he has no active backlogs till the 3 <sup>rd</sup> semester at the time of registration.                                                                                                                                                                                                                                          |
|                          | 3.2 | The minimum CGPA required to maintain up to the 3 <sup>rd</sup> semester at the time of registration and onward up to completing the core degree program is $\geq 5.0$ .                                                                                                                                                                                                                                  |
|                          | 3.3 | A CGPA of $\geq 5.0$ has to be maintained in the subsequent semesters without any backlog in order to keep the Minors' registration active.                                                                                                                                                                                                                                                               |
|                          | 3.4 | Prior approval of mentor, Head of the Department, and Principal of the Institute for the enrolment into the Minor program, before commencement is mandatory                                                                                                                                                                                                                                               |
| <b>22UGMINOR4.0</b>      |     | <b>Registration Procedure:</b>                                                                                                                                                                                                                                                                                                                                                                            |
|                          | 4.1 | Any student meeting the eligibility criteria specified above and intending to register for the Minor qualification shall apply to the University through the Principal of his /her Institute in the prescribed form along with the prescribed application fees within 15 Working days after notification by the University.                                                                               |
|                          | 4.2 | There shall be no limit on the intake of students for registration for the Minor qualification. All the applicants fulfilling the eligibility criteria can register.                                                                                                                                                                                                                                      |
|                          | 4.3 | The Registrar shall notify the registration, or otherwise of the students within the next 15 working days on the University Notice Boards with copies to the Colleges concerned.                                                                                                                                                                                                                          |
|                          | 4.4 | If registered, the students shall pay a one-time non-refundable registration fee as prescribed by the University to confirm the registration.                                                                                                                                                                                                                                                             |
|                          | 4.5 | A fee for late registration may be imposed as per the university norms.                                                                                                                                                                                                                                                                                                                                   |
| <b>22UGMINOR5.0</b>      |     | <b>Rules</b>                                                                                                                                                                                                                                                                                                                                                                                              |
|                          | 5.1 | The choice to opt/take a Minor program is purely the choice of the students.                                                                                                                                                                                                                                                                                                                              |
|                          | 5.2 | For B. Tech. with a Minor, a student needs to earn additional 18 credits (over and above the required 160 credits for the B.E./B. Tech program). The list of courses of each Minor program, the irrespective credits weightage, and the semester-wise break-up of the courses is enclosed as Annexure-I. All these 18 credits need to be completed between the <b>IV semester and VIII semester only.</b> |
|                          | 5.3 | These 18 credits are to be earned from the additional courses offered by the host department in the college.                                                                                                                                                                                                                                                                                              |
|                          | 5.4 | The students should choose a course from the list against each semester (from the                                                                                                                                                                                                                                                                                                                         |

|  |      |                                                                                                                                                                                                                                                                                                                                                                  |
|--|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |      | Minor course structure) other than the course they have studied/registered for regular B.E./B.Tech program. No course should be identical to that of the regular B.E./B.Tech., course. The students should take the advice of faculty mentors while registering for a course at the beginning of the semester.                                                   |
|  | 5.5  | After registering for the Minor program, if a student is unable to earn all the required 18 credits in a specified duration (twice the duration of the course), he/she shall not be awarded a Minor degree. However, if the student earns all the required 160 credits of B.E./B.Tech., he/she will be awarded only B.E./B. Tech degree in the concerned branch. |
|  | 5.6  | Minor must be completed simultaneously with a major degree program. A student cannot earn the Minor after he/she has already earned bachelor's degree.                                                                                                                                                                                                           |
|  | 5.7  | The student can choose only one Minor program along with his/her basic engineering degree. A student who chooses an Honours program is not eligible to choose a Minor program and vice-versa                                                                                                                                                                     |
|  | 5.8  | There is no transfer of credits from Minor program courses to regular B.E./B. Tech. Degree course & vice-versa.                                                                                                                                                                                                                                                  |
|  | 5.9  | A student can graduate with a Minor if he/she fulfills the requirements for his/her regular B.E./B.Tech program as well as fulfills the requirements for the Minor program                                                                                                                                                                                       |
|  | 5.10 | The maximum number of courses for the Minor is limited to two (three in case of inclusion of lab) in a semester along with regular semester courses.                                                                                                                                                                                                             |
|  | 5.11 | Any students failing to maintain the performance in the 4 <sup>th</sup> -8 <sup>th</sup> Semesters at UG, as the case may be, at the levels prescribed under clauses 4 (a) (b) shall discontinue the attempt to earn additional credits. The Registrar (Evaluation) shall notify the list of deregistered students from time to time.                            |
|  | 5.12 | The student shall be given a choice of withdrawing all the courses registered and/or the credits earned for the Minor program at any time; and in that case, the student will be awarded only B.E./B. Tech. degree in the concerned branch on earning the required credits of 160.                                                                               |
|  | 5.13 | The institute shall maintain a record of students registered and pursuing their Minor program, minor program-wise, and parent branch-wise. The same report needs to be sent to the University once the enrolment process is complete                                                                                                                             |
|  | 5.14 | The institute/department shall prepare the time-tables for each Minor course                                                                                                                                                                                                                                                                                     |

|                     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |      | offered at their respective institutes without any overlap/clash with other courses of study in the respective semesters                                                                                                                                                                                                                                                                                                              |
|                     | 5.15 | The weekly instruction hours, internal & external evaluation, and award of grades are on par with regular 4-Years B.E./B. Tech. program.                                                                                                                                                                                                                                                                                              |
|                     | 5.16 | A minor in a program is permitted only if the Institute has a respective UG program and lab facilities as per the scheme of the curriculum of minors courses.                                                                                                                                                                                                                                                                         |
|                     | 5.17 | There shall be no limit on the number of programs offered under Minor. The University/Institution can offer minor programs in emerging technologies based on expertise in the respective departments or can explore the possibility of collaborating with the relevant industries/agencies/Institutes in offering the program.                                                                                                        |
|                     | 5.18 | If industries/agencies/Institutes have sufficient expertise/infrastructure in the respective area/discipline. An undertaking to this effect has to be submitted by the Principal and is subjected to scrutiny/audit by the University. Complaints from any corner regarding this issue will not be entertained by the University and shall be addressed by the respective Principal.                                                  |
|                     | 5.19 | The Institute can opt the courses from an external industry/agency/institute recommended and approved by the concerned BOS and should produce a course completion certificate. The Board of studies of the concerned discipline of Engineering shall review such courses being offered by eligible external industry/agency/institute and prepare a fresh list every year incorporating the latest skills based on industrial demand. |
| <b>22UGMINOR6.0</b> |      | <b>Award of Minor Qualification</b>                                                                                                                                                                                                                                                                                                                                                                                                   |
|                     | 6.1  | All the students who complete the course as prescribed under Section 22UGMINOR5.0 above and submit their certificates in time before the closure of the UG (8 <sup>th</sup> Semester) as per the academic calendar shall be eligible for the “Minors” qualification.                                                                                                                                                                  |
|                     | 6.2  | The “Minors’ qualification shall be suffixed to the respective degrees and shown in the Degree certificate as a recognition of higher achievement by the student concerned                                                                                                                                                                                                                                                            |
|                     |      | The CGPA and/or Class awarded to the students shall be only based on students’ performance in the various semester-level examinations conducted by the University/ Autonomous college, as the case may be.                                                                                                                                                                                                                            |

|                     |     |                                                                                                                                                                                                                                        |
|---------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>22UGMINOR7.0</b> |     | <b>Repeal and Savings:</b>                                                                                                                                                                                                             |
|                     | 7.1 | Notwithstanding anything contained in these Regulations, the provisions of any guidelines, orders, rules, or regulations in force at the University shall be inapplicable to the extent of their inconsistency with these Regulations. |
|                     | 7.2 | The University shall issue such orders/instructions, and prescribe such format/procedure, as it may deem fit to implement the provisions of these Regulations.                                                                         |
| <b>22UGMINOR8.0</b> |     | <b>Interpretation:</b>                                                                                                                                                                                                                 |
|                     | 8.1 | Any question as to the interpretation of these Regulations shall be decided by the Vice-Chancellor, whose decision shall be final and binding.                                                                                         |
|                     | 8.2 | The University shall have the powers to issue clarifications to remove any doubt difficulty or anomaly which may arise during the implementation of the provisions of these Regulations.                                               |

| (EXAMPLE FOR MINOR)                                |                                            |       |    |          |                                           |
|----------------------------------------------------|--------------------------------------------|-------|----|----------|-------------------------------------------|
| DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING |                                            |       |    |          |                                           |
| S.NO.                                              | COURSE NAME                                | L-T-P | CR | PRE-REQ. | OFFERED TO                                |
| TRACK -1 POWER SYSTEMS                             |                                            |       |    |          |                                           |
| 1                                                  | Distribution System Planning & Automation  |       |    |          | All departments except the EEE department |
| 2                                                  | Restructured Power Systems                 |       |    |          |                                           |
| 3                                                  | HVDC & FACTS                               |       |    |          |                                           |
| 4                                                  | Power Quality                              |       |    |          |                                           |
| 5                                                  | Smart Grid Technologies                    |       |    |          |                                           |
| TRACK -2 POWER ELECTRONICS                         |                                            |       |    |          |                                           |
| 1                                                  | Advanced Power Electronics                 |       |    |          | All departments except the EEE department |
| 2                                                  | Advanced Electrical Drives                 |       |    |          |                                           |
| 3                                                  | HVDC & FACTS                               |       |    |          |                                           |
| 4                                                  | Power Quality                              |       |    |          |                                           |
| 5                                                  | Hybrid Electrical Vehicles                 |       |    |          |                                           |
| TRACK- 3 CONTROL SYSTEMS                           |                                            |       |    |          |                                           |
| 1                                                  | State Estimation & System Identification   |       |    |          | All departments except the EEE department |
| 2                                                  | Digital Control Systems                    |       |    |          |                                           |
| 3                                                  | Non Linear Control Systems                 |       |    |          |                                           |
| 4                                                  | Optimal Control Systems                    |       |    |          |                                           |
| 5                                                  | Adaptive Control Systems                   |       |    |          |                                           |
| TRACK- 4 ENERGY SYSTEMS                            |                                            |       |    |          |                                           |
| 1                                                  | Energy Conservation & Audit                |       |    |          | All departments except the EEE department |
| 2                                                  | Utilization of Electrical Energy           |       |    |          |                                           |
| 3                                                  | Solar & Fuel cell Energy Systems           |       |    |          |                                           |
| 4                                                  | Wind & Biomass Energy Systems              |       |    |          |                                           |
| 5                                                  | Nuclear, Geothermal & Tidal Energy Systems |       |    |          |                                           |

The student has to select the track for his minor degree and register himself with the department. Each department has to forward the list of the students registered track-wise to the University before the commencement of the 4<sup>th</sup> semester. However, the change of track is permitted within 15 days of the registration.

## Example for awarding of Minor degree

| S. No. | Minor Program track name                   | Eligible branch of students                                                                    | @Offering Department     | Award of Degree                                                                          |
|--------|--------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------|
| 1.     | Artificial Intelligence & Machine Learning | All branches, except B. Tech. in CSE (AI&ML) /B. Tech.(AI&ML)/ B. Tech. (AI)/ B. Tech. CSE(AI) | CSE                      | "B. Tech. in <u>branch-name</u> with Minor in Artificial Intelligence& Machine Learning" |
| 2.     | Cyber Security                             | All branches, except B. Tech. in CSE (Cyber Security)/ B. Tech. (Cyber Security)               | CSE                      | "B. Tech. in <u>branch name</u> with Minor inCyber Security"                             |
| 3.     | Data Science                               | All branches, except B. Tech. in CSE (Data Science)/ B.Tech. (Data Science)                    | CSE                      | "B. Tech. in <u>branch name</u> with Minor inData Science"                               |
| 4.     | IOT                                        | All branches, except B. Tech.in CSE (IOT) / B. Tech. (IOT)                                     | ECE                      | "B. Tech. in <u>branchname</u> with Minor inIOT"                                         |
| 5.     | Innovation and Entrepreneurship            | All branches.                                                                                  | Management Science / MBA | "B. Tech. in <u>branchname</u> with Minor inInnovation and Entrepreneurship"             |

## Additional Sample Minor programs Track list ;

**Engineering & Technology Stream**

- NanoEngineering
- Advanced Vehicle Engineering
- Biomedical and Micro Engineering
- Biomedical Engineering
- Aerospace Engineering
- Earth and Atmospheric Science
- Civil Infrastructure
- Environmental Engineering
- Structural Engineering
- Geotechnical Engineering
- Environmental & Water Resource Engineering
- Transportation Engineering

- Computer Science
- Electrical and Computer Engineering
- Game Design
- Network Engineering
- Software Engineering
- Distributed & Cloud Computing
- Information Science
- Computational Intelligence
- Communication Engineering
- Digital Systems
- Signal Processing
- Digital Systems
- Power System
- Power Electronics
- Control Systems
- Energy Systems
- Industrial Systems and Information Technology
- Materials Science and Engineering
- Mechanical Engineering
- Robotics
- Sustainable Energy Systems

#### **MBA stream**

- Business Administration
- Business Analytics
- Entrepreneurship
- Finance
- Human Resource Management
- International Business
- Leadership
- Management Information Systems
- Supply Chain and Operations Management
- Operations Research and Management Science
- Business for Engineering Students

- Entrepreneurship and Innovation
- Engineering Management



# Visvesvaraya Technological University

"Jnana Sangama", Belagavi - 590 018, Karnataka State

Prof. A S. Deshpande B.E. M.Tech., Ph.D.  
REGISTRAR

Phone : (0831) 2498100

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Ref VTU/BGM/Aca-OS/Gen-Cirs/2019-20/ 3014

Date :

21 AUG 2019

## CIRCULAR

**Sub: Earning of Activity Points for Award of Degree for students admitted under 2018 Regulations - reg..**

- Ref: 1. AICTE Internship Guidelines  
2. Hon'ble Vice-Chancellor Approval dated : 30-07-2019

### Preamble:

Apart from technical knowledge and skills, to be successful as professionals, students should have excellent soft skills, leadership qualities and team spirit. They should have entrepreneurial capabilities and societal commitment. In order to match these multifarious requirement, AICTE has created a unique mechanism of awarding Activity Points over and above the academic grades.

1. Every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other Universities to fifth semester are required to earn 50 Activity Points from the year of entry to VTU. This is applicable to B.E/B.Tech. students taking admission starting from 2018-19: regular, 2019-20 : lateral entry admission and those joining 5<sup>th</sup> semester in 2020-21.

| Sl. No. | Student Category                                                     | Activity points prescribed by AICTE |
|---------|----------------------------------------------------------------------|-------------------------------------|
| 1       | Day College regular student admitted to the 4 years Degree programme | 100                                 |
| 2       | Student entering 4 years Degree programme through lateral entry      | 75                                  |
| 3       | Students transferred from other Universities to fifth semester       | 50                                  |

2. The Activity Points earned shall be reflected on the student's eighth semester Grade Card.

3. The activities can be spread over the years (duration of the programme), anytime during the semester weekends and holidays, as per the interest and convenience of the student from the year of entry to the programme. However, minimum hours specified must be satisfied.
4. Activity Points (non-credit) have no effect on SGPA/CGPA and shall not be considered for vertical progression.
5. In case students fail to earn the prescribed Activity Points, Eighth semester Grade Card shall be issued only after earning the required Activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.
6. **AICTE Activity Point Programme (Activity Summary Sheet)** For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines (copy enclosed).

| <b>AICTE Activity Point Programme (Activity Summary Sheet)</b>                                                                                                                                                                                                  |                                                                                                                      |                  |         |                                                 |                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------|---------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The AICTE Activity Programme, a non-credit programme, can be taken up any time during the semester weekends and holidays. These activities can be spread over the years, as per convenience of the student. However, minimum hours specified must be satisfied. |                                                                                                                      |                  |         |                                                 |                                                                                                                                                                                 |
| <b>Following suggestive activities may be carried out by students in teams as per their choice.</b>                                                                                                                                                             |                                                                                                                      |                  |         |                                                 |                                                                                                                                                                                 |
| Sl. No.                                                                                                                                                                                                                                                         | Activity Head                                                                                                        | Minimum Duration |         | Performance appraisal/ Maximum points/ activity | Evaluated by                                                                                                                                                                    |
|                                                                                                                                                                                                                                                                 |                                                                                                                      | Weeks            | Hours   |                                                 |                                                                                                                                                                                 |
| 1                                                                                                                                                                                                                                                               | Helping local schools to achieve good result and enhance their enrolment in Higher/ technical/ Vocational Education. | 2                | 80 - 90 | 20                                              | NSS/<br>youth Red Cross<br>Co-ordinators /Chairperson- CICC (College Internal Complaints Committee) / SAGY (Sansad Adarsh Gram Yojana, Govt. of India) of the institute/ Mentor |
| 2                                                                                                                                                                                                                                                               | Preparing an actionable business proposal for enhancing the village Income.                                          | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 3                                                                                                                                                                                                                                                               | Developing Sustainable Water Management system                                                                       | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 4                                                                                                                                                                                                                                                               | Tourism Promotion Innovative Approaches.                                                                             | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 5                                                                                                                                                                                                                                                               | Promotion of Appropriate Technologies.                                                                               | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 6                                                                                                                                                                                                                                                               | Reduction in Energy Consumption.                                                                                     | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 7                                                                                                                                                                                                                                                               | To Skill rural population.                                                                                           | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 8                                                                                                                                                                                                                                                               | Facilitating 100% Digitized money transactions.                                                                      | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 9                                                                                                                                                                                                                                                               | Setting of the information imparting club for women leading to contribution in social and economic issues.           | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 10                                                                                                                                                                                                                                                              | Developing and managing efficient garbage disposable system.                                                         | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 11                                                                                                                                                                                                                                                              | To assist the marketing of rural produce.                                                                            | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 12                                                                                                                                                                                                                                                              | Food preservation/packaging.                                                                                         | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |
| 13                                                                                                                                                                                                                                                              | Automation of local activities.                                                                                      | 2                | 80 - 90 | 20                                              |                                                                                                                                                                                 |

**AICTE Activity Point Programme (Activity Summary Sheet)**

The AICTE Activity Programme, a non-credit programme, can be taken up any time during the semester weekends and holidays. These activities can be spread over the years, as per convenience of the student. However, minimum hours specified must be satisfied.

**Following suggestive activities may be carried out by students in teams as per their choice.**

| Sl. No. | Activity Head                                                                                                                             | Minimum Duration |         | Performance appraisal/ Maximum points/ activity | Evaluated by |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------|-------------------------------------------------|--------------|
|         |                                                                                                                                           | Weeks            | Hours   |                                                 |              |
| 14      | Spreading public awareness under rural outreach programmes                                                                                | 2                | 80 - 90 | 20                                              |              |
| 15      | Contribution to any national level initiative of Government of India. For e.g. Digital India/ Skill India/ Swachh Bharat Internship etc., | 2                | 80 - 90 | 20                                              |              |

7. **Submission of Activity Points:** The consolidated report of activity points earned by the students shall be sent to the University. A notification in this respect will be issued by Registrar (Evaluation), VTU, Belagavi.

**The content of this circular is applicable to both Affiliated and Autonomous colleges under VTU.**

Hence, the Principals of Colleges are informed to advice and guide the students in this regard.

The contents of this circular may be brought to the notice of all concerned.

**Encl: As above**

**BY ORDER,**

**REGISTRAR**

**To,**  
**The of Principals of All Engineering Colleges (Constituent/Affiliated/ Autonomous) under the ambit VTU, Belagavi**

**Copy to:**

1. Hon'ble Vice-Chancellor through the Secretary to VC, VTU, Belagavi for kind information
2. The Registrar(Eval.), VTU, Belagavi
3. The Regional Directors (I/C) of all the Regional Offices of VTU for kind information
4. The Special Officers of Academic & Examination Section, VTU, Belagavi
4. The concerned Case workers of Academic & Examination Section, VTU, Belagavi
5. The Computer Network centre, VTU, Belagavi



## CHAPTER – 6

### AICTE ACTIVITY POINT PROGRAMME

#### ADDITIONAL REQUIREMENT FOR EARNING 4 YEARS DEGREE PROGRAMME

Apart from technical knowledge and skills, to be successful as professionals, students should have excellent soft skills, leadership qualities and team spirit. They should have entrepreneurial capabilities and societal commitment. In order to match these multifarious requirements, AICTE has created a unique mechanism of awarding minimum 100 Activity Points over and above the academic grades.

Every regular student, who is admitted to the 4 years Degree programme, is required to earn 100 Activity Points in addition to the required academic grades, for getting 4 Years degree programme. Students entering 4 years Degree programme through lateral entry are required to earn 75 Activity Points, in addition to the academic grades, for getting 4 years' degree program. Similarly, Diploma students are required to earn 75 Activity Points during 3 years of their diploma programme.

AICTE recommends 300-400 hours Activity Programme for each degree student for Community service and allied activities. Similarly, 200-250 hours should be devoted by Diploma student for Community service and allied activities as an additional requirement or non-credit programme. Here, 40-45 hours are equivalent to 1 week.

These activities will be coordinated by NSS/NCC/Sports/SAGY Coordinator or TPO of the Institute. The student will be provided a certificate from the concerned coordinator and Institutional Head.

Every student is required to prepare a file containing documentary proofs of activities, done by him/ her. This file will be duly verified by the concerned evaluator as listed in Table-4. The student should earn at least 100 activity points before he/ she appears for his/ her Final Examinations. The points students have earned will be reflected on the student's transcript. However, there will be neither grades/ marks for these points nor will there be any effect on SPI/CPI/CGPA etc.

As proposed under the AICTE Rural Internship Programme, if a student completes any long term goal during his degree programme, it will be counted as Internship Activity and credit requirement for the internship is fulfilled. However, if only short term interventions under the programme are attempted it will be counted towards AICTE Activity Point Programme requisite. Following suggestive activities as Long Term Goals may be carried out by students in teams:

1. Prepare and implement plan to create local job opportunities.
2. Prepare and implement plan to improve education quality in village.
3. Prepare an actionable DPR for Doubling the village Income.
4. Developing Sustainable Water Management system.
5. Prepare and Improve a plan to improve health parameters of villagers.
6. Developing and implementing of Low Cost Sanitation facilities.
7. Prepare and implement plan to promote Local Tourism through Innovative Approaches.
8. Implement/Develop Technology solutions which will improve quality of life.
9. Prepare and implement solution for energy conservation.

## AICTE INTERNSHIP POLICY: GUIDELINES & PROCEDURES

10. Prepare and implement plan to Skill village youth and provide employment.
11. Develop localized techniques for Reduction in construction Cost.
12. Prepare and implement plan of sustainable growth of village.
13. Setting of Information imparting club for women leading to contribution in social and economic issues.
14. Developing and managing Efficient garbage disposable system.
15. Contribution to any national level initiative of Government of India. For eg. Digital India/ Skill India/ Swachh Bharat Internship etc

The student may choose any activities as per their liking in order to earn the AICTE Activity points. These activities can be spread over the years, as per convenience of the student. The Minimum points required as per entry level of any student are presented in Table 3.

**Table 3. The activity Point requirement for Degree/ Diploma/ Lateral entry students**

| Level of entry in degree course                                             | Total Years tot Points | Minimum Points |
|-----------------------------------------------------------------------------|------------------------|----------------|
| <b>Degree Programmes</b>                                                    |                        |                |
| 1st Year Regular                                                            | 1st to 4th Year        | 100            |
| 2nd Year (3rd Sem.) through lateral entry or transfer from other University | 2nd to 4th year        | 75             |
| <b>Diploma Programmes</b>                                                   |                        |                |
| 1st Year Regular                                                            | 1st to 3rd Year        | 75             |
| 2nd Year (3rd Sem.) through lateral entry                                   | 2nd to 3rd Year        | 50             |



**Table 4: AICTE Activity Point Programme (Activity Summary Sheet)**

| Major Head of Activity   | Credits (Binc./ Degree/ Diploma) | Suggested period (Max.)                                 | Total Duration/ Week |                    | Sub Activity-Head                                                                                                                      | Proposed Document as Evidence | Evaluated by                                | Performance appraisal/ Maximum points/ activity | Maximum Points under this category. |
|--------------------------|----------------------------------|---------------------------------------------------------|----------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------|-------------------------------------------------|-------------------------------------|
|                          |                                  |                                                         | Degree               | Diploma            |                                                                                                                                        |                               |                                             |                                                 |                                     |
| AICTE Activity Programme | Non Credit                       | Anytime during the semester during weekends or holidays | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Prepare and implement plan to create local job opportunities.                                                                          | Project Report                | NSS/ NCC/ SAGY Coordinator of the Institute | 20                                              | 100                                 |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Prepare and implement plan to improve education quality in village.                                                                    |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Preparing an actionable DPR for Doubling the village Income.                                                                           |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Developing Sustainable Water Management system.                                                                                        |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Prepare and improve a plan to improve health parameters of villagers.                                                                  |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Developing and implementing of Low Cost Sanitation facilities.                                                                         |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Prepare and implement plan to promote Local Tourism through Innovative Approaches.                                                     |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Implement/Develop Technology solutions which will improve quality of life.                                                             |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Prepare and implement solution for energy conservation.                                                                                |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Prepare and implement plan to Skill village youth and provide employment.                                                              |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Develop localized techniques for Reduction in construction Cost.                                                                       |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Prepare and implement plan of sustainable growth of village.                                                                           |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Setting of Information imparting club for women leading to contribution in social and economic issues.                                 |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Developing and managing Efficient garbage disposable system.                                                                           |                               |                                             | 20                                              |                                     |
|                          |                                  |                                                         | 2 Weeks (80-90 hrs)  | 1 Week (40-45 hrs) | Contribution to any national level Initiative of Government of India. For eg. Digital India/ Skill India/ Swachh Bharat Internship etc |                               |                                             | 20                                              |                                     |

## Annexure-VIII

### CIE and SEE details for scheme 2021

| S. No. | Courses                                                                                         | 2021 scheme                                     |                             |                                                 |                             |
|--------|-------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------|-------------------------------------------------|-----------------------------|
|        |                                                                                                 | CIE<br>(Minimum Passing marks 40% of Max marks) |                             | SEE<br>(Minimum Passing marks 35% of Max marks) |                             |
|        |                                                                                                 | Max Marks                                       | Mini passing marks required | Max Marks                                       | Mini passing marks required |
| 1      | Theory                                                                                          | 50                                              | 20                          | 50                                              | 18                          |
| 2      | Practical                                                                                       | 50                                              | 20                          | 50                                              | 18                          |
| 3      | Drawing                                                                                         | 50                                              | 20                          | 50                                              | 18                          |
| 4      | Languages                                                                                       | 50                                              | 20                          | 50                                              | 18                          |
| 5      | Field Work                                                                                      | 50                                              | 20                          | 50                                              | 18                          |
| 6      | a) Inter/Intra Institutional Internship<br>b) Innovation /Societal /Entrepreneurship internship | 100                                             | 40                          | ---                                             | ---                         |
| 7      | (Research / Industry Internship)                                                                | 100                                             | 40                          | 100                                             | 35                          |
| 8      | Mini Project                                                                                    | 100                                             | 40                          | ---                                             | ---                         |
| 9      | Project                                                                                         | 100                                             | 40                          | 100                                             | 35                          |
| 10     | Seminar                                                                                         | 100                                             | 40                          | ---                                             | ---                         |
| 11     | Integrated Professional Core Course (IPCC)                                                      | 50                                              | 20                          | 50                                              | 18                          |

All university examination (SEE) shall be conducted for maximum of 100 marks. For assigning the letter grade the university examination marks secured by a student, except in case of serial no. 07 and 09 shall be reduced to 50 marks to add the same with CIE marks. If a fraction result during reduction, it shall be rounded off to higher value.



**Visvesvaraya Technological University**  
"Jnana Sangama", Belagavi - 590 018, Karnataka State

Dr. A S. Deshpande B.E. M.Tech., Ph.D.,  
REGISTRAR

Phone : (0831) 2498100  
Fax : (0831) 2405467

Ref: VTU/BGV/OS-Aca/2020-21/ 1306

Date : 21 JUL 2020

**NOTIFICATION**

**Sub: Regulations Governing the Change of Branch - reg...**

**Ref: Executive Council Resolution. No. 2.1.5 dt: 27<sup>th</sup> May, 2020**

Pursuant to the aforesaid Executive Council Resolution, the "**Regulations Governing the Change of Branch**" are hereby notified.

1. These Regulations are applicable with effect from the academic year 2020-21 and onwards.
2. These Regulations are uniformly applicable to Affiliated, Autonomous and Constituent Colleges under VTU

You are hereby directed to bring the content of these regulations to the notice of all the concerned and to follow them scrupulously.

**Encl: as above**

**BY ORDER**

**REGISTRAR**

To,

**The of Principals of All Engineering (Affiliated/ Autonomous/ Constituent) Colleges under the ambit of VTU, Belagavi**

**Copy to:**

1. Hon'ble Vice-Chancellor through the Secretary to VC, VTU, Belagavi for kind information
2. The Registrar (Evaluation), VTU, Belagavi
3. The Regional Directors (I/C) of all the Regional Offices of VTU for circulation
4. The Computer Network Centre, VTU, Belagavi- to upload on VTU website
5. PS to Registrar, VTU, Belagavi
6. All the concerned Special Officer and Case-workers of Academic Section, VTU, Belagavi

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
**"Jnana Sangama", Belagavi**



**VTU Regulations Governing Change of Branch**

**Applicable from the academic year 2020-21**

**Approved vide Executive Council Resolution Number 2.1.5 dt: 27-5-2020**

**May 2020**



*21.7.2020*  
**REGISTRAR**  
**Visvesvaraya Technological University,**  
**BELAGAVI - 590 018.**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**REGULATIONS FOR CHANGE OF BRANCH AT B.E./B.TECH. DEGREE PROGRAMMES**  
**(with effect from the academic year 2020-21 ]**  
**(Approved Vide Executive Council's resolution Number 2.1.5 Dated 27-5-2020)**

**COB 1      Short Title, Applicability and Commencement:**

- 1 These Regulations shall be called "VTU Regulations for Change of Branch at B.E./B.Tech. 2020".
- 2 These Regulations shall be applicable to all B.E./B.Tech. Programmes being conducted by the University at constituent, affiliated and autonomous colleges under the University.
- 3 These Regulations shall come into force from the date of their notification by the University.

**COB 2      Definitions:**

In these Regulations, unless the context requires otherwise or it is specifically defined:

- 1 **'AICTE'** means the All India Council for Technical Education established at New Delhi by an Act of Parliament in 1987.
- 2 **'University'** means the Visvesvaraya Technological University (VTU) with its Headquarters at Belagavi
- 3 **'Vice Chancellor'** means the Vice Chancellor of the University.
- 4 **'Registrar'** and **'Registrar (Evaluation)'** mean respectively the Registrar and Registrar (Evaluation) of the University.
- 5 **'Principal'** means the executive head of an Affiliated/ Constituent/ Autonomous college under the university.
- 6 **'Intake/ sanctioned Intake'** means the number of students sanctioned by VTU, AICTE and State Govt. for admission in a year for a programme/Department.
- 7 **'Admission/ Actual Admissions'** means the number of students admitted to a particular programme
- 8 **'Programme'** means it is an educational Programme in a particular stream/branch of Engineering/branch of specialization leading to the award of the Degree. It involves events/activities, comprising of lectures/tutorials/ laboratory work/field work, outreach activities/project work/vocational training/viva - voce/ seminars/ internship/assignments/ presentations/ self-study etc., or a combination of some of these.
- 9 **'Branch'** means Specialization or discipline of B.E./B.Tech. Degree Programme,

VTU COB Regulations 2020

  
**REGISTRAR**  
visvesvaraya Technological University,  
BELAGAVI - 590 018.

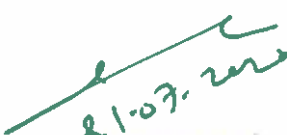
like Civil Engineering, Mechanical Engineering, Textile Engineering, etc.

- 10 **Semester:** Refers to one of the two sessions of an academic year, each session being of sixteen weeks duration (with working days greater than or equal to ninety). The odd and even semesters shall be as per the University academic calendar.
- 11 **Academic Year:** Refers to sessions of two consecutive semesters (odd followed by an even) including periods of vacation.
- 12 **Course:** Usually referred to as 'papers' and is a component of a Programme. All Courses need not carry the same weightage. The Courses should define learning objectives and learning outcomes. A Course may be designed to comprise lectures/ tutorials/ laboratory work/ field work/ outreach activities/project work/ vocational training/ viva voce/ seminars/ term papers/assignments/ presentations/ self-study etc., or combination of these.
- 13 **Credit:** Refers to a unit by which the Course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of lecture or two hours of laboratory/practical Courses/ tutorials/ fieldwork per week etc.
- 14 **Audit Courses:** Means the Knowledge/ Skill enhancing Courses without the benefit of a grade or credit for a Course.
- 15 **Choice Based Credit System (CBCS):** Refers to customizing the Course work, through the Core, Elective and Soft skill Courses, to provide necessary support for the students to achieve their goals.
- 16 **'COC'** means change of College
- 17 **'COB'** means change of branch
- 18 **'Affiliated College'** means college under temporary or permanent affiliation granted by the University
- 19 **'Autonomous College'** means college under VTU, granted autonomous status by UGC and VTU
- 20 **'SNQ'** Means Supernumerary Quota
- 21 **Reg** – Regular admission
- 22 **Rep-** Repeater admissions under various categories

**COB 3 Procedure for Change of Branch:**

- 1 Branch change is to be done at the college level only.
- 2 Branch change is permitted at the beginning of III semester (II year) only for B.E/B.Tech. programs. Branch change is not permitted for B.Arch./B.Plan. programmes.

VTU COB Regulations 2020

  
**REGISTRAR**  
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BELAGAVI - 590 018.

- 3 For the purposes of branch change, "**Sanctioned intake 'I'**" shall be the intake prescribed by AICTE for the previous academic session when the students were admitted at 1<sup>st</sup> semester level. Subsequent variations in intake shall have no bearing on the students eligible for the branch change.
- 4 For the purposes of branch change, "**Admissions (A)**" shall be actual admissions at first year level in the respective branch/branches. This admission at first year level excludes all supernumerary admissions viz: fee waiver quota (SNQ), J&K quota, PIO, GIO, PM quota etc.
- 5 Branch change is permitted, if the strength in any branch is not falling below 75% of the admissions (A) at first year level in the respective branch/ branches.
- 6 Branch change shall not be permitted in any course where (Reg + Rep) ≥ I. Under any circumstances, there shall be NO exception to the above stipulation.
- 7 **Who is eligible to apply for Change of Branch:**
  - a) Only those students (irrespective of admitted quota) who are eligible for III semester as per vertical progression regulations of the University shall be eligible to apply for change of branch.
  - b) Fee waiver (SNQ) category students are not eligible for Change of branch as per Karnataka State Government norms (or as notified by the State Government from time to time)
  - c) Diploma Lateral Entry students are not eligible for Change of branch
  - d) Students admitted to second shift are eligible for Change of branch
  - e) GOI admitted students are eligible for applying the Change of Branch, however, their application will be considered under sanctioned intake only.
  - f) Foreign national and PIO quota students are eligible for applying the Change of Branch, however, their application will be considered under sanctioned intake only. These cases could be considered only if vacancies exist after Change of Branch of regular students.

8 **Vacancy for Change of Branch:**

- a) Branch change can be made only against the clear vacancy in the particular branch. Vacancy , 'V' being defined as:

$$V = I - (\text{Reg} + \text{Rep})$$

Where,

**I** = Sanctioned intake for the branch

**Reg** = Number of regular students who become eligible to be promoted to III semester as per vertical progression norms

VTU COB Regulations 2020

21-07-2020  
**REGISTRAR**  
 Visvesvaraya Technological University,  
 BELAGAVI - 590 018.

of the University, excluding all supernumerary admissions viz: SNQ, GOI , PIO etc.

**Rep** = Number of students from previous batches who become eligible to join III semester (along with regular students)

- b) The vacancy shall be calculated in every branch within **Ten (10) days** after the declaration of first year (I and II semester) SEE examination results of that academic session.
- c) The vacancy shall not depend on re-evaluation.
- d) The College should submit the vacancy position in each branch as stipulated in Table - I

**9 Procedure for applying for Change of Branch and Generation of Merit list:**

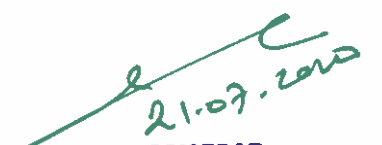
**Application:**

- a) The University will invite applications for Change of Branch for the academic year.
- b) The students shall apply to the University with the non refundable application fee as fixed and notified by the University in this regard. Before applying, the student shall verify his / her eligibility for change of branch after the announcement of first year (I and II semester): SEE results. However, it is hereby clarified that the application for change of branch does not guarantee the approval of change of Branch.
- c) No requests/applications would be entertained after the last date as notified by the University.

**Merit List :**

- d) On the basis of applications received, University will prepare the merit list of the respective colleges. While preparing the merit list,
  - i) the students who have passed in all subjects shall be placed above, as per CGPA
  - ii) the students who have failed in few subjects, but eligible to seek admission to 3<sup>rd</sup> semester as per vertical progression shall be placed below as per number of courses failed and as per CGPA.
  - iii) the foreign students(admitted any quota) and students admitted under PIO, GOI etc. will be placed last in the merit list as per clauses 9 (d (i) and (ii) )
- e) The merit list so generated will be sent back to the college/s for allotment of Change of Branch as per these regulations.
  - i) Merit list does not depend on the re-evaluation process.

VTU COB Regulations 2020

  
**REGISTRAR**  
Visvesvaraya Technological University,  
BELAGAVI - 590 018.

ii) Ties in interse will be resolved by the percentage obtained at 10+2 level of the applicants.

f) The merit list as notified by the University shall be displayed on the Notice boards of the respective colleges.

10 **Submission of list of students who have been allotted change of branch to University :**

One single Consolidated list prepared as per the merit list mentioning the change of branch shall be sent to the University as prescribed in Table –II on or before the date as notified by the University along with

- The details the vacancy position as submitted earlier by the college
- The College will operate the merit list as notified by the University
- Certification from the Principal that he/she has not permitted change of branch to students admitted in SNQ.
- Details of the vacancy position in prescribed format as below **Table - I**

| Vacancy Position |                   |                                                       |                                                                  |                                                                                      |                                                                                               |                          |                        |
|------------------|-------------------|-------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------|------------------------|
| 1                | 2                 | 3                                                     | 4                                                                | 5                                                                                    | 6                                                                                             | 7                        | 8                      |
| S. No.           | Program me/branch | Sanctioned Intake (I) in previous academic year _____ | No. of students admitted (A) during previous academic year _____ | No. of students eligible to 3 <sup>rd</sup> sem. for the present academic year _____ | No. of repeater students eligible to 3 <sup>rd</sup> sem. for the present academic year _____ | Total Admitted (T) (5+6) | Vacancy (3-7 i.e. I-T) |
|                  |                   |                                                       |                                                                  |                                                                                      |                                                                                               |                          |                        |

e) Final list of students who have been allotted change of branch in the following format – **Table - II**

| S.No. | Name | USN | Sl.No. in University Merit list | Existing Branch | COB allotted as per merit list | Signature of |        |
|-------|------|-----|---------------------------------|-----------------|--------------------------------|--------------|--------|
|       |      |     |                                 |                 |                                | Student      | Parent |
|       |      |     |                                 |                 |                                |              |        |

f) The list of students who have applied but not allotted change of branch shall be submitted by the college to the University in the following Format – table – III

| S. No. | Name | USN | Sl.No. in University Merit list | Existing Branch | COB Applied | Reason for non allotment of COB | Signature of |        |
|--------|------|-----|---------------------------------|-----------------|-------------|---------------------------------|--------------|--------|
|        |      |     |                                 |                 |             |                                 | Student      | Parent |
|        |      |     |                                 |                 |             |                                 |              |        |

- g) the 3<sup>rd</sup> semester eligible list of students of all branches signed by the Principal.
- h) Attested Photocopies of marks cards/ grade cards of I and II semester of students who have applied and allotted the Change of Branch.
- i) Before submission of the list to the University, the college shall invite both student and parent and obtain their signature. If any student withdraws the application, the same shall be recorded and submitted to the University along with parent signature.
- j) Branch once changed cannot be reverted and / or changed again.
- k) Late submission of the list by the college under any circumstances is not accepted.
- l) The process of Change of Branch at the College level shall be completed as per prescribed norms. If any vacancy exists at 3<sup>rd</sup> semester level after the Change of Branch, then the College may issue NOC for Change of College.
- m) After the submission of the list by the colleges, the University will verify the same as per Regulations and announce the final list of students who have given the Change of Branch.
- n) No student will be permitted to attend the classes in the changed branch before the announcement of the list by the University.

- COB 4 These regulations shall be applicable to all institutions under this University Affiliated, Autonomous Institutes, Aided, Un-aided, Government, Religious/ linguistic minority institutions, Constituent institutions, etc. The process of change of branch may be carried out by the University for Autonomous and affiliated Colleges independently based on the announcement of I / II semester SEE results.
- COB 5 The branch change is only a facility extended at II year (III Semester) level and shall be available only to eligible student in the order of merit.
- COB 6 Change of branch shall not be considered as a matter of right.
- COB 7 Excess intake in any branch shall disentitle the college to effectuate any branch change in that discipline, until the punitive measures, such as reduction in intake etc. as imposed by VTU/AICTE is effective.
- COB 8 The University shall inform/report to AICTE about any violations in implementing these Regulations or excess admission made by the college.
- COB 9 College/students shall not be entitled to any relief, if the regulations mentioned above for permitting branch change are not strictly adhered to.

VTU COB Regulations 2020

*21.07.2020*  
**REGISTRAR**  
 Visvesvaraya Technological University,  
 BELAGAVI - 590 018.

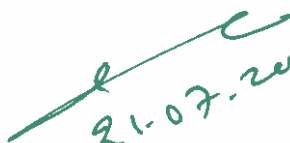
**COB 10 Repeal and Savings:**

- 1 Notwithstanding anything contained in these Regulations, the provisions of any guidelines, orders, rules or regulations in force at the University shall be inapplicable to the extent of their inconsistency with these Regulations.
- 2 The University shall issue such orders/instructions, and prescribe such format/procedure, as it may deem fit to implement the provisions of these Regulations.

**COB 11 Interpretation:**

- 1 Any question as to the interpretation of these Regulations shall be decided by the Vice Chancellor, whose decision shall be final and binding.
- 2 The University shall have the power to issue clarifications to remove any doubt, difficulty or anomaly which may arise during the implementation of the provisions of these Regulations.
- 3 The University may issue any amendment, if necessary, with the approval of the competent authorities.

-----XXXX-----

  
21.07.2020.  
**REGISTRAR**  
**Visvesvaraya Technological University,**  
**BELAGAVI - 590 018.**



**Visvesvaraya Technological University**  
"Jnana Sangama", Belagavi - 590 018, Karnataka State

Dr. A S. Deshpande B.E., M.Tech., Ph.D.,  
REGISTRAR

Phone : (0831) 2498100  
Fax : (0831) 2405467

Ref: VTU/BGM/OS-Aca/2020-21/ 1305

Date : 21 JUL 2020

**NOTIFICATION**

**Sub: Regulations Governing the Change of College - reg...**

**Ref: Executive Council Resolution. No. 2.1.5 dt: 27<sup>th</sup> May, 2020**

Pursuant to the aforesaid Executive Council Resolution, the "**Regulations Governing the Change of Branch**" are hereby notified.

1. These Regulations are applicable with effect from the academic year 2020-21 and onwards.
2. These Regulations are uniformly applicable to Affiliated, Autonomous and Constituent Colleges under VTU.

You are hereby directed to bring the contents of these regulations to the notice of all the concerned and to follow them scrupulously.

**Encl: as above**

**BY ORDER**

**REGISTRAR**

**To,**

**The of Principals of All Engineering (Affiliated/ Autonomous/ Constituent) Colleges under the ambit of VTU, Belagavi**

**Copy to:**

1. Hon'ble Vice-Chancellor through the Secretary to VC, VTU, Belagavi for kind information
2. The Registrar (Evaluation), VTU, Belagavi
3. The Regional Directors (I/C) of all the Regional Offices of VTU for circulation
4. The Computer Network Centre, VTU, Belagavi- to upload on VTU website
5. PS to Registrar, VTU, Belagavi
6. All the concerned Special Officer and Case-workers of Academic Section, VTU, Belagavi

# **VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

## **"Jnana Sangama", Belagavi**



### **VTU Regulations Governing the Change of College**

**Applicable from the academic year 2020 – 21 and onwards**

**Approved vide Executive Council Resolution Number 2.1.5 dated : 27-05-2020**

**June, 2020**



*21.07.2020.*  
**REGISTRAR**  
**Visvesvaraya Technological University,**  
**BELAGAVI - 590 018.**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**REGULATIONS FOR CHANGE OF COLLEGE AT B.E./B.TECH./B.Arch./B.Plan. DEGREE**  
**PROGRAMMES**

(Approved Vide Executive Council's resolution Number 2.1.5 Dated 27-5-2020)

**COC 1 Short Title, Applicability and Commencement:**

- a. These Regulations shall be called "VTU Regulations for Change of College at B.E./B.Tech./B.Arch./B.Plan. 2020"
- b. These regulations shall be applicable to all B.E./B.Tech./B.Arch./B.Plan. Programmes being conducted by the University at its Affiliated, Autonomous and Constituent colleges.
- c. These regulations shall come into force from the date of their notification by the University.

**COC 2 Definitions:**

In these regulations unless the context requires otherwise or it is specifically defined:

- a. **'AICTE'** means the All India Council for Technical Education, established in New Delhi by an Act of Parliament in 1987.
- b. **'AIU'** means the Association of Indian Universities established in New Delhi by registration in 1967 under Society Registration Act, 1860
- c. **'UGC'** means the University Grants Commission established in New Delhi by an Act of Parliament in 1956.
- d. **'University'** means the Visvesvaraya Technological University (VTU) with its headquarters at Belagavi
- e. **'Executive Council (EC)', 'Academic Senate (AS)', 'Board of studies (BOS)'**, mean the respective Authorities of the University.
- f. **'Vice Chancellor'** means the Vice Chancellor of the University.
- g. **'Registrar'** and **'Registrar (Evaluation)'** mean respectively the Registrar and Registrar (Evaluation) of the University.
- h. **'Principal'** means the executive head of an affiliated/ constituent/ autonomous college under the university.
- i. **'Intake / Sanctioned Intake'** means the number of students sanctioned for admission in a year to a programme.
- j. **'Admission / actual admission'** means the actual number of students admitted to the a particular programme

- k. **'Programme'** means it is an educational Programme in a particular stream/branch of Engineering/branch of specialization leading to award of the Degree. It involves events/activities, comprising of lectures/tutorials/laboratory work/field work, outreach activities/project work/vocational training/viva voce/ seminars/ internship/assignments/ presentations/ self-study etc., or a combination of some of these.
- l. **'Branch'** means Specialization or discipline of B.E./B.Tech. Degree Programme, like Civil Engineering, Mechanical Engineering, Textile Engineering, etc.
- m. **Academic Year:** Refers to the sessions of two consecutive semesters (odd followed by an even) including periods of vacation.
- n. **Semester:** Refers to one of the two sessions of an academic year each session being of sixteen weeks duration (with working days greater than or equal to ninety). The odd and even semesters shall be as per the University academic calendar.
- o. **Course:** Usually referred to as 'papers' and is a component of a Programme. All Courses need not carry the same weightage. The Courses should define learning objectives and learning outcomes. A Course may be designed to comprise lectures/ tutorials/ laboratory work/ field work/ outreach activities/project work/ vocational training/ viva voce/ seminars/ term papers/assignments/ presentations/ self-study etc., or combination of some of these.
- p. **Credit:** Refers to a unit by which the Course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of lecture or two hours of laboratory/practical Courses/ tutorials/ fieldwork per week etc.
- q. **Audit Courses:** Means the Knowledge/ Skill enhancing Courses without the benefit of a grade or credit for a Course
- r. **Choice Based Credit System (CBCS):** Refers to customizing the Course work, through Core, Elective and soft skill Courses, to provide necessary support for students to achieve their goals.
- s. **'COC'** means change of College
- t. **'COB'** means change of branch
- x. **Affiliated means** college under temporary or permanent affiliation granted by the University
- y. **Autonomous means** college under VTU granted autonomous status by UGC and VTU
- z. **SNQ means** supernumerary quota

### **COC 3 No Objection Certificates**

- i) The admitting college shall issue No Objection Certificate (**Annx -A**) only if there is availability of seats within the sanctioned intake in respective branch.
- ii) The relieving College shall issue No Objection Certificate (**Annx -B**) only if the actual admissions will not fall below 75% of the admitted students at first level in the respective branch.
- iii) The colleges (relieving and admitting) shall issue No Objection certificates
  - a) in the prescribed format only as notified by the University
  - b) after the announcements of respective even semester results against the notification in this regard by the University.
- iv) No college shall issue No Objection certificates after the last date as notified by the University under any circumstances.
- v) The students shall obtain No Objection certificates from relieving college and admitting college.
- vi) The student shall apply to the University ,
  - a) in the prescribed application format (**Annx -C**)
  - b) No Objection certificates obtained from both the colleges
  - c) Non refundable fee and
  - d) other documents as notified by the University in this regard.
- iv) The University after verifying the application of the students will issue its No objection certificate.
- v) No student will be permitted to attend the classes in the new college until the receipt of the No objection certificate from the University. The student may continue to attend classes in the old college. The attendance and CIE would be transferred to the new college once the University issues the NOC.
- vi) The student then may seek admission in the new college and complete the Programme as per the provisions of the Regulations governing the respective programmes
- (vi) Earn the credits decided by the University as per applicable regulations of the respective programme

**COC 4 Change of College**

**a) Transfer of students from one VTU affiliated college to another VTU affiliated college is permitted with the following conditions.**

**i)** Transfer of students from one VTU affiliated college to another VTU affiliated college shall be permitted only at the beginning of the third and fifth semesters of B.E./B.Tech./B.Arch. /B.Plan., subject to

- a) satisfying all clauses of COC 3 above
- b) satisfying the eligibility as defined under the vertical progression of the respective programme/s

**b) Transfer of students from an Autonomous to Affiliated college under VTU is permitted with the following conditions.**

**i)** Transfer of students from VTU Autonomous college to VTU affiliated college shall be permitted only at the beginning of the third and fifth semester for B.E./B.Tech./ B.Arch./B.Plan., subject to :

- a) satisfying all clauses of COC 3 above
- b) Students who are seeking transfer must have passed in all the Courses of all the previous semesters (nil 'F' grade from all the previous semesters).

**(ii)** Complete additional Course/s, if any, as per the decision of concerned bodies, i.e. Dean / Board of Studies, as applicable for establishing equivalence between the two schemes. A grade-card shall be issued to that effect. Additional Course/s shall not be considered for the eligibility criteria prescribed for promotion, calculation of SGPA and CGPA. However, a pass in the additional Courses, if any, is mandatory before the completion of Degree.

**c) Transfer of students from one Autonomous to another Autonomous college, under VTU is permitted with the following conditions.**

**i)** Transfer of students from one VTU Autonomous college to another VTU autonomous college shall be permitted only at the beginning of the third and fifth semester for B.E./B.Tech./B.Arch./B.Plan., subject to

- a) satisfying all clauses of COC 3 above
- b) Students who are seeking transfer must have passed in all the Courses of all the previous semesters (nil 'F' grade from all the previous semesters).

**ii)** Complete additional Course/s, if any, as per the decision of concerned bodies i.e. academic Council of admitting college, on establishing equivalence between

two schemes. A Grade card shall be issued to that effect. Additional Course/s shall not be considered for the eligibility criteria prescribed for promotion, calculation of SGPA and CGPA. However, a pass in the additional Courses, if any, is mandatory before the completion of Degree.

**d Transfer of students from Affiliated College to Autonomous college, under VTU is permitted with the following conditions.**

- i) Transfer of students from one VTU affiliated college to another VTU autonomous college shall be permitted only at the beginning of third and fifth semester B.E./B.Tech./B.Arch./B.Plan, subject to
- a) satisfying all clauses of COC 3 above
  - b) Students who are seeking transfer must have passed in all the Courses of all the previous semesters (nil 'F' grade from all the previous semesters).
- ii) Complete additional Course/s, if any, as per the decision of concerned bodies i.e. academic Council of admitting college, on establishing equivalence between two schemes. A grade-card shall be issued to that effect. Additional Course/s shall not be considered for the eligibility criteria prescribed for promotion, calculation of SGPA and CGPA. However, a pass in the additional Courses, if any, is mandatory before the completion of Degree.

**e) Transfer of students from Day College to Evening College only with respect to Diploma Lateral Entry students**

Transfer of students from Day College to Evening College shall be permitted only at the beginning of the fifth and seventh semesters for B.E./B.Tech. subject to

- a) satisfying all clauses of COC 3 above
- b) satisfying all clauses of a and b of COC 4 above , as applicable

Note: Such transfers at seventh semester will be subject to the scrutiny and recommendation of University's Equivalence Committee.

**Further, the student has also to submit**

- a) Appointment letter from employer
- b) Documentary proof : Date of joining, experience
- c) No Objection Certificate from employer for continuation of study
- d) No Objection Certificate from Director of Technical Education, Govt. of Karnataka

**f) Other University to VTU Affiliated and Autonomous Colleges**

**a) Eligibility for applying:**

In the case of students seeking transfer from Universities other than VTU the following conditions shall be satisfied :

- i) The students must satisfy the entry level academic qualification for UG programmes as notified by VTU, AICTE, & State Government from time to time
- ii) Transfer is permitted only if the parent University has AICTE approval in case of Indian University and recognition of AIU, in case of foreign University.
- iii) The students must have passed in all the Courses of I and II semesters for admission to III semester and I to IV semester for admission to V semester
- iv) No transfer shall be permitted to VII semester B.E./B.Tech./B.Plan. Programme of VTU from any other Universities.
- v) No transfer shall be permitted to VII and IX semester B.Arch. Programme of VTU from any other Universities
- vi) The student has to satisfy all clauses of COC 3 above along with he /she has to submit Migration certificate from University at the time of admission to the college.
- vii) The student has to complete an additional Course/s, if any, as per the decision of concerned bodies, i.e. Dean / Board of Studies / equivalence Committee/ Academic Council, as applicable for establishing equivalence between the two schemes. A grade-card shall be issued to that effect. Additional Course/s shall not be considered for the eligibility criteria prescribed for promotion, calculation of SGPA and CGPA. However, a pass in the additional Courses, if any, is mandatory before the completion of the Degree.

**COC 5 Change of College with Change of Branch for B.E./B.Tech.:**

Change of College with Change of branch is permitted only at the beginning of the 3<sup>rd</sup> semester level of B.E./B.Tech. and satisfying the following:

- a. All the regulations of Change of Branch as prescribed by the University
- b. All the clauses of COC 3 above

c. No change of branch is permitted to B.Arch. and B.Plan programmes

**COC 6** Foreign national student admitted under any category/quota is not permitted for change of college.

**COC 7** Fee waiver (SNQ) category students are not eligible for Change of College as per Karnataka State Government norms (or as notified by the State Government from time to time)

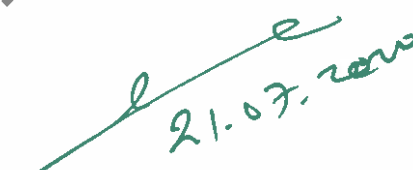
**COC 8 Repeal and Savings:**

- 1 Notwithstanding anything contained in these Regulations, the provisions of any guidelines, orders, rules or regulations in force at the University shall be inapplicable to the extent of their inconsistency with these Regulations.
- 2 The University shall issue such orders/instructions, and prescribe such format/procedure, as it may deem fit to implement the provisions of these Regulations.

**COC 9 Interpretation:**

- 1 Any question as to the interpretation of these Regulations shall be decided by the Vice Chancellor, whose decision shall be final and binding.
- 2 The University shall have the powers to issue clarifications to remove any doubt, difficulty or anomaly which may arise during the implementation of the provisions of these Regulations.
- 3 The University may issue any amendments if necessary with the approval of the competent authorities.



  
**REGISTRAR**  
**Visvesvaraya Technological University.**  
**BELAGAVI - 590 018.**

## COLLEGE LETTER HEAD

Annexure A

### NOC FORMAT OF ADMITTING COLLEGE

Mr./Ms. \_\_\_\_\_ with USN \_\_\_\_\_ is presently studying in \_\_\_\_\_ semester at \_\_\_\_\_ [college] has submitted application for Change of College. This college \_\_\_\_\_ (Name) has no objection to admit the aforesaid student to \_\_\_\_\_ semester for the academic year \_\_\_\_\_. The vacancy position for change of college of this college is as follows. Sanctioned intake : \_\_\_\_\_ Admissions to \_\_\_\_\_ semester. Vacancy: \_\_\_\_\_

It is further certified that: The aforesaid student

1. is eligible to seek admission to \_\_\_\_\_ semester as per regulations of the University.
2. Has not been admitted under SNQ quota
3. Has completed the MPC punishment period / not applicable

Date:

Place:

**Signature of Principal,  
with name and  
Seal of the College**

---

## COLLEGE LETTER HEAD

Annexure B

### NOC FORMAT OF RELIEVING COLLEGE

Mr./Ms. \_\_\_\_\_ with USN \_\_\_\_\_ is presently studying in \_\_\_\_\_ semester at \_\_\_\_\_ (name) [college] has submitted application for Change of College. This college \_\_\_\_\_ has no objection to relieve the aforesaid student. The vacancy position for change of college of this college is as follows. Sanctioned intake : \_\_\_\_\_ Admissions to \_\_\_\_\_ semester. Vacancy: \_\_\_\_\_. It is hereby confirmed that after relieving the aforesaid student the vacancy of the \_\_\_\_\_ branch will not fall below 75% of actual admissions.

It is further certified that: The aforesaid student

1. is eligible to seek admission to \_\_\_\_\_ semester as per regulations of the University.
2. Has not been admitted under SNQ quota
3. Has completed the MPC punishment period / not applicable

Date:

Place:

**Signature of Principal,  
with name and  
Seal of the College**



# Visvesvaraya Technological University

"JnanaSangama"

Belagavi - 590 018, Karnataka State

## Annexure C

### :APPLICATION TO UNIVERSITY FOR CHANGE OF COLLEGE:

|    |                                                       |   |                                                                                                                   |
|----|-------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------|
| 1. | Name                                                  | : |                                                                                                                   |
| 2. | University Seat Number (USN)                          | : |                                                                                                                   |
| 3. | Name of Admitting College                             | : |                                                                                                                   |
| 4. | Name of Relieving College                             | : |                                                                                                                   |
| 5. | Semester for which COC is sought                      | : |                                                                                                                   |
| 6. | Documents Attached                                    | : |                                                                                                                   |
|    | a) NOC of Admitting College                           | : | Yes/ No                                                                                                           |
|    | b) NOC of Relieving College                           | : | Yes/ No                                                                                                           |
|    | c) NOC of Employer (if applicable)                    | : | Yes/ No/ Not applicable                                                                                           |
|    | d) NOC of DTE (if applicable)                         | : | Yes/ No/ Not applicable                                                                                           |
|    | e) Equivalence of Academic Council (as applicable)    | : | Yes/ No/ Not applicable                                                                                           |
|    | f) Approval of AICTE (as applicable)                  | : | Yes/ No/ Not applicable                                                                                           |
|    | g) Approval of AIU (as applicable)                    | : | Yes/ No/ Not applicable                                                                                           |
| 7. | Correct Postal Address with e-mail and contact number | : |                                                                                                                   |
| 8  | Payment of Prescribed fee (non refundable)            | : | To be paid through online payment (visit <a href="http://www.vtu.ac.in/online-fee">www.vtu.ac.in/online-fee</a> ) |
|    | a) Amount                                             | : |                                                                                                                   |
|    | b) Transaction ID                                     | : |                                                                                                                   |
|    | c) Date of Transaction                                | : |                                                                                                                   |

Date:

Place:

**Signature of Parent/ Guardian  
with full name**

**Signature of Candidate**

### Acknowledgement

Received the application for Change of College of \_\_\_\_\_ on \_\_\_\_\_

**Signature & Date of VTU Staff**

**ಆಕ್ಷೇಪಣಾರಹಿತ ಪ್ರಮಾಣ ಪತ್ರ : ಪ್ರವೇಶ ನೀಡುವ ಕಾಲೇಜು**

-----ನೇ ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ಒಂದು ಕಾಲೇಜಿನಿಂದ ಮತ್ತೊಂದು ಕಾಲೇಜಿಗೆ ವರ್ಗಾವಣೆ ಮೇರೆಗೆ ಅಥವಾ ಕೋರ್ಸ್ ಬದಲಾವಣೆಯೊಂದಿಗೆ ಕಾಲೇಜು ವರ್ಗಾವಣೆ ಬಯಸಿದ ವಿದ್ಯಾರ್ಥಿಯನ್ನು ಪರಿಗಣಿಸುವ ಕಾಲೇಜು ನೀಡಬೇಕಾದ ಆಕ್ಷೇಪಣಾರಹಿತ ಪ್ರಮಾಣ ಪತ್ರ.

ಕುಮಾರ/ಕುಮಾರಿ ----- ರವರು ----- ಕಾಲೇಜಿನಲ್ಲಿ ----- ಕೋರ್ಸ್‌ನಲ್ಲಿ ----- ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ವ್ಯಾಸಂಗ ಮಾಡುತ್ತಿದ್ದು, ನಮ್ಮ ಕಾಲೇಜಿನಲ್ಲಿ ವರ್ಗಾವಣೆ ಮೇರೆಗೆ ಪ್ರವೇಶ ಹೊಂದಲು ಸಂಬಂಧಪಟ್ಟ ಕಾಲೇಜಿನಿಂದ ಆಕ್ಷೇಪಣಾರಹಿತ ಪ್ರಮಾಣ ಪತ್ರ ಸಲ್ಲಿಸಿದ್ದಾರೆ. ಇವರನ್ನು ನಮ್ಮ ಕಾಲೇಜಿನಲ್ಲಿ ವರ್ಗಾವಣೆ ಮೇರೆಗೆ ಪ್ರವೇಶ ನೀಡಲು ಅಭ್ಯಂತರವೇನೂ ಇರುವುದಿಲ್ಲ. ವರ್ಗಾವಣೆ ಮೇರೆಗೆ ಇವರಿಗೆ ಪ್ರವೇಶ ನೀಡಿದಾಗ ----- ಕೋರ್ಸ್‌ನಲ್ಲಿ ಇನ್‌ಟೆಕ್‌ಗಿಂತ ಹೆಚ್ಚುವರಿ ಪ್ರವೇಶವಾಗುವುದಿಲ್ಲವೆಂದು ಪ್ರಮಾಣೀಕರಿಸಲಾಗಿದೆ. ಸದರಿ ಕೋರ್ಸ್‌ನಲ್ಲಿ ಮಂಜೂರಾತಿ ಸ್ಥಾನಗಳು ----- ಸದರಿ ಕೋರ್ಸ್‌ನಲ್ಲಿ ಪ್ರವೇಶವಾಗಿರುವ ಸ್ಥಾನಗಳು ----- ಸದರಿ ಕೋರ್ಸ್‌ನಲ್ಲಿ ಖಾಲಿಯಿರುವ ಒಟ್ಟು ಸ್ಥಾನಗಳು -----

ಸದರಿ ವಿದ್ಯಾರ್ಥಿಯು ೧) SNQ/II Shiftನಲ್ಲಿ ಪ್ರವೇಶ ಪಡೆದಿರುವುದಿಲ್ಲವೆಂದು ಪ್ರಮಾಣೀಕರಿಸಲಾಗಿದೆ.

೨) ವಿಶ್ವವಿದ್ಯಾಲಯದ Vertical Progressionನಅನ್ವಯ ----- ಸೆಮಿಸ್ಟರ್‌ಗೆ ಪ್ರವೇಶ ಪಡೆಯಲು ಅರ್ಹತೆಯನ್ನು ಪಡೆದಿರುತ್ತಾರೆ.

೩) MPC :ಅನ್ವಯವಾಗುವುದಿಲ್ಲ/ ಶಿಕ್ಷಾವಧಿ ಪೂರ್ಣಗೊಂಡಿರುತ್ತದೆ.

೪) ವಿಶಾಖೆಯ ಪ್ರಸಕ್ತ ನಿಯಮಾವಳಿ/ ಸುತ್ತೋಲೆಗಳ ಅನ್ವಯ ----- Schemeನ್ನು ----- Semester/year ನಲ್ಲಿ ಮಹಾವಿದ್ಯಾಲಯ ತರಗತಿಗಳನ್ನು ನಡೆಸುತ್ತಲಿದೆ.

ದಿನಾಂಕ:

ಪ್ರಾಂಶುಪಾಲರ ಸಹಿ ಮತ್ತು ಸೀಲ್

**ಆಕ್ಷೇಪಣಾರಹಿತ ಪ್ರಮಾಣ ಪತ್ರ: ಬಿಡುಗಡೆ ಮಾಡುವ ಕಾಲೇಜು**

-----ನೇ ಸೆಮಿಸ್ಟರ್ ನಲ್ಲಿ ಒಂದು ಕಾಲೇಜಿನಿಂದ ಮತ್ತೊಂದು ಕಾಲೇಜಿಗೆ ವರ್ಗಾವಣೆ ಮೇರೆಗೆ ಅಥವಾ ಕೋರ್ಸ್ ಬದಲಾವಣೆಯೊಂದಿಗೆ ಕಾಲೇಜು ವರ್ಗಾವಣೆ ಬಯಸಿದ ವಿದ್ಯಾರ್ಥಿಯು ಬಿಡುಗಡೆ ಹೊಂದುವ ಇಂಜಿನೀಯರಿಂಗ್ ಕಾಲೇಜು ನೀಡಬೇಕಾದ ಆಕ್ಷೇಪಣಾರಹಿತ ಪ್ರಮಾಣ ಪತ್ರ.

ಕುಮಾರ/ಕುಮಾರಿ -----ರವರು ಈ ಕಾಲೇಜಿನ ----- ಕೋರ್ಸ್‌ನಲ್ಲಿ ಪ್ರವೇಶ ಪಡೆದು ----- ಸೆಮಿಸ್ಟರ್‌ನಲ್ಲಿ ವ್ಯಾಸಂಗ ಮಾಡುತ್ತಿದ್ದಾರೆ. ಇವರು ಈಗ ----- ಕಾಲೇಜಿಗೆ ವರ್ಗಾವಣೆ ಕೊಂಡಿದ್ದಾರೆ. ಇವರನ್ನು ಈ ಕಾಲೇಜಿನಿಂದ ಬಿಡುಗಡೆ ಮಾಡಲು ಅಭ್ಯಂತರವೇನೂ ಇರುವುದಿಲ್ಲ. ಸದರಿ ವಿದ್ಯಾರ್ಥಿಯನ್ನು ಈ ಕಾಲೇಜಿನಿಂದ ಬಿಡುಗಡೆ ಮಾಡಿದಂತೆ ಸಂಬಂಧಿತ ಕೋರ್ಸ್‌ನಲ್ಲಿ actual admissions ಶೇ. ೭೫ ಕ್ಕಿಂತ ಕಡಿಮೆಯಾಗುವುದಿಲ್ಲವೆಂದು ಪ್ರಮಾಣೀಕರಿಸಲಾಗಿದೆ ಹಾಗೂ ಸದರಿ ಕೋರ್ಸ್‌ನ ಪ್ರವೇಶ ಮಿತಿ ----- ಪ್ರವೇಶವಾಗಿರುವ ಸ್ಥಾನಗಳು ----- ಮತ್ತು ಖಾಲಿ ಇರುವ ಸ್ಥಾನಗಳು -----

ಸದರಿ ವಿದ್ಯಾರ್ಥಿಯು ೧) SNQ/II Shiftನಲ್ಲಿ ಪ್ರವೇಶ ಪಡೆದಿರುವುದಿಲ್ಲವೆಂದು ಪ್ರಮಾಣೀಕರಿಸಲಾಗಿದೆ.

೨) ವಿಶ್ವವಿದ್ಯಾಲಯದ Vertical Progressionನಅನ್ವಯ ----- ಸೆಮಿಸ್ಟರ್‌ಗೆ ಪ್ರವೇಶ ಪಡೆಯಲು ಅರ್ಹತೆಯನ್ನು ಪಡೆದಿರುತ್ತಾರೆ.

೩) MPC :ಅನ್ವಯವಾಗುವುದಿಲ್ಲ/ ಶಿಕ್ಷಾವಧಿ ಪೂರ್ಣಗೊಂಡಿರುತ್ತದೆ.

೪) ವಿಶಾಖೆಯ ಪ್ರಸಕ್ತ ನಿಯಮಾವಳಿ/ ಸುತ್ತೋಲೆಗಳ ಅನ್ವಯ ----- Schemeನ್ನು ----- Semester/year ನಲ್ಲಿ ಮಹಾವಿದ್ಯಾಲಯ ತರಗತಿಗಳನ್ನು ನಡೆಸುತ್ತಲಿದೆ.

ದಿನಾಂಕ:

ಪ್ರಾಂಶುಪಾಲರ ಸಹಿ ಮತ್ತು ಸೀಲ್





# Examination Reform Policy

November 2018

**ALL INDIA COUNCIL FOR TECHNICAL EDUCATION**  
Nelson Mandela Marg, Vasant Kunj, New Delhi-110070



# Examination Reform Policy

November 2018



# MESSAGE

AICTE is taking a multi-pronged approach to recalibrate the technical education in the country, to provide competent professionals. Challenged by keeping the pace of education with the advancements in the technology and industry needs, AICTE has pushed reforms by way of a model curriculum for various engineering disciplines, providing good quality self-learning content through MOOCs, framing a policy for the training of technical teachers 3-week student induction program and enunciating guidelines for the mandatory internship for student among others. Continuing with the streak, AICTE has now come out with an Examination Reform Policy, which would not only improve the quality of technical education in general but also examine the effectiveness of earlier initiatives of AICTE and also those on the anvil.

Evaluation, grading and certification in our system rest on examinations which play an important role in the progression of a learner on the learning path. The examinations not only indicate whether the desired learning outcomes have been achieved but also assess the level of achievements against benchmarks. Thus, examinations serve as checkpoints for both the learner and the external world, allowing appropriate certification to be issued reflecting the proficiency of an individual operating in socio-economic spheres.

This policy comes at a time when knowledge is freely available for creating resources, opportunities for more knowledge, which requires skill of higher order beyond remembering and comprehension. This policy intends to push the evaluation notches up on the Bloom's taxonomy and examine the learner for higher order cognitive skills to drive critical thinking, creativity and problem solving which have to be the attributes of any technical professional. It is hoped that this will also force necessary alignment in the teaching-learning processes on one hand to the bridging of the gap between theory and practicals on the other and prepare students for innovation and creativity.

We request the technical institutions and universities in the country to adopt this examination reform policy. To facilitate this, model question papers and question banks will be developed/ shared through AICTE website. With a view to impart momentum to this much-awaited reform, AICTE shall be conducting a series of training workshops for faculty, across the country.

We thank members of the committee led by Prof. Shettar, Vice-Chancellor, KLE University for developing the policy which will go a long way to enhance the employability ratio and also enable youngsters to become problem-solvers, innovators and job creators. We especially thank MHRD for providing guidance and support throughout the process of creation of this Policy.

**(Prof. Anil D. Sahasrabudhe)**



# PREFACE

Globalisation of the world economy and higher education are driving profound changes in engineering education system. Worldwide adaptation of Outcome-Based Education (OBE) framework and enhanced focus on higher-order learning and professional skills necessitates paradigm shift in traditional practices of curriculum design, education delivery and assessment. In recent years, worldwide sweeping reforms are being undertaken to bring about essential changes in engineering education in terms of what to teach (content) and how to teach (knowledge delivery) and how to assess (student learning).

Examinations/student assessments play a very important role in deciding the quality of education. The academic quality of examinations (question papers) in Indian engineering education system has been a matter of concern from a long time. This report attempts to bring out recommendations for reforms in examination system to meet challenges of emerging engineering education landscape.

The recommendations are presented in four sections. Beginning in Section-1, the most important drivers for examination reforms in Indian engineering education system are discussed. Section-2 brings out strategies to be adopted to align assessment with the desired student learning outcomes. A two-step method is proposed for mapping the examination questions with course outcomes. Section-3 highlights the necessity of designing question papers to test higher order abilities and skills. Application of blooms taxonomy framework to create an optimal structure of examination papers to test the different cognitive skills is discussed in detail. Challenge of assessing higher order abilities and professional skills through traditional examination system is brought out in Section-4. Several educational experiences and assessment opportunities are identified to overcome the challenges. Appendices contain the supplement material that is helpful for Universities/ Colleges to implement recommendations.

At this juncture, reforms in examinations are critical for the improvement of the quality and relevance of Indian engineering education. It is hoped that the Report will be of use to Universities and Colleges to bring out the much-needed change. The cooperation received from AICTE officials in bringing out the Report is gratefully acknowledged.

Prof. Ashok S. Shettar

Prof. Rama Krishna Challa

Prof. Sanjay Agarwal

Prof. Upendra Pandel



# ACKNOWLEDGEMENT

The development of an outcome based Examination Reform Policy for technical education is a result of thoughtful deliberations, involving dedicated and specialized experts. This Policy has been framed to meet the expectations of an academically challenging environment, develop problem-solving skills by students, aligning with current global standards and to enrich the students learning to make them self-enablers and/or match job requirements on successful completion of their degree.

The performance-based new-age reforms in the examination will benefit each student for preparing him/her for success in the knowledge society. This will create proper mapping between program outcomes and assessment tools that lead to the accurate and reliable measurement of attainment of outcomes of the students. In short, the Policy focuses on providing the ability of student to understand the subject and apply the knowledge to real world problems.

We are thankful to the members of the committee Prof. Ashok S. Shettar, Prof. Rama Krishna Challa, Prof. Sanjay Agarwal and Prof. Upendra Pandel who were devotedly committed towards framing this Policy. We thank them for identifying Competencies and Performance Indicators (PIs) with Program Outcomes (POs); Sample Questions for all six levels of Bloom's Taxonomy; Model Question Papers for end semester examinations based on Bloom's Taxonomy; and Sample Scoring Rubrics for communication (written & oral), and assessment of design projects and semester mini projects.

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I also sincerely thank all officers and officials of AICTE, who have contributed in one way or other for the development of this Policy.

Thanking all once again and seeking continued support and also feedback on the Policy.

**(Prof. Rajive Kumar)**

Adviser-I

Policy & Academic Planning Bureau, AICTE



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# INTRODUCTION

Globalisation of the world economy and higher education are driving profound changes in engineering education system. There is a continuing need to dynamically adapt to these changes, to ensure that we remain competitive and can respond effectively to the challenges of globalisation. Future engineering graduates not only need to be knowledgeable in his/her discipline but also needs a new set of soft, professional skills and competencies [1].

In recent years, there have been essential changes in engineering education in terms of what to teach (content) and how to teach (knowledge delivery) and how to assess (student learning).

AICTE has already taken initiation to come out with model curriculum for engineering programs. The digital initiatives of MHRD and AICTE have made available very large number of MOOC courses through SWAYAM, that can help the colleges and teachers to adopt innovative methodologies in the delivery of course.

The present report focusses on the recommendations for reforms in examinations (assessment of student) in the context of emerging landscape of engineering education.

Examinations/student assessments play a very important role in deciding the quality of education. They must not only assess student's achievements (and grades) but also measure whether the desired learning outcomes have been achieved. The achievement of objectives and program outcomes are crucial and needs to be proven through accurate and reliable assessments.

The academic quality of examinations (question papers) in Indian engineering education system has been a matter of concern from a long time. It is widely acknowledged that “assessment drives learning”, what and how students learn depends to a major extent on how they think they will be assessed [2]. The question papers that require simple memory recall will not ensure deep, meaningful learning. High expectations for learning motivate the students to rise to the occasion. The assessment (examination) must embed those high expectations to ensure that the learner is motivated to attain them.

Considering the above imperatives, it is clear that reforms in Examinations are critical for improvement of the quality of Indian engineering education. The most important drivers for reforms in examination system of Indian engineering education are:

## 1. Adaptation of Outcome-Based Education Framework

Outcome-based education (OBE)- a performance-based approach has emerged as a major reform model in the global engineering education scenario [3]. The country that wants to be a signatory member of a multinational agreement for the mutual recognition of engineering degrees, i.e. the Washington Accord (WA) must implement OBE. This will be an endorsement that the engineering education system has demonstrated a strong, long-term commitment to quality assurance in producing engineers ready for industry practice in the international scene. Being signatory to the Washington Accord, Indian accreditation agency 'National Board of Accreditation (NBA)' has made it mandatory for engineering institutions to adapt OBE framework for their curriculum design, delivery and assessment. In OBE framework, the educational outcomes of a program are clearly and unambiguously specified. These determine the curriculum content and its organization, the teaching methods and strategies and the assessment process.

Though Indian Universities and Colleges have started adapting OBE framework for their engineering programs, the focus is limited to the curriculum design part, i.e. connecting curriculum components to the program outcomes. Very little attention is being given for connecting examination questions/assessment tools to the program outcomes. The absence of proper mapping between program outcomes and assessment tools lead to the inaccurate and unreliable measurement of attainment of outcomes by the students. This missing connect creates a big gap in the effective adaptation of OBE framework, making the whole exercise futile.

## 2. Importance of Higher-order Abilities and Professional Skills

In the present examination system, memorization occupies a dominant place. The recall of factual knowledge, though essential to any examination, is only one of several major abilities to be demonstrated by the graduates. The assessment process must also test higher level skills viz. ability to apply knowledge, solve complex problems, analyse, synthesise and design. Further, professional skills like the ability to communicate, work in teams, lifelong learning have become important elements for employability of the graduates [4]. It is important that the examinations also give appropriate weightage to the assessment of these higher-level skills and professional competencies.

Keeping in view of the above challenges and looking at some of the worldwide best practices in assessment, the present report comes up with several recommendations that can be used by Universities/ Colleges to design their assessment strategies.

# ASSESSMENT STRATEGY FOR OUTCOME-BASED EDUCATION

## 1. Mapping Program Outcomes to Assessment (Examinations)

Graduate attributes (GAs) articulate the generic abilities to be looked for in a graduate of any undergraduate degree program. They form the Program Outcomes (POs) that reflect the skills, knowledge and abilities of graduates regardless of the field of study. This does not mean that POs are necessarily independent of disciplinary knowledge –rather, these qualities may be developed in various disciplinary contexts.

In outcome-based education, a “design down” process is employed which moves from POs to Course Outcomes (COs) and outcomes for individual learning experiences. Outcomes at each successive level need to be aligned with, and contribute to, the program outcomes.

Courses are the building blocks of a program. Teaching strategies, learning activities, assessments and resources should all be designed and organized to help students achieve the learning outcomes at the course level. In the assessment activities, students demonstrate their level of achievement of the course learning outcomes. In a constructively aligned program, the courses are carefully coordinated to ensure steady development or scaffolding from the introduction to mastery of the learning outcomes, leading to achievement of the intended POs. For the effectiveness of the program, the achievement of POs is crucial which needs to be proven through accurate and reliable assessments.

## 2. Two-step Process for Bringing Clarity to POs

POs give useful guidance at the program level for the curriculum design, delivery and assessment of student learning. However, they represent fairly high-level generic goals that are not directly measurable. Real observability and measurability of the POs at course level is very difficult. To connect high-level learning outcomes (POs) with course content, course outcomes and assessment, there is a necessity to bring further clarity and specificity to the program outcomes [5]. This can be achieved through the following two-step process of identifying Competencies and Performance Indicators (PI).

- (1) Identify Competencies to be attained: For each PO define competencies –different abilities implied by program outcome statement that would generally require different assessment measures. This helps us to create a shared understanding of the competencies we want students to achieve. They serve as an intermediate step to the creation of measurable indicators.

### **Example:**

Program Outcome (Attribute 3)

### **Design:**

PO3: Design/Development of Solutions: Design solutions for complex engineering problems and

design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

### ***Competencies***

1. Demonstrate an ability to define a complex, open-ended problem in engineering terms.
  2. Demonstrate an ability to generate a diverse set of alternative design solutions.
  3. Demonstrate an ability to select the optimal design scheme for further development.
  4. Demonstrate an ability to advance an engineering design to the defined end state.
- (2) Define Performance Indicators: For each of the competencies identified, define performance Indicators (PIs) that are explicit statements of expectations of the student learning. They can act as measuring tools in assessment to understand the extent of attainment of outcomes. They can also be designed to determine the appropriate achievement level or competency of each indicator so that instructors can target and students can achieve the acceptable level of proficiency.

### ***Example:***

For the Competency -2

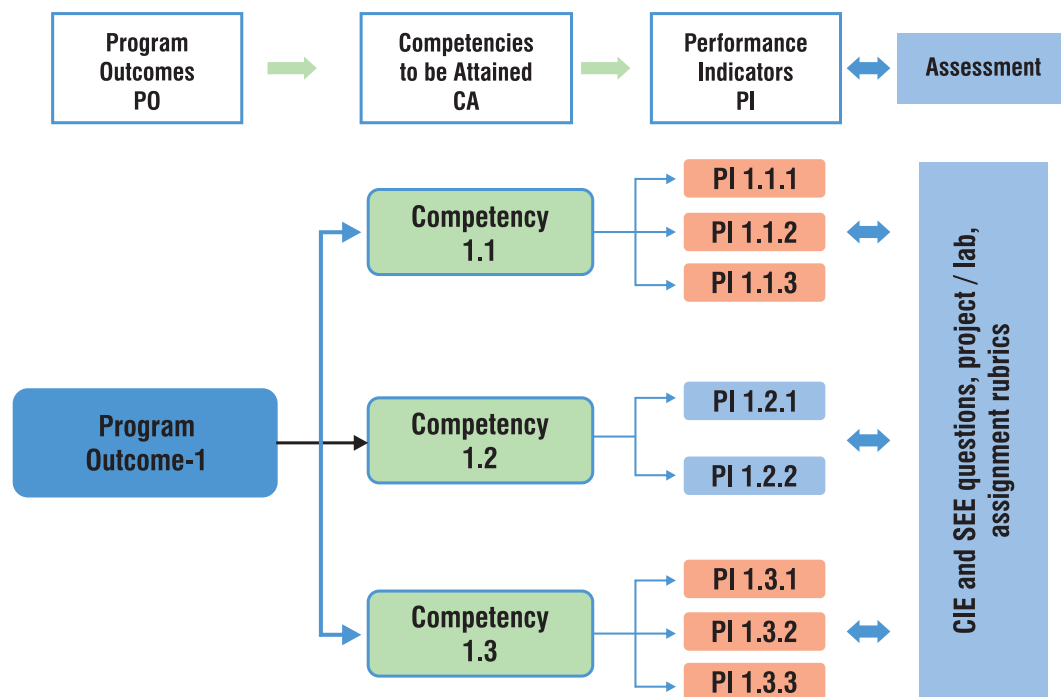
Demonstrate an ability to generate a diverse set of alternative design solutions

### ***Performance Indicators:***

1. Apply formal idea generation tools to develop multiple engineering design solutions
2. Build models, prototypes, algorithms to develop a diverse set of design solutions
3. Identify the functional and non-functional criteria for evaluation of alternate design solutions.

It should be noted that, when we consider the program outcome, it looks like, it can be achieved only in the Capstone project. But if we consider the competencies and performance indicators, we start seeing the opportunities of addressing them (and hence PO) in various courses of the program.

Once the above process is completed for the program, the assessment of COs for all the courses is designed by connecting assessment questions (used in various assessment tools) to the PIs. By following this process, where examination questions map with PIs, we get clarity and better resolution for the assessment of COs and POs. The pictorial representation of the process is given in Fig. 1



**Fig. 1: Connecting POs to Assessment**

### 3. Program Outcomes – Competencies – Performance Indicators

Following table gives the suggestive list of competencies and associated performance indicators for each of the PO in Mechanical Engineering Program.

| <b>PO 1: Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems.                                          |                                                                              |                   |                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------|
| <b>Competency</b>                                                                                                                                                                                                                       |                                                                              | <b>Indicators</b> |                                                                                                     |
| 1.1                                                                                                                                                                                                                                     | Demonstrate competence in mathematical modelling                             | 1.1.1             | Apply mathematical techniques such as calculus, linear algebra, and statistics to solve problems    |
|                                                                                                                                                                                                                                         |                                                                              | 1.1.2             | Apply advanced mathematical techniques to model and solve mechanical engineering problems           |
| 1.2                                                                                                                                                                                                                                     | Demonstrate competence in basic sciences                                     | 1.2.1             | Apply laws of natural science to an engineering problem                                             |
| 1.3                                                                                                                                                                                                                                     | Demonstrate competence in engineering fundamentals                           | 1.3.1             | Apply fundamental engineering concepts to solve engineering problems                                |
| 1.4                                                                                                                                                                                                                                     | Demonstrate competence in specialized engineering knowledge to the program   | 1.4.1             | Apply Mechanical engineering concepts to solve engineering problems.                                |
| <b>PO 2: Problem analysis:</b> Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |                                                                              |                   |                                                                                                     |
| <b>Competency</b>                                                                                                                                                                                                                       |                                                                              | <b>Indicators</b> |                                                                                                     |
| 2.1                                                                                                                                                                                                                                     | Demonstrate an ability to identify and formulate complex engineering problem | 2.1.1             | Articulate problem statements and identify objectives                                               |
|                                                                                                                                                                                                                                         |                                                                              | 2.1.2             | Identify engineering systems, variables, and parameters to solve the problems                       |
|                                                                                                                                                                                                                                         |                                                                              | 2.1.3             | Identify the mathematical, engineering and other relevant knowledge that applies to a given problem |

|     |                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.2 | Demonstrate an ability to formulate a solution plan and methodology for an engineering problem | 2.2.1 Reframe complex problems into interconnected sub-problems<br>2.2.2 Identify, assemble and evaluate information and resources.<br>2.2.3 Identify existing processes/solution methods for solving the problem, including forming justified approximations and assumptions<br>2.2.4 Compare and contrast alternative solution processes to select the best process.                                  |
| 2.3 | Demonstrate an ability to formulate and interpret a model                                      | 2.3.1 Combine scientific principles and engineering concepts to formulate model/s (mathematical or otherwise) of a system or process that is appropriate in terms of applicability and required accuracy.<br>2.3.2 Identify assumptions (mathematical and physical) necessary to allow modeling of a system at the level of accuracy required.                                                          |
| 2.4 | Demonstrate an ability to execute a solution process and analyze results                       | 2.4.1 Apply engineering mathematics and computations to solve mathematical models<br>2.4.2 Produce and validate results through skilful use of contemporary engineering tools and models<br>2.4.3 Identify sources of error in the solution process, and limitations of the solution.<br>2.4.4 Extract desired understanding and conclusions consistent with objectives and limitations of the analysis |

**PO 3: Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

| Competency |                                                                                    | Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.1        | Demonstrate an ability to define a complex/open-ended problem in engineering terms | 3.1.1 Recognize that need analysis is key to good problem definition<br>3.1.2 Elicit and document, engineering requirements from stakeholders<br>3.1.3 Synthesize engineering requirements from a review of the state-of-the-art<br>3.1.4 Extract engineering requirements from relevant engineering Codes and Standards such as ASME, ASTM, BIS, ISO and ASHRAE.<br>3.1.5 Explore and synthesize engineering requirements considering health, safety risks, environmental, cultural and societal issues<br>3.1.6 Determine design objectives, functional requirements and arrive at specifications |
| 3.2        | Demonstrate an ability to generate a diverse set of alternative design solutions   | 3.2.1 Apply formal idea generation tools to develop multiple engineering design solutions<br>3.2.2 Build models/prototypes to develop a diverse set of design solutions<br>3.2.3 Identify suitable criteria for the evaluation of alternate design solutions                                                                                                                                                                                                                                                                                                                                        |
| 3.3        | Demonstrate an ability to select an optimal design scheme for further development  | 3.3.1 Apply formal decision-making tools to select optimal engineering design solutions for further development<br>3.3.2 Consult with domain experts and stakeholders to select candidate engineering design solution for further development                                                                                                                                                                                                                                                                                                                                                       |
| 3.4        | Demonstrate an ability to advance an engineering design to defined end state       | 3.4.1 Refine a conceptual design into a detailed design within the existing constraints (of the resources)<br>3.4.2 Generate information through appropriate tests to improve or revise the design                                                                                                                                                                                                                                                                                                                                                                                                  |

**PO 4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

| Competency |                                                                                                                                 | Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.1        | Demonstrate an ability to conduct investigations of technical issues consistent with their level of knowledge and understanding | 4.1.1 Define a problem, its scope and importance for purposes of investigation<br>4.1.2 Examine the relevant methods, tools and techniques of experiment design, system calibration, data acquisition, analysis and presentation<br>4.1.3 Apply appropriate instrumentation and/or software tools to make measurements of physical quantities<br>4.1.4 Establish a relationship between measured data and underlying physical principles. |

| 4.2                                                                                                                                                                                                                                               | Demonstrate an ability to design experiments to solve open-ended problems                                                                               | 4.2.1 Design and develop an experimental approach, specify appropriate equipment and procedures<br>4.2.2 Understand the importance of the statistical design of experiments and choose an appropriate experimental design plan based on the study objectives                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.3                                                                                                                                                                                                                                               | Demonstrate an ability to analyze data and reach a valid conclusion                                                                                     | 4.3.1 Use appropriate procedures, tools and techniques to conduct experiments and collect data<br>4.3.2 Analyze data for trends and correlations, stating possible errors and limitations<br>4.3.3 Represent data (in tabular and/or graphical forms) so as to facilitate analysis and explanation of the data, and drawing of conclusions<br>4.3.4 Synthesize information and knowledge about the problem from the raw data to reach appropriate conclusions |
| <b>PO 5: Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.   |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Competency                                                                                                                                                                                                                                        |                                                                                                                                                         | Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 5.1                                                                                                                                                                                                                                               | Demonstrate an ability to identify/ create modern engineering tools, techniques and resources                                                           | 5.1.1 Identify modern engineering tools such as computer-aided drafting, modeling and analysis; techniques and resources for engineering activities<br>5.1.2 Create/adapt/modify/extend tools and techniques to solve engineering problems                                                                                                                                                                                                                    |
| 5.2                                                                                                                                                                                                                                               | Demonstrate an ability to select and apply discipline-specific tools, techniques and resources                                                          | 5.2.1 Identify the strengths and limitations of tools for (i) acquiring information, (ii) modeling and simulating, (iii) monitoring system performance, and (iv) creating engineering designs.<br>5.2.2 Demonstrate proficiency in using discipline-specific tools                                                                                                                                                                                            |
| 5.3                                                                                                                                                                                                                                               | Demonstrate an ability to evaluate the suitability and limitations of tools used to solve an engineering problem                                        | 5.3.1 Discuss limitations and validate tools, techniques and resources<br>5.3.2 Verify the credibility of results from tool use with reference to the accuracy and limitations, and the assumptions inherent in their use.                                                                                                                                                                                                                                    |
| <b>PO 6: The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Competency                                                                                                                                                                                                                                        |                                                                                                                                                         | Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 6.1                                                                                                                                                                                                                                               | Demonstrate an ability to describe engineering roles in a broader context, e.g. pertaining to the environment, health, safety, legal and public welfare | 6.1.1 Identify and describe various engineering roles; particularly as pertains to protection of the public and public interest at the global, regional and local level                                                                                                                                                                                                                                                                                       |
| 6.2                                                                                                                                                                                                                                               | Demonstrate an understanding of professional engineering regulations, legislation and standards                                                         | 6.2.1 Interpret legislation, regulations, codes, and standards relevant to your discipline and explain its contribution to the protection of the public                                                                                                                                                                                                                                                                                                       |
| <b>PO 7: Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and the need for sustainable development.                  |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Competency                                                                                                                                                                                                                                        |                                                                                                                                                         | Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 7.1                                                                                                                                                                                                                                               | Demonstrate an understanding of the impact of engineering and industrial practices on social, environmental and in economic contexts                    | 7.1.1 Identify risks/impacts in the life-cycle of an engineering product or activity<br>7.1.2 Understand the relationship between the technical, socio-economic and environmental dimensions of sustainability                                                                                                                                                                                                                                                |

| 7.2                                                                                                                                                                                                                                                                                                               | Demonstrate an ability to apply principles of sustainable design and development                                                | 7.2.1 Describe management techniques for sustainable development<br>7.2.2 Apply principles of preventive engineering and sustainable development to an engineering activity or product relevant to the discipline                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PO 8: Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.                                                                                                                                                                       |                                                                                                                                 |                                                                                                                                                                                                                                                                                                |
| Competency                                                                                                                                                                                                                                                                                                        |                                                                                                                                 | Indicators                                                                                                                                                                                                                                                                                     |
| 8.1                                                                                                                                                                                                                                                                                                               | Demonstrate an ability to recognize ethical dilemmas                                                                            | 8.1.1 Identify situations of unethical professional conduct and propose ethical alternatives                                                                                                                                                                                                   |
| 8.2                                                                                                                                                                                                                                                                                                               | Demonstrate an ability to apply the Code of Ethics                                                                              | 8.2.1 Identify tenets of the ASME professional code of ethics<br>8.2.2 Examine and apply moral & ethical principles to known case studies                                                                                                                                                      |
| <b>PO 9: Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.                                                                                                                                                      |                                                                                                                                 |                                                                                                                                                                                                                                                                                                |
| Competency                                                                                                                                                                                                                                                                                                        |                                                                                                                                 | Indicators                                                                                                                                                                                                                                                                                     |
| 9.1                                                                                                                                                                                                                                                                                                               | Demonstrate an ability to form a team and define a role for each member                                                         | 9.1.1 Recognize a variety of working and learning preferences; appreciate the value of diversity on a team<br>9.1.2 Implement the norms of practice (e.g. rules, roles, charters, agendas, etc.) of effective team work, to accomplish a goal.                                                 |
| 9.2                                                                                                                                                                                                                                                                                                               | Demonstrate effective individual and team operations--communication, problem-solving, conflict resolution and leadership skills | 9.2.1 Demonstrate effective communication, problem-solving, conflict resolution and leadership skills<br>9.2.2 Treat other team members respectfully<br>9.2.3 Listen to other members<br>9.2.4 Maintain composure in difficult situations                                                      |
| 9.3                                                                                                                                                                                                                                                                                                               | Demonstrate success in a team-based project                                                                                     | 9.3.1 Present results as a team, with smooth integration of contributions from all individual efforts                                                                                                                                                                                          |
| <b>PO 10: Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions |                                                                                                                                 |                                                                                                                                                                                                                                                                                                |
| Competency                                                                                                                                                                                                                                                                                                        |                                                                                                                                 | Indicators                                                                                                                                                                                                                                                                                     |
| 10.1                                                                                                                                                                                                                                                                                                              | Demonstrate an ability to comprehend technical literature and document project work                                             | 10.1.1 Read, understand and interpret technical and non-technical information<br>10.1.2 Produce clear, well-constructed, and well-supported written engineering documents<br>10.1.3 Create flow in a document or presentation - a logical progression of ideas so that the main point is clear |
| 10.2                                                                                                                                                                                                                                                                                                              | Demonstrate competence in listening, speaking, and presentation                                                                 | 10.2.1 Listen to and comprehend information, instructions, and viewpoints of others<br>10.2.2 Deliver effective oral presentations to technical and non-technical audiences                                                                                                                    |
| 10.3                                                                                                                                                                                                                                                                                                              | Demonstrate the ability to integrate different modes of communication                                                           | 10.3.1 Create engineering-standard figures, reports and drawings to complement writing and presentations<br>10.3.2 Use a variety of media effectively to convey a message in a document or a presentation                                                                                      |

**PO 11: Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

| Competency                                                                                                                | Indicators                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11.1 Demonstrate an ability to evaluate the economic and financial performance of an engineering activity                 | 11.1.1 Describe various economic and financial costs/benefits of an engineering activity<br>11.1.2 Analyze different forms of financial statements to evaluate the financial status of an engineering project                                  |
| 11.2 Demonstrate an ability to compare and contrast the costs/benefits of alternate proposals for an engineering activity | 11.2.1 Analyze and select the most appropriate proposal based on economic and financial considerations.                                                                                                                                        |
| 11.3 Demonstrate an ability to plan/manage an engineering activity within time and budget constraints                     | 11.3.1 Identify the tasks required to complete an engineering activity, and the resources required to complete the tasks.<br>11.3.2 Use project management tools to schedule an engineering project, so it is completed on time and on budget. |

**PO 12: Life-long learning:** Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

| Competency                                                                                    | Indicators                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12.1 Demonstrate an ability to identify gaps in knowledge and a strategy to close these gaps  | 12.1.1 Describe the rationale for the requirement for continuing professional development<br>12.1.2 Identify deficiencies or gaps in knowledge and demonstrate an ability to source information to close this gap                                                                               |
| 12.2 Demonstrate an ability to identify changing trends in engineering knowledge and practice | 12.2.1 Identify historic points of technological advance in engineering that required practitioners to seek education in order to stay current<br>12.2.2 Recognize the need and be able to clearly explain why it is vitally important to keep current regarding new developments in your field |
| 12.3 Demonstrate an ability to identify and access sources for new information                | 12.3.1 Source and comprehend technical literature and other credible sources of information<br>12.3.2 Analyze sourced technical and popular information for feasibility, viability, sustainability, etc.                                                                                        |

The above table can be used for most of the engineering programs. However, for Computer Science & Engineering/ Information Technology programs it requires some modifications.

**A suggestive list of competencies and associated performance indicators for Computer Science & Engineering/ Information Technology Programs is given in Appendix- A.**



# IMPROVING STRUCTURE AND QUALITY OF ASSESSMENTS

For improving the structure and quality of assessment in various engineering programs following points need to be remembered:

1. In Indian engineering education system, written examinations play a major role in assessing the learning and awarding of grades to the student. Universities and colleges give highest weightage to the outcomes of the written examinations in overall grading. Questions raised in the examination/test papers play an important role in defining the level of learning the student is expected to achieve in the courses and hence in the program. Since assessment drives learning, the design of question papers needs to go beyond the mere test of memory recall. They also need to test higher-order abilities and skills.
2. Written examinations assess a very limited range of outcomes and cognitive levels. Particularly in the courses, where course outcomes (COs) cover a broad range of expectations, written examinations alone will not be sufficient to make valid judgements about student learning. A wide range of assessment methods (e.g., term papers, open-ended problem-solving assignments, course/lab project rubrics, portfolios etc.) need to be employed to ensure that assessment methods match with learning outcomes.
3. It is advisable to formulate assessment plans for each of the course in the program that brings clarity to the following:
  - a. Alignment of assessment with learning outcome of the course
  - b. Level of learning (cognitive) student is expected to achieve
  - c. Assessment method to be adapted

The method to align examination questions/assessment to COs and hence POs was discussed in the section-1. The following sections discuss the application of Bloom's taxonomy framework to create the optimal structure of examination papers to test the different cognitive skills.

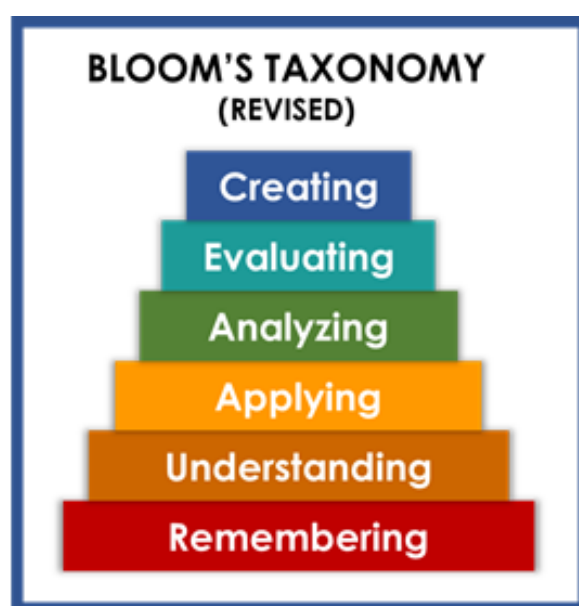
## 1. Bloom's Taxonomy for Assessment Design

Bloom's Taxonomy provides an important framework to not only design curriculum and teaching methodologies but also to design appropriate examination questions belonging to various cognitive levels. Bloom's Taxonomy of Educational Objectives developed in 1956 by Benjamin Bloom [6] was widely accepted by educators for curriculum design and assessment. In 2001, Anderson and Krathwohl modified Bloom's taxonomy [7] to make it relevant to the present-day requirements. It attempts to divide learning into three types of domains (cognitive, affective, and behavioural) and then defines the level of performance for each domain. Conscious efforts to map the curriculum and assessment to these levels can help the programs to aim for higher-level abilities which go beyond remembering or understanding, and require application, analysis, evaluation or creation.

Revised Bloom's taxonomy in the cognitive domain includes thinking, knowledge, and application of knowledge. It is a popular framework in engineering education to structure the assessment as it characterizes complexity and higher-order abilities. It identifies six levels of competencies within the cognitive domain (Fig. 2) which are appropriate for the purposes of engineering educators.

According to revised Bloom's taxonomy, the levels in the cognitive domain are as follows:

| Level | Descriptor    | Level of attainment                                                            |
|-------|---------------|--------------------------------------------------------------------------------|
| 1     | Remembering   | Recalling from the memory of the previously learned material                   |
| 2     | Understanding | Explaining ideas or concepts                                                   |
| 3     | Applying      | Using the information in another familiar situation                            |
| 4     | Analysing     | Breaking information into the part to explore understandings and relationships |
| 5     | Evaluating    | Justifying a decision or course of action                                      |
| 6     | Creating      | Generating new ideas, products or new ways of viewing things                   |



**Fig. 2: Revised Bloom's Taxonomy**

Bloom's taxonomy is hierarchical, meaning that learning at the higher level requires that skills at a lower level are attained.

## 2. Action Verbs for Assessment

Choice of action verbs in constructing assessment questions is important to consider. Quite often, the action verbs are indicators of the complexity (level) of the question. Over time, educators have come up with a taxonomy of measurable verbs corresponding to each of the Bloom's cognitive levels [8]. These verbs help us not only to describe and classify observable knowledge, skills and abilities but also to frame the examination or assignment questions that are appropriate to the level we are trying to assess.

Suggestive list of skills/ competencies to be demonstrated at each of the Bloom's level and corresponding cues/ verbs for the examination/ test questions is given below:

| Level         | Skill Demonstrated                                                                                                                                                                                                                                                                                                                                                                    | Question cues / Verbs for tests                                                                                                                                 |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Remember   | <ul style="list-style-type: none"> <li>Ability to recall of information like facts, conventions, definitions, jargon, technical terms, classifications, categories, and criteria</li> <li>ability to recall methodology and procedures, abstractions, principles, and theories in the field</li> <li>knowledge of dates, events, places</li> <li>mastery of subject matter</li> </ul> | list, define, tell, describe, recite, recall, identify, show, label, tabulate, quote, name, who, when, where                                                    |
| 2. Understand | <ul style="list-style-type: none"> <li>understanding information</li> <li>grasp meaning</li> <li>translate knowledge into new context</li> <li>interpret facts, compare, contrast</li> <li>order, group, infer causes</li> <li>predict consequences</li> </ul>                                                                                                                        | describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss                                                        |
| 3. Apply      | <ul style="list-style-type: none"> <li>use information</li> <li>use methods, concepts, laws, theories in new situations</li> <li>solve problems using required skills or knowledge</li> <li>Demonstrating correct usage of a method or procedure</li> </ul>                                                                                                                           | calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify                                             |
| 4. Analyse    | <ul style="list-style-type: none"> <li>break down a complex problem into parts</li> <li>Identify the relationships and interaction between the different parts of a complex problem</li> <li>identify the missing information, sometimes the redundant information and the contradictory information, if any</li> </ul>                                                               | classify, outline, break down, categorize, analyze, diagram, illustrate, infer, select                                                                          |
| 5. Evaluate   | <ul style="list-style-type: none"> <li>compare and discriminate between ideas</li> <li>assess value of theories, presentations</li> <li>make choices based on reasoned argument</li> <li>verify value of evidence</li> <li>recognize subjectivity</li> <li>use of definite criteria for judgments</li> </ul>                                                                          | assess, decide, choose, rank, grade, test, measure, defend, recommend, convince, select, judge, support, conclude, argue, justify, compare, summarize, evaluate |
| 6. Create     | <ul style="list-style-type: none"> <li>use old ideas to create new ones</li> <li>Combine parts to make (new) whole,</li> <li>generalize from given facts</li> <li>relate knowledge from several areas</li> <li>predict, draw conclusions</li> </ul>                                                                                                                                   | design, formulate, build, invent, create, compose, generate, derive, modify, develop, integrate                                                                 |

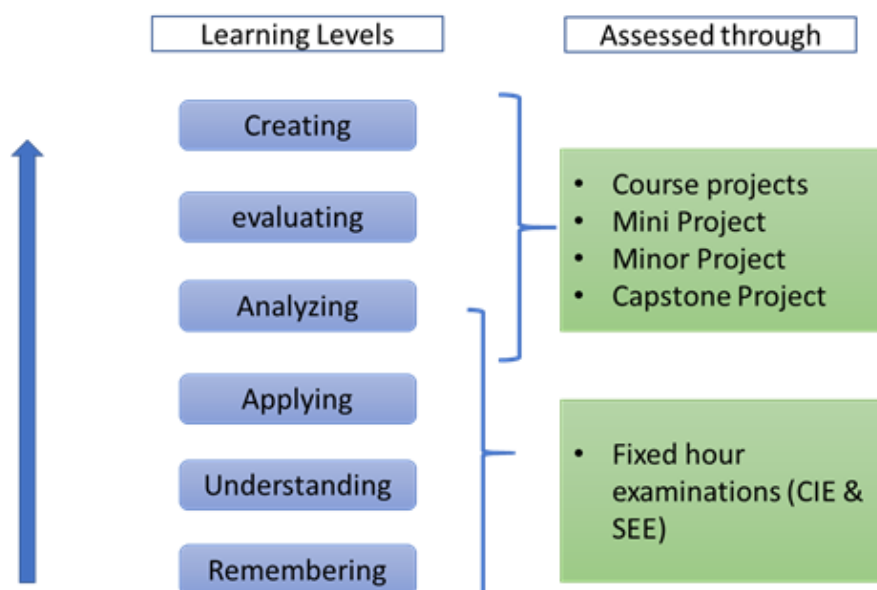
It may be noted that some of the verbs in the above table are associated with multiple Bloom's Taxonomy levels. These verbs are actions that could apply to different activities. We need to keep in mind that it's the skill, action or activity we need students to demonstrate that will determine the contextual meaning of the verb used in the assessment question.

### 3. Assessment Planning

While using Bloom's taxonomy framework in planning and designing of assessment of student learning, following points need to be considered:

1. Normally the first three learning levels; remembering, understanding and applying and to some extent fourth level analysing are assessed in the Continuous Internal Evaluation (CIE) and Semester End

Examinations (SEE), where students are given a limited amount of time. And abilities; analysis, evaluation and creation can be assessed in extended course works or in a variety of student works like course projects, mini/ minor projects, internship experience and final year projects.



**Fig. 3: Assessment methods for different Bloom's cognitive levels**

2. Before adopting this framework for reforms in examination system of a University/Institution, it is worthwhile to study the present pattern of assessment in each of the course in the program to gain insight about:
  - a) Alignment of assessment questions with course learning outcomes
  - b) Whether all the learning outcomes are tested; sometimes some learning outcomes are over tested at the expense of others which may be not tested at all.
  - c) Overall weightage in the assessment, to each of Bloom's learning levels
  - d) Assessment methods used to adequately assess the content and desired learning outcomes

Based on the study, improvement priorities for each of the above factors need to be arrived at. The reform process needs to be well planned and implemented through institutional strategy and communicated to all stakeholders particularly to the students.

3. A good and reasonable examination paper must consist of various difficulty levels to accommodate the different capabilities of students. Bloom's taxonomy framework helps the faculty to set examination papers that are well balanced, testing the different cognitive skills without a tilt towards a tough or easy paper perception. If the present examination questions are more focused towards lower cognitive skills, conscious efforts need to be made to bring in application skills or higher cognitive skills in the assessment. It is recommended that at institution/ University level, upper limit need to be arrived for lower order skills (for example, no more than 40% weightage for knowledge-oriented questions). It is important to note that, as nature of every course is different, the weightage for different cognitive levels in the question papers can also vary from course to course.
  - Examples of typical questions for each of Bloom's cognitive level are given in Appendix-B
  - Model Question Papers are given in Appendix- C

# ASSESSING HIGHER-ORDER ABILITIES & PROFESSIONAL SKILLS

In the 21st century, professional skills (also known as soft skills, generic skills or transferable skills) have emerged as important attributes of a graduate engineer. Studies show that Industry/ employers around the world value these abilities more than the disciplinary knowledge. This is also reflected in the NBA graduate attributes wherein six out of twelve attributes belong to this category, viz. (1) communication, (2) teamwork, (3) understanding ethics and professionalism, (4) understanding global and societal contexts, (5) lifelong learning, and (6) knowledge of contemporary issues. Further, higher-order cognitive abilities like critical thinking, problem-solving and making informed decisions are also crucial for a graduate to succeed in the emerging world. Though the employers consider these professional skills and higher abilities as important, students are weak in them. The main challenge surrounding them is that they are difficult to assess through existing conventional examination system.

## 1. Innovative Educational Experiences to Teach and Assess

One of the main obstacles in addressing these outcomes is the limitation of educational experience we create within our engineering programs. Most of the coursework in our programs are oriented towards teaching technical knowledge and skills; hence, the assessment is limited to those abilities. However, acquiring the professional outcomes may not result simply from participation in a particular class or set of classes. Rather, these outcomes are more often acquired or influenced through sources both in and outside the classroom [4].

To address these challenges, comprehensive reforms are needed in the way we design our curriculum, student learning experiences and assessment of the outcomes. Worldwide several attempts are being made to address these challenges. Following are the few educational experiences that are recommended to teach and assess professional outcomes and higher-order cognitive abilities:

- Course projects
- Open-ended experiments in laboratories
- Project-based learning modules
- MOOCs
- Co-Curricular experiences
- Mini / Minor projects
- Final year projects
- Internship experiences
- E-portfolios of student works

## 2. Using Scoring Rubrics as Assessment Tool

To evaluate the above, student works for attainment of course outcomes and hence POs, it is of

utmost importance to have reliable methods / proper assessment tools. Rubrics provide a powerful tool for assessment and grading of student work. They can also serve as a transparent and inspiring guide to learning. Rubrics are scoring, or grading tool used to measure a students' performance and learning across a set of criteria and objectives. Rubrics communicate to students (and to other markers) your expectations in the assessment, and what you consider important.

There are three components within rubrics namely (i) criteria / performance Indicator: the aspects of performance that will be assessed, (ii) descriptors: characteristics that are associated with each dimension, and (iii) scale/level of performance: a rating scale that defines students' level of mastery within each criterion.

| Communication Skills |                       |                        |                   |                |  |
|----------------------|-----------------------|------------------------|-------------------|----------------|--|
|                      | Unsatisfactory<br>1   | Developing<br>2        | Satisfactory<br>3 | Exemplary<br>4 |  |
| Performance criteria | <div>Scales</div>     |                        |                   |                |  |
| Performance criteria |                       |                        |                   |                |  |
| Performance criteria | <div>Dimensions</div> |                        |                   |                |  |
| Performance criteria |                       |                        |                   |                |  |
|                      |                       | <div>Descriptors</div> |                   |                |  |
|                      |                       |                        |                   |                |  |

Fig. 4: Examples of Rubrics (Accessed from Rogers 2010)

### 3. Open-Book Examinations

In the earlier sections it was noted that the traditional written examinations have a significant weakness that they tend to encourage rote learning and more superficial application of knowledge. This deficiency can be overcome by "open-book examination". Open-book examination is similar to time constrained written examinations but designed in a way that allows students to refer to either class notes, textbooks, or other approved material while answering questions. They are particularly useful if you want to test skills in application, analysis and evaluation, i.e. higher levels of Bloom's taxonomy. However, in a program, the courses or the curriculum areas that are best suited to an open-book exam are to be carefully chosen.

#### **Advantages of open-book examinations**

1. Less demanding on memory and hence less stressful
2. Questions can emphasise more on problem-solving, application of knowledge and higher-order thinking rather than simple recall of facts.
3. Assessment questions can reflect real-life situations that require comprehension, information retrieval and synthesising skills of the students to solve.

#### **Designing a good open-book examination**

- Set questions that require students to do things with the information available to them, rather than to merely locate the correct information and then summarize or rewrite it.
- The questions in open-book exam must take advantage of the format, and give more weightage

to the application of knowledge, critical thinking and use of resources for solving real complex engineering problems.

- As the nature of questions is complex, it is to be ensured that the students get enough time. Open book test questions typically take longer time compared to traditional examinations. It is advisable either to set less number of questions that encompass 2 or 3 concepts taught or allocate longer duration of time for the examinations.

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# APPENDIX

Competencies and Performance Indicators (PIs)

Computer Science & Engineering/Information Technology Programs

## Appendix-A

**PO 1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems.

| Competency                                                                     | Indicators                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.2 Demonstrate competence in mathematical modelling                           | 1.2.1 Apply the knowledge of discrete structures, linear algebra, statistics and numerical techniques to solve problems<br>1.2.2 Apply the concepts of probability, statistics and queuing theory in modeling of computer-based system, data and network protocols. |
| 1.5 Demonstrate competence in basic sciences                                   | 1.5.1 Apply laws of natural science to an engineering problem                                                                                                                                                                                                       |
| 1.6 Demonstrate competence in engineering fundamentals                         | 1.6.1 Apply engineering fundamentals                                                                                                                                                                                                                                |
| 1.7 Demonstrate competence in specialized engineering knowledge to the program | 1.7.1 Apply theory and principles of computer science and engineering to solve an engineering problem                                                                                                                                                               |

**PO 2: Problem analysis:** Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

| Competency                                                                                         | Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.1 Demonstrate an ability to identify and formulate complex engineering problem                   | 2.5.1 Evaluate problem statements and identifies objectives<br>2.5.2 Identify processes/modules/algorithms of a computer-based system and parameters to solve a problem<br>2.5.3 Identify mathematical algorithmic knowledge that applies to a given problem                                                                                                                                                                                  |
| 2.6 Demonstrate an ability to formulate a solution plan and methodology for an engineering problem | 2.6.1 Reframe the computer-based system into interconnected subsystems<br>2.6.2 Identify functionalities and computing resources.<br>2.6.3 Identify existing solution/methods to solve the problem, including forming justified approximations and assumptions<br>2.6.4 Compare and contrast alternative solution/methods to select the best methods<br>2.6.5 Compare and contrast alternative solution processes to select the best process. |
| 2.7 Demonstrate an ability to formulate and interpret a model                                      | 2.7.1 Able to apply computer engineering principles to formulate modules of a system with required applicability and performance.<br>2.7.2 Identify design constraints for required performance criteria.                                                                                                                                                                                                                                     |
| 2.8 Demonstrate an ability to execute a solution process and analyze results                       | 2.8.1 Applies engineering mathematics to implement the solution.<br>2.8.2 Analyze and interpret the results using contemporary tools.<br>2.8.3 Identify the limitations of the solution and sources/causes.<br>2.8.4 Arrive at conclusions with respect to the objectives.                                                                                                                                                                    |

**PO 3: Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

| Competency                                                                             | Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.5 Demonstrate an ability to define a complex/open-ended problem in engineering terms | 3.5.1 Able to define a precise problem statement with objectives and scope.<br>3.5.2 Able to identify and document system requirements from stakeholders.<br>3.5.3 Able to review state-of-the-art literature to synthesize system requirements.<br>3.5.4 Able to choose appropriate quality attributes as defined by ISO/IEC/IEEE standard.<br>3.5.5 Explore and synthesize system requirements from larger social and professional concerns.<br>3.5.6 Able to develop software requirement specifications (SRS). |
| 3.6 Demonstrate an ability to generate a diverse set of alternative design solutions   | 3.6.1 Able to explore design alternatives.<br>3.6.2 Able to produce a variety of potential design solutions suited to meet functional requirements.<br>3.6.3 Identify suitable non-functional requirements for evaluation of alternate design solutions.                                                                                                                                                                                                                                                           |
| 3.7 Demonstrate an ability to select optimal design scheme for further development     | 3.7.1 Able to perform systematic evaluation of the degree to which several design concepts meet the criteria.<br>3.7.2 Consult with domain experts and stakeholders to select candidate engineering design solution for further development                                                                                                                                                                                                                                                                        |
| 3.8 Demonstrate an ability to advance an engineering design to defined end state       | 3.8.1 Able to refine architecture design into a detailed design within the existing constraints.<br>3.8.2 Able to implement and integrate the modules.<br>3.8.3 Able to verify the functionalities and validate the design.                                                                                                                                                                                                                                                                                        |

**PO 4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

| Competency                                                                                                                          | Indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.4 Demonstrate an ability to conduct investigations of technical issues consistent with their level of knowledge and understanding | 4.4.1 Define a problem for purposes of investigation, its scope and importance<br>4.4.2 Able to choose appropriate procedure/algorithm, dataset and test cases.<br>4.4.3 Able to choose appropriate hardware/software tools to conduct the experiment.                                                                                                                                                                                                       |
| 4.5 Demonstrate an ability to design experiments to solve open-ended problems                                                       | 4.5.1 Design and develop appropriate procedures/methodologies based on the study objectives                                                                                                                                                                                                                                                                                                                                                                  |
| 4.6 Demonstrate an ability to analyze data and reach a valid conclusion                                                             | 4.6.1 Use appropriate procedures, tools and techniques to collect and analyze data<br>4.6.2 Critically analyze data for trends and correlations, stating possible errors and limitations<br>4.6.3 Represent data (in tabular and/or graphical forms) so as to facilitate analysis and explanation of the data, and drawing of conclusions<br>4.6.4 Synthesize information and knowledge about the problem from the raw data to reach appropriate conclusions |

**PO 5: Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

| Competency                                                                                                           | Indicators                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.4 Demonstrate an ability to identify/create modern engineering tools, techniques and resources                     | 5.4.1 Identify modern engineering tools, techniques and resources for engineering activities<br>5.4.2 Create/adapt/modify/extend tools and techniques to solve engineering problems                                                                                |
| 5.5 Demonstrate an ability to select and apply discipline-specific tools, techniques and resources                   | 5.5.1 Identify the strengths and limitations of tools for (i) acquiring information, (ii) modeling and simulating, (iii) monitoring system performance, and (iv) creating engineering designs.<br>5.5.2 Demonstrate proficiency in using discipline-specific tools |
| 5.6 Demonstrate an ability to evaluate the suitability and limitations of tools used to solve an engineering problem | 5.6.1 Discuss limitations and validate tools, techniques and resources<br>5.6.2 Verify the credibility of results from tool use with reference to the accuracy and limitations, and the assumptions inherent in their use.                                         |

**PO 6: The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

| Competency                                                                                                                                                  | Indicators                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.3 Demonstrate an ability to describe engineering roles in a broader context, e.g. pertaining to the environment, health, safety, legal and public welfare | 6.3.1 Identify and describe various engineering roles; particularly as pertains to protection of the public and public interest at the global, regional and local level |
| 6.4 Demonstrate an understanding of professional engineering regulations, legislation and standards                                                         | 6.4.1 Interpret legislation, regulations, codes, and standards relevant to your discipline and explain its contribution to the protection of the public                 |

**PO 7: Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and the need for sustainable development.

| Competency                                                                                                                               | Indicators                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.3 Demonstrate an understanding of the impact of engineering and industrial practices on social, environmental and in economic contexts | 7.3.1 Identify risks/impacts in the life-cycle of an engineering product or activity<br>7.3.2 Understand the relationship between the technical, socio-economic and environmental dimensions of sustainability    |
| 7.4 Demonstrate an ability to apply principles of sustainable design and development                                                     | 7.4.1 Describe management techniques for sustainable development<br>7.4.2 Apply principles of preventive engineering and sustainable development to an engineering activity or product relevant to the discipline |

**PO 8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

| Competency                                               | Indicators                                                                                   |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 8.3 Demonstrate an ability to recognize ethical dilemmas | 8.3.1 Identify situations of unethical professional conduct and propose ethical alternatives |

| 8.4                                                                                                                                                                                                                                                                                                               | Demonstrate an ability to apply the Code of Ethics                                                                              | 8.4.1 Identify tenets of the ASME professional code of ethics<br>8.4.2 Examine and apply moral & ethical principles to known case studies                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PO 9: Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.                                                                                                                                                      |                                                                                                                                 |                                                                                                                                                                                                                                                                                                |
| Competency                                                                                                                                                                                                                                                                                                        |                                                                                                                                 | Indicators                                                                                                                                                                                                                                                                                     |
| 9.4                                                                                                                                                                                                                                                                                                               | Demonstrate an ability to form a team and define a role for each member                                                         | 9.4.1 Recognize a variety of working and learning preferences; appreciate the value of diversity on a team<br>9.4.2 Implement the norms of practice (e.g. rules, roles, charters, agendas, etc.) of effective team work, to accomplish a goal.                                                 |
| 9.5                                                                                                                                                                                                                                                                                                               | Demonstrate effective individual and team operations--communication, problem-solving, conflict resolution and leadership skills | 9.5.1 Demonstrate effective communication, problem-solving, conflict resolution and leadership skills<br>9.5.2 Treat other team members respectfully<br>9.5.3 Listen to other members<br>9.5.4 Maintain composure in difficult situations                                                      |
| 9.6                                                                                                                                                                                                                                                                                                               | Demonstrate success in a team-based project                                                                                     | 9.6.1 Present results as a team, with smooth integration of contributions from all individual efforts                                                                                                                                                                                          |
| <b>PO 10: Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions |                                                                                                                                 |                                                                                                                                                                                                                                                                                                |
| Competency                                                                                                                                                                                                                                                                                                        |                                                                                                                                 | Indicators                                                                                                                                                                                                                                                                                     |
| 10.4                                                                                                                                                                                                                                                                                                              | Demonstrate an ability to comprehend technical literature and document project work                                             | 10.4.1 Read, understand and interpret technical and non-technical information<br>10.4.2 Produce clear, well-constructed, and well-supported written engineering documents<br>10.4.3 Create flow in a document or presentation - a logical progression of ideas so that the main point is clear |
| 10.5                                                                                                                                                                                                                                                                                                              | Demonstrate competence in listening, speaking, and presentation                                                                 | 10.5.1 Listen to and comprehend information, instructions, and viewpoints of others<br>10.5.2 Deliver effective oral presentations to technical and non-technical audiences                                                                                                                    |
| 10.6                                                                                                                                                                                                                                                                                                              | Demonstrate the ability to integrate different modes of communication                                                           | 10.6.1 Create engineering-standard figures, reports and drawings to complement writing and presentations<br>10.6.2 Use a variety of media effectively to convey a message in a document or a presentation                                                                                      |
| <b>PO 11: Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's work, as a member and leader in a team, to manage projects and in multidisciplinary environments.                                                     |                                                                                                                                 |                                                                                                                                                                                                                                                                                                |
| Competency                                                                                                                                                                                                                                                                                                        |                                                                                                                                 | Indicators                                                                                                                                                                                                                                                                                     |
| 11.4                                                                                                                                                                                                                                                                                                              | Demonstrate an ability to evaluate the economic and financial performance of an engineering activity                            | 11.4.1 Describe various economic and financial costs/benefits of an engineering activity<br>11.4.2 Analyze different forms of financial statements to evaluate the financial status of an engineering project                                                                                  |
| 11.5                                                                                                                                                                                                                                                                                                              | Demonstrate an ability to compare and contrast the costs/benefits of alternate proposals for an engineering activity            | 11.5.1 Analyze and select the most appropriate proposal based on economic and financial considerations.                                                                                                                                                                                        |

| 11.6                                                                                                                                                                                            | Demonstrate an ability to plan/manage an engineering activity within time and budget constraints | 11.6.1 Identify the tasks required to complete an engineering activity, and the resources required to complete the tasks.<br>11.6.2 Use project management tools to schedule an engineering project, so it is completed on time and on budget.                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PO 12: Life-long learning:</b> Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |                                                                                                  |                                                                                                                                                                                                                                                                                                 |
| Competency                                                                                                                                                                                      |                                                                                                  | Indicators                                                                                                                                                                                                                                                                                      |
| 12.4                                                                                                                                                                                            | Demonstrate an ability to identify gaps in knowledge and a strategy to close these gaps          | 12.4.1 Describe the rationale for the requirement for continuing professional development<br>12.4.2 Identify deficiencies or gaps in knowledge and demonstrate an ability to source information to close this gap                                                                               |
| 12.5                                                                                                                                                                                            | Demonstrate an ability to identify changing trends in engineering knowledge and practice         | 12.5.1 Identify historic points of technological advance in engineering that required practitioners to seek education in order to stay current<br>12.5.2 Recognize the need and be able to clearly explain why it is vitally important to keep current regarding new developments in your field |
| 12.6                                                                                                                                                                                            | Demonstrate an ability to identify and access sources for new information                        | 12.6.1 Source and comprehend technical literature and other credible sources of information<br>12.6.2 Analyze sourced technical and popular information for feasibility, viability, sustainability, etc.                                                                                        |



# APPENDIX

Sample questions for Bloom's Taxonomy levels

## Appendix-B

### SAMPLES QUESTIONS FOR BLOOMS TAXONOMY LEVELS:

#### 1. REMEMBER

| Skill Demonstrated                                                                                                                                                                                                                                                                                                                                                                        | Question Ques / Verbs for tests                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Ability to recall of information like, facts, conventions, definitions, jargon, technical terms, classifications, categories, and criteria</li><li>• ability to recall methodology and procedures, abstractions, principles, and theories in the field</li><li>• knowledge of dates, events, places</li><li>• mastery of subject matter</li></ul> | list, define, describe, state, recite, recall, identify, show, label, tabulate, quote, name, who, when, where, etc. |

#### Sample Questions:

1. State Ohm's law
2. List the physical and chemical properties of silicon
3. List the components of A/D converter
4. List the arithmetic operators available in C in increasing order of precedence.
5. Define the purpose of a constructor.
6. Define the terms: Sensible heat, Latent heat and Total heat of evaporation
7. List the assembler directives.
8. Describe the process of galvanisation and tinning
9. Write truth table and symbol of AND, OR, NOT, XNOR gates
10. Define the terms: Stress, Working stress and Factor of safety.
11. What is the difference between declaration and definition of a variable/function?
12. List the different storage class specifiers in C.
13. What is the use of local variables?
14. What is a pointer to a pointer?
15. What are the valid places for the keyword "break" to appear?
16. What is a self-referential structure?

## 2. UNDERSTAND

| Skill Demonstrated                                                                                                                                                                                                                                                  | Question Ques / Verbs for tests                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• understanding information</li><li>• grasp meaning</li><li>• translate knowledge into new context</li><li>• interpret facts, compare, contrast</li><li>• order, group, infer causes</li><li>• predict consequences</li></ul> | describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss |

### Sample Questions:

1. Explain the importance of sustainability in Engineering design
2. Explain the behaviour of PN junction diode under different bias conditions
3. Describe the characteristics of SCR and transistor equivalent for a SCR
4. Explain the terms: Particle, Rigid body and Deformable body giving two examples for each.
5. How many values of the variable num must be used to completely test all branches of the following code fragment?

```
if (num>0)
    if (value<25)
    {
        value=10*num;
        if(num<12)
            value=value/10;
    }
else
    Value=20*num;
else
    Value=30*num
```

6. Discuss the effect of Make in India initiative on the Indian manufacturing Industry.
7. Summarise the importance of ethical code of conduct for engineering professionals
8. Explain the syntax for 'for loop'.
9. What is the difference between including the header file with-in angular braces < > and double quotes " "?
10. What is the meaning of base address of the array?
11. What is the difference between actual and formal parameters?
12. Explain the different ways of passing parameters to the functions.
13. Explain the use of comma operator (,).
14. Differentiate between entry and exit controlled loops.
15. How is an array different from linked list?

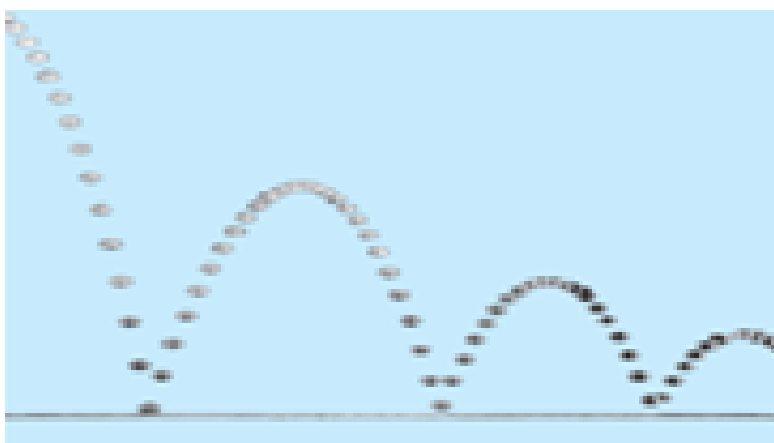
### 3. APPLY

| Skill Demonstrated                                                                                                                                                                                                                                          | Question Ques / Verbs for tests                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>use information</li> <li>use methods, concepts, laws, theories in new situations</li> <li>solve problems using required skills or knowledge</li> <li>Demonstrating correct usage of a method or procedure</li> </ul> | calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify |

#### Sample Questions:

- Model and realize the following behaviors using diodes with minimum number of digital inputs.
  - Turning on of a burglar alarm only during night time when the locker door is opened.
  - Providing access to an account if either date of birth or registered mobile number or both are correct.
  - Updating the parking slot empty light in the basement of a shopping mall.
- One of the resource persons needs to address a huge crowd (nearly 400 members) in the auditorium. A system is to be designed in such a way that everybody attending the session should be able to hear properly and clearly without any disturbance. Identify the suitable circuit to boost the voice signal and explain its functionality in brief.
- A ladder 5.0 m long rests on a horizontal ground & leans against a smooth vertical wall at an angle  $20^\circ$  with the vertical. The weight of the ladder is 900 N and acts at its middle. The ladder is at the point of sliding, when a man weighing 750 N stands on a rung 1.5 m from the bottom of the ladder. Calculate the coefficient of friction between the ladder & the floor.
- A ball is dropped from 6 meters above a flat surface. Each time the ball hits the surface after falling a distance  $h$ , it rebounds a distance  $rh$ . What will be the total distance the ball travels in each of the following cases.

(a)  $r > 1$     (b)  $0 < r < 1$     (c)  $r = 1$



- The region bounded by the curves  $y = e^{(-1)x}$ ,  $y = 0$ ,  $x = 1$ , and  $x = 5$  is rotated about the  $x$ -axis. Use Simpson's Rule with  $n = 8$  to estimate the volume of the resulting solid.
- An electric train is powered by machine which takes the supply from 220 V DC rail running above the train throughout. Machine draws current of 100 A from the DC rail to account for high torque during starting and runs at 700 r.p.m initially. Calculate the new speed of the train once it picks up the speed

where the torque output required is only 70% of starting torque. Assume the motor has a resistance of  $0.1\Omega$  across its terminals.

7. Write an algorithm to implement a stack using queue.
8. A single array  $A[1..MAXSIZE]$  is used to implement two stacks. The two stacks grow from opposite ends of the array. Variables  $top1$  and  $top2$  ( $top1 < top2$ ) point to the location of the topmost element in each of the stacks. What is the condition for “stack full”, if the space is to be used efficiently.
9. Consider the following table of arrival time and burst time for three processes P0, P1 and P2.

| Process | Arrival time | Burst Time |
|---------|--------------|------------|
| P0      | 0 ms         | 9 ms       |
| P1      | 1 ms         | 4 ms       |
| P2      | 2 ms         | 9 ms       |

The pre-emptive shortest job first scheduling algorithm is used. Scheduling is carried out only at arrival or completion of processes. What is the average waiting time for the three processes?

10. A CPU generates 32-bit virtual addresses. The page size is 4 KB. The processor has a translation look-aside buffer (TLB) which can hold a total of 128-page table entries and is 4-way set associative. What is the minimum size of the TLB tag?

## 4. ANALYZE

| Skill Demonstrated                                                                                                                                                                            | Question Ques / Verbs for tests                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>break down a complex problem into parts.</li> <li>Identify the relationships and interaction between the different parts of complex problem</li> </ul> | classify, outline, break down, categorize, analyse, diagram, illustrate, infer, select |

### Sample Questions:

1. A class of 10 students consists of 5 males and 5 females. We intend to train a model based on their past scores to predict the future score. The average score of females is 60 whereas that of male is 80. The overall average of the class is 70. Give two ways of predicting the score and analyse them for fitting model.
2. Suppose that we want to select between two prediction models, M1 and M2. We have performed 10 rounds of 10-fold cross-validation on each model, whereas the same data partitioning in round one is used for both M1 and M2. The error rates obtained for M1 are 30.5, 32.2, 20.7, 20.6, 31.0, 41.0, 27.7, 26.0, 21.5, 26.0. The error rates for M2 are 22.4, 14.5, 22.4, 19.6, 20.7, 20.4, 22.1, 19.4, 16.2, 35.0. Comment on whether one model is significantly better than the other considering a significance level of 1%.
3. Return statement can only be used to return a single value. Can multiple values be returned from a function? Justify your answer.
4. Bob wrote a program using functions to find sum of two numbers whereas Alex wrote the statements to find the sum of two numbers in the `main()` function only. Which of the two methods is efficient in execution and why?
5. Carly wants to store the details of students studying in 1st year and later on wishes to retrieve the

information about the students who score the highest marks in each subject. Specify the scenario where the data can be organized as a single 2-D array or as multiple 1-D arrays.

6. Dave is working on a Campus Management Software but is unable to identify the maximum number of students per course. He decided to implement the same using arrays but discovered that there is memory wastage due to over-provisioning. Which method of memory storage should be used by Dave and how it can be implemented using C?
7. Albert is working on a 32-bit machine whereas Julie is working on a 64-bit machine. Both wrote the same code to find factorial of a number but Albert is unable to find factorial of a number till 9 whereas Julie is able to find the factorial of higher number. Identify the possible reason why Albert is unable to find the factorial. Suggest some changes in the code so that Albert can handle bigger inputs.
8. While writing a C code, the problem faced by the programmers is to find if the parenthesis is balanced or not. Write an algorithm to check if the parenthesis in C code are balanced. Initially your code should work for balanced { and } braces.
9. Swapping of the data in a linked list can be performed by swapping the contents in the linked list. Can the contents of a linked list be swapped without actually swapping the data?

## 5. EVALUATE

| Skill Demonstrated                                                                                                                                                                                                                                                                                           | Question Ques / Verbs for tests                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>compare and discriminate between ideas</li> <li>assess value of theories, presentations</li> <li>make choices based on reasoned argument</li> <li>verify value of evidence</li> <li>recognize subjectivity</li> <li>use of definite criteria for judgments</li> </ul> | assess, decide, choose, rank, grade, test, measure, defend, recommend, convince, select, judge, support, conclude, argue, justify, compare, summarize, evaluate |

## 6. CREATE

| Skill Demonstrated                                                                                                                                                                                                                                  | Question Ques / Verbs for tests                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>use old ideas to create new ones</li> <li>Combine parts to make (new) whole,</li> <li>generalize from given facts</li> <li>relate knowledge from several areas</li> <li>predict, draw conclusions</li> </ul> | design, formulate, build, invent, create, compose, generate, derive, modify, develop, integrate |

Both higher order cognitive skills 'Evaluate' and 'Create' are difficult to assess in time-limited examinations. These need to be assessed in variety of student works like projects, open ended problem-solving exercises etc. Typical examples of problem statements or need statements which need higher order abilities to solve are given below

### Sample Problem / Need statements:

1. Automatic tethering of milking machine to the udder of a cow. A milk diary wants to automate the milking process. The milking process involves attaching the milking cups to the teats. Design a system for the same.
2. An electric vehicle uses LloN batteries. The batteries have to be charged and get discharged during use.

The batteries require continuous monitoring during charging and discharging so that they remain healthy and yield a long life. Design a system to monitor and manage the health of the batteries.

3. A Biotech industry needs automation for filling its product into 20 ltr bottles. Design a system to meter the flow into the bottles so that each bottle has 20 ltr of the liquid. There will be more than one filling station and the system has to monitor all the filling stations as well as keep count of the total production on a daily basis.
4. Microwave Doppler radar with a range of 9m are available for motion detection. Design a surround view monitoring system for a 3 wheeler to detect human obstacles while the vehicle is in motion.
5. Design a system to assist the driver by using cameras to detect lane markers and pedestrians while the vehicle is in motion.
6. Develop a small size USB 2.0 / 3.0 CMOS camera system which can be used for industrial inspection, medical applications, microscopy, etc. The system should be able to capture the image quickly and be able to process the captured image and then store it also

# APPENDIX

## Model Question Papers

### Appendix-C

## MODEL QUESTION PAPER

Course: Programming for Problem solving (ESC 103)

Maximum Marks :100; Duration: 03 hours

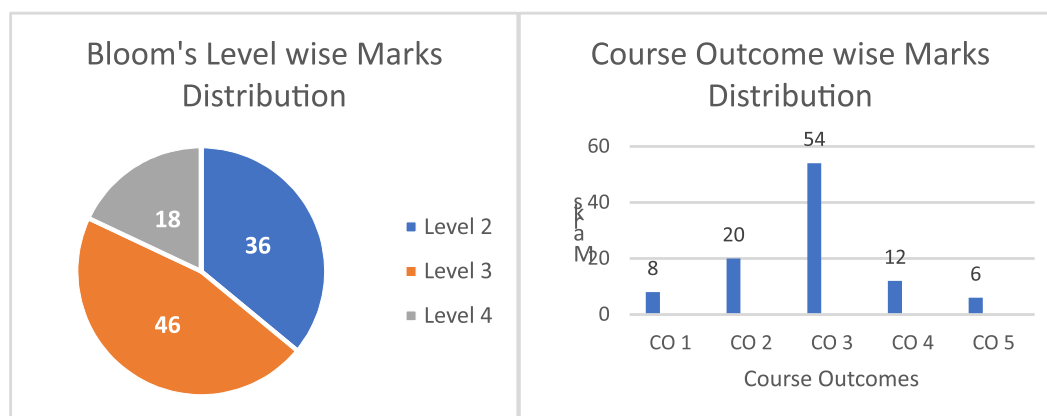
| Q.No | Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Marks | CO  | BL | PI    |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|----|-------|
| 1(a) | Explain the steps involved in solving a problem using computer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 08    | CO1 | L2 | 1.4.1 |
| 1(b) | Write an algorithm to find roots of a quadratic equation $ax^2 + bx + c = 0$ reading the values of a, b and c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 12    | CO2 | L3 | 1.4.1 |
| 2(a) | Compare if-else-if and switch statement giving examples for their relevant use.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 08    | CO2 | L2 | 1.4.1 |
| 2b   | Write a C program that reads a given integer number and checks whether it a palindrome. A palindrome is a number that has same value even when it is reversed. Eg: 12321 is a palindrome.                                                                                                                                                                                                                                                                                                                                                                                             | 12    | CO3 | L3 | 1.4.1 |
| 3a   | Compare the working of three looping constructs of C language giving their syntax.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 08    | CO3 | L2 | 1.4.1 |
| 3b   | <p>What does the following program do?</p> <pre>#include &lt;stdio.h&gt; int main() {     char ch;     int vcnt = 0, ccnt=0;     for ( ch = getchar(); ch != '\n'; ch=getchar()){         if(ch=='a'    ch=='e'    ch=='i'    ch=='o'    ch=='u'               ch=='A'    ch=='E'    ch=='I'    ch=='O'    ch=='U')             vcnt++;         else if((ch &gt;= 'a' &amp;&amp; ch &lt;= 'z')    (ch &gt;= 'A' &amp;&amp; ch &lt;= 'Z'))             ccnt++;     }     printf( " %d  %d\n", vcnt, ccnt); }</pre> <p>Rewrite the above program using while and switch constructs.</p> | 12    | CO4 | L4 | 1.4.1 |
| 4a   | Compare call by value and call by reference with relevant examples.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 8     | CO3 | L2 | 1.4.1 |
| 4b   | Write a C function to find the largest and smallest in a given list of integers of size n using call by reference:<br>void minmax( int list[ ], int n, int *min, int *max);                                                                                                                                                                                                                                                                                                                                                                                                           | 12    | CO3 | L3 | 1.4.1 |
| 5a   | Explain at least four file handling operations available in C language giving their syntax.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 4     | CO3 | L2 | 1.4.1 |
| 5b   | Identify the bug in the following function written to return the swapped values of two integer variables given:                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |     |    |       |

|    |                                                                                                                                                                                                                     |    |     |    |       |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|----|-------|
|    | <pre>int swap( int *x, int *y) {     int *temp;     temp = x, x=y, y = temp; }</pre>                                                                                                                                | 6  | C05 | L4 | 1.4.1 |
| 5c | Define a structure to store time with three components hours, mins and seconds. Write a modular C program to compute the time taken by an athlete to complete a marathon reading the start and end time of his run. | 10 | C03 | L3 | 1.4.1 |

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes

PO – Program Outcomes; PI Code – Performance Indicator Code



## MODEL QUESTION PAPER FOR END SEMESTER EXAMINATION

**Course Name:** Programming for Problem Solving

**Duration:** 3 hrs. ; Max. Marks: 100

### Instructions:

- Attempt five questions selecting ONE from each section. Question 9 (Section E) is compulsory.
- All the questions carry equal marks.
- Draw neat diagrams wherever applicable.

| Q. No            | Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Marks | BL  | CO    | PO  | PI Code      |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|-------|-----|--------------|
| <b>Section-A</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |     |       |     |              |
| 1.               | a. What is an algorithm? Explain the characteristics of an algorithm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2+6   | 1,2 | 2     | 1   | 1.4.1        |
|                  | b. Write an algorithm to find angle between hour and minute hands of a clock at a given time.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7     | 3   | 3     | 1   | 1.4.1        |
|                  | c. Is it mandatory to declare main() function with return type as void or int. What will be the effect if there is no return type declared for main() function?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3+2   | 4   | 3     | 1   | 1.4.1        |
| <b>OR</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |     |       |     |              |
| 2.               | a. What is the difference between definition and declaration in C? When a user writes "int x;" is it treated as declaration or definition in C.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3+2   | 2,4 | 3     | 1   | 1.4.1        |
|                  | b. Write a program in C to find largest of 3 positive integer numbers using conditional operators.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7     | 3   | 3     | 1,2 | 1.4.1, 2.2.4 |
|                  | c. What is meant by iterative statements? What are the different types of iterative statements in C?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 8     | 1,2 | 3     | 1   | 1.4.1        |
| <b>Section-B</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |     |       |     |              |
| 3.               | a. Bob has placed N objects in a row which are marked with a number equal to their weight in Kg. He wants to check whether the objects are in increasing order of their weights or not. Write a C program to help Bob.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 12    | 3   | 3,6,7 | 1,2 | 1.4.1, 2.2.4 |
|                  | b. Differentiate between Big-O and Big-Omega notation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4     | 2   | 3     | 1   | 1.4.1        |
|                  | c. What is the role of index in an array? How are the elements of a 2D array accessed in C?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2+2   | 2   | 3     | 1   | 1.4.1        |
| <b>OR</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |     |       |     |              |
| 4.               | a. Ram is conducting a study which is based on counting the number of cars crossing the highway. Every hour he generates a random string containing sequence of characters <rbwbwr...>, where r represents red color, w denotes white color and b denotes blue color cars. The string is forwarded to Shyam for analysis who computes the number of red, blue and white color cars crossing Ram every hour. Assume that Ram works for 5 hours in a day, help Shyam generate a daily report containing the following:<br>i. Total number of different colour cars crossing Ram in an hour.<br>ii. Total number of different colour cars crossing Ram in a day.<br>iii. Total number of cars crossing Ram in a day. | 4+4+4 | 3   | 3,6,7 | 1,2 | 1.4.1, 2.2.4 |

|                                        |                                                                                                                                                                                                                                                                                |       |     |       |     |       |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|-------|-----|-------|
|                                        | b. What is a variable? Explain the ways to declare scope of a variable.                                                                                                                                                                                                        | 2+6   | 1,2 | 3     | 1   | 1.4.1 |
| <b>Section-C</b>                       |                                                                                                                                                                                                                                                                                |       |     |       |     |       |
| 5.                                     | a. Write a program which will read positive integer numbers from the users and compute the sum if the number can be expressed as power of 2. The test whether a number can be expressed as power of 2 will be done using a function power_of_two(int a).                       | 12    | 3   | 3,6,7 | 1,2 | 1.4.1 |
|                                        | b. What is recursion? Differentiate between homogeneous and heterogeneous recursion with the help of an example.                                                                                                                                                               | 2+3+3 | 2   | 3     | 1   | 1.4.1 |
| <b>OR</b>                              |                                                                                                                                                                                                                                                                                |       |     |       |     |       |
| 6.                                     | a. What are the different ways to pass parameters to a function? Explain with the help of a suitable example.                                                                                                                                                                  | 4+4   | 2   | 3,5   | 1   | 1.4.1 |
|                                        | b. Is it possible to return multiple values from a function? Justify the statement with the help of an example.                                                                                                                                                                | 4+8   | 3   | 3,6,7 | 1,2 | 1.4.1 |
| <b>Section-D</b>                       |                                                                                                                                                                                                                                                                                |       |     |       |     |       |
| 7.                                     | a. What is a structure? What is the benefit offered by using a structure over multiple arrays?                                                                                                                                                                                 | 2+6   | 2   | 5     | 1   | 1.4.1 |
|                                        | b. Ram is working on a project which requires returning multiple values from a function. He observed that a return statement can only be used to return a single value from a function. How the function should be implemented so that multiple values can be returned by Ram? | 12    | 4   | 5     | 1   | 1.4.1 |
| <b>OR</b>                              |                                                                                                                                                                                                                                                                                |       |     |       |     |       |
| 8.                                     | a. Write a program that reads a number as input from the user. The entered number is written to a file "even.txt" if the input is even else it is written to "odd.txt". Write a C code to perform the desired task.                                                            | 12    | 3   | 5     | 1   | 1.4.1 |
|                                        | b. What are the different methods to open a file? Explain each with the help of a C program.                                                                                                                                                                                   | 3+5   | 2   | 5     | 1   | 1.4.1 |
| <b>Section-E (Compulsory Question)</b> |                                                                                                                                                                                                                                                                                |       |     |       |     |       |
| 9.                                     | a. What is a compiler? List names of any 2 compilers.                                                                                                                                                                                                                          | 2 ½   | 1   | 1     | 1   | 1.4.1 |
|                                        | b. What are the benefits of designing a flowchart for solving a problem?                                                                                                                                                                                                       | 2 ½   | 4   | 2     | 1   | 1.4.1 |
|                                        | c. What is the output of the following code?<br>int main(){<br>int x=10;<br>int y=sizeof(x/2);<br>printf("%d",y); }                                                                                                                                                            | 2 ½   | 3   | 4     | 1   | 1.4.1 |
|                                        | d. What is the difference between creating constant using #define macro and const keyword?                                                                                                                                                                                     | 2 ½   | 3   | 3     | 1   | 1.4.1 |
|                                        | e. What is the role of function prototype? When is it required in C?                                                                                                                                                                                                           | 2 ½   | 2   | 3     | 1   | 1.4.1 |
|                                        | f. Which of the following are unary operators in C? State reason for your answer.<br>a. !<br>b. sizeof<br>c. ~<br>d. &&                                                                                                                                                        | 2 ½   | 2   | 3     | 1   | 1.4.1 |

|                                                                                                                                                                                |     |   |   |   |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|---|---|-------|
| g. Which of the following special symbol allowed in a variable name? State reason for your answer.<br>a. * (asterisk)<br>b.   (pipeline)<br>c. - (hyphen)<br>d. _ (underscore) | 2 ½ | 2 | 3 | 1 | 1.4.1 |
| h. In which header file is the NULL macro defined? State reason for your answer.<br>a. stdio.h<br>b. stddef.h<br>c. stdio.h and stddef.h<br>d. math.h                          | 2 ½ | 2 | 3 | 1 | 1.4.1 |

BL – Bloom’s Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes

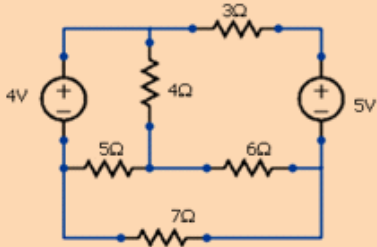
PO – Program Outcomes; PI Code – Performance Indicator Code

## MODEL QUESTION PAPER

**Total Duration (H:M): 3:00**

**Course :** Basic Electrical Engineering (ESC101)

**Maximum Marks :100**

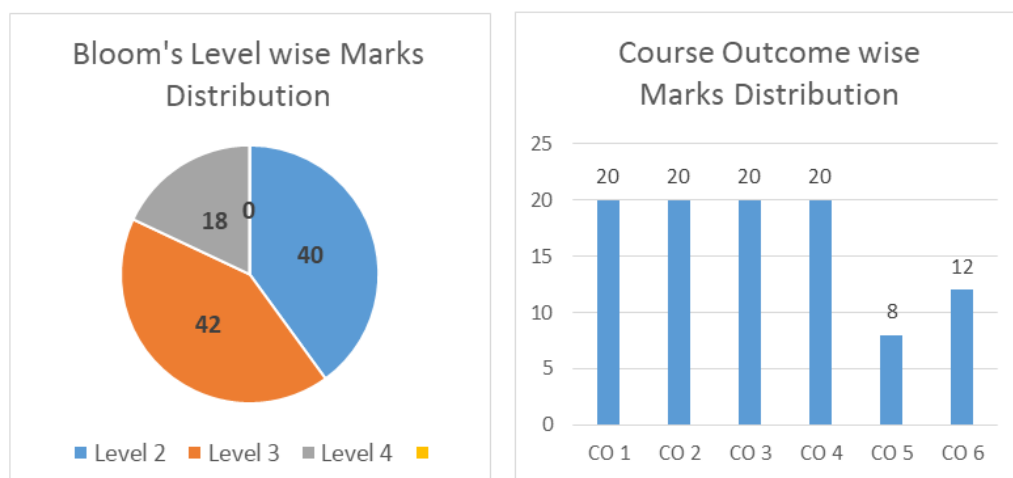
| Q.No | Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Marks | CO  | BL | PI    |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|----|-------|
| 1(a) | Calculate current through 4 Ω resistor using Kirchoff’s Laws? Verify the same using Superposition Theorem.<br>                                                                                                                                                                                                                                                           | 12    | CO1 | L3 | 1.3.1 |
| 1(b) | Derive the expression for the transient current in a series ‘R-L’ circuit when a ‘dc’ voltage of V volts is applied. Sketch time variation of current in the circuit.                                                                                                                                                                                                                                                                                       | 8     | CO1 | L2 | 1.3.1 |
| 2(a) | Two impedances $Z_1 = 15 + j12\Omega$ and $Z_2 = 8 - j5\Omega$ are connected in parallel. If the potential difference across one of the impedance is 250 V, calculate<br>i) total current and branch currents<br>ii) total power and power consumed in each branch<br>iii) overall p.f.<br>IV) draw the phasor diagram                                                                                                                                      | 12    | CO2 | L3 | 1.3.1 |
| 2b   | It is desired to operate a 100 W, 120 V, electric bulb at its rated current on a 240 V, 50 Hz supply. The simplest arrangement is to use either (a) a resistor, or (b) a capacitor or (c) an inductor having 10 Ω resistance in series with the electric bulb so as to drop the excess voltage. Determine the value of the component used, the total power consumed and the power factor in each case. Giving reasons, state which alternative is the best. | 8     | CO2 | L4 | 1.3.1 |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |     |    |       |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|----|-------|
| 3a | A single phase 25 kVA 1000/2000 V, 50 Hz transformer has maximum efficiency of 98% at full load upf. Determine its efficiency at,<br>(a) 3/4th full load, unity power factor<br>(b) 3/4th full load 0.8 power factor                                                                                                                                                                                                                      | 12 | C03 | L3 | 1.3.1 |
| 3b | Explain the working of a practical transformer with relevant phasor diagram. and define voltage regulation.                                                                                                                                                                                                                                                                                                                               | 8  | C03 | L2 | 1.3.1 |
| 4a | A two pole 3 phase 50 Hz induction motor is running on load with a slip of 4%. Calculate the actual speed and the synchronous speed of the machine. Sketch the speed/ load characteristic of the machine.                                                                                                                                                                                                                                 | 8  | C04 | L2 | 1.3.1 |
| 4b | A wireless battery powered drilling machine operates on 24 V DC with constant speed and negligible field current. Initially when the machine is powered it runs at 1200 rpm and draws 0.5 A from the battery. Further when the drill bit starts drilling the hole, the speed reduces to 1120 rpm. Determine power requirement from the battery for drilling if the resistance of the armature is 0.2Ω. What is the power drawn initially? | 12 | C04 | L4 | 1.3.1 |
| 5a | Explain the working principle of a single phase pulse width modulated voltage source inverter with relevant circuit diagram and draw the output voltage wave form.                                                                                                                                                                                                                                                                        | 8  | C05 | L2 | 1.3.1 |
| 5b | To protect an expensive circuit component from being delivered too much power, you decide to incorporate a fast blowing fuse into the design. Knowing that the circuit component is connected to 12 V, its minimum power consumption is 12 watts and the maximum power it can safely dissipate is 100 watts, which of the three available fuse ratings should you select: 1A , 4A or 10 A? Give reasons.                                  | 6  | C06 | L4 | 1.3.1 |
| 5c | Calculate the i) ampere-hour and ii) watt-hour efficiency of a secondary cell which is discharged at a uniform rate of 30 A for 6 hours at an average terminal voltage of 2 V. It is then charged at a uniform rate of 40 A for 5 hours to restore it to its original condition. The terminal voltage during charging is 2.5 V.                                                                                                           | 6  | C06 | L3 | 1.3.1 |

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)

CO – Course Outcomes

PO – Program Outcomes; PI Code – Performance Indicator Code



# APPENDIX

## Sample Scoring Rubrics

### Appendix-D

## RUBRICS FOR COMMUNICATION (WRITTEN & ORAL)

| Component                | Proficient                                                                                                                                                                                                                                                                                                                            | Acceptable                                                                                                                                                                                                                                                                                                                          | Needs Improvements                                                                                                                                                                                                                                                                      |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Written Communication    | Report is well organized and clearly written. The underlying logic is clearly articulated and easy to follow. Words are chosen that precisely express the intended meaning and support reader comprehension. Diagrams or analyses enhance and clarify presentation of ideas. Sentences are grammatical and free from spelling errors. | Report is organized and clearly written for the most part. In some areas the logic or flow of ideas is difficult to follow. Words are well chosen with some minor exceptions. Diagrams are consistent with the text. Sentences are mostly grammatical and only a few spelling errors are present but they do not hinder the reader. | Report lacks an overall organization. Reader has to make considerable effort to understand the underlying logic and flow of ideas. Diagrams are absent or inconsistent with the text. Grammatical and spelling errors make it difficult for the reader to interpret the text in places. |
| Presentation Visual Aids | Slides are error-free and logically present the main components of the process and recommendations. Material is readable and the graphics highlight and support the main ideas.                                                                                                                                                       | Slides are error-free and logically present the main components of the process and recommendations. Material is mostly readable and graphics reiterate the main ideas.                                                                                                                                                              | Slides contain errors and lack a logical progression. Major aspects of the analysis or recommendations are absent. Diagrams or graphics are absent or confuse the audience.                                                                                                             |
| Oral Presentation        | Speakers are audible and fluent on their topic, and do not rely on notes to present or respond. Speakers respond accurately and appropriately to audience questions and comments.                                                                                                                                                     | Speakers are mostly audible and fluent on their topic, and require minimal referral to notes. Speakers respond to most questions accurately and appropriately.                                                                                                                                                                      | Speakers are often inaudible or hesitant, often speaking in incomplete sentences. Speakers rely heavily on notes. Speakers have difficulty responding clearly and accurately to audience questions.                                                                                     |
| Body Language            | Body language, as indicated by appropriate and meaningful gestures (e.g., drawing hands inward to convey contraction, moving arms up to convey lift, etc.) eye contact with audience, and movement, demonstrates a high level of comfort and connection with the audience.                                                            | Body language, as indicated by a slight tendency to repetitive and distracting gestures (e.g., tapping a pen, wringing hands, waving arms, clenching fists, etc.) and breaking eye contact with audience, demonstrates a slight discomfort with the audience.                                                                       | Body language, as indicated by frequent, repetitive and distracting gestures, little or no audience eye-contact, and /or stiff posture and movement, indicate a high degree of discomfort interacting with audience.                                                                    |

## RUBRICS FOR ASSESSMENT OF DESIGN PROJECTS

| Category                              | Needs Improvements                                                                                                                                                                       | Acceptable                                                                                                                                                                               | Proficient                                                                                                                                                                                                                               |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Purpose of the Project                | Does not clearly explain the intended outcome of the project or provides little information about the problem that was being solved, the need being met, or why the project was selected | Provides a description of the intended outcome of the project which includes information about the problem that was being solved or the need being met, and why the project was selected | Provides a detailed intended outcome of the project which includes information about the problem that was being solved or the need being met, and clearly articulates the reasons and decision-making process used to select the project |
| Research                              | Lacks awareness of similar work done by others in an unacceptable literary form                                                                                                          | Reflects awareness of similar work done by others and presents it in an acceptable literary format                                                                                       | • Reflects thorough understanding of similar work done by others and presents it in an acceptable literary format                                                                                                                        |
| Choices                               | Lacks justification of choices with little or no references to functional, aesthetic, social, economic, or environmental considerations                                                  | Justifies choices made with reference to functional, aesthetic, social, economic, or environmental considerations                                                                        | Demonstrates sophisticated justification of choices with reference to functional, aesthetic, social, economic, or environmental consideration                                                                                            |
| Alternative Designs                   | Only one design presented or clearly infeasible alternative given. Serious deficiencies in exploring and identifying alternative designs.                                                | Alternative approaches identified to some degree.                                                                                                                                        | Final design achieved after review of reasonable alternatives.                                                                                                                                                                           |
| Application of Engineering Principles | No or erroneous application of engineering principles yielding unreasonable solution. Serious deficiencies in proper selection and use of engineering principles.                        | Effective application of engineering principles resulting in reasonable solution.                                                                                                        | Critical selection and application of engineering principles ensuring reasonable results.                                                                                                                                                |
| Final Design                          | Not capable of achieving desired objectives.                                                                                                                                             | Design meets desired objectives.                                                                                                                                                         | Design meets or exceeds desired objectives.                                                                                                                                                                                              |
| Interpretation of Results             | No or erroneous conclusions based on achieved results. Serious deficiencies in support for stated conclusions.                                                                           | Sound conclusions reached based on achieved results.                                                                                                                                     | Insightful, supported conclusions and recommendations.                                                                                                                                                                                   |

Rubrics can also be used effectively to design the continuous assessment of the student projects. The Performance Indicators referred to in the previous sections can be used measurement criteria in the rubric. In the following example, we can see that for different phases of the students projects, we can design the rubrics keeping in mind the deliverables of the project at that particular stage.

## 5 - SEMESTER MINI PROJECT

### RUBRICS FOR REVIEW – I

| PI Code | PI                                                                                                                                     | Marks | Very Poor<br>Up to 20%                                                                                                                      | Poor<br>Up to 40%                                                                                                                               | Average<br>Up to 60%                                                                                                              | Good<br>Up to 80%                                                                                         | Very good<br>Up to 100%                                                                                                  |
|---------|----------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 2.1.1   | Articulate problem statements and identify objectives - GA                                                                             | 02    | Problem statement and objectives are not identified                                                                                         | Problem statement and objectives are not clear                                                                                                  | Problem statement is clear and objectives are not in line with problem statement                                                  | Problem statement is clear and objectives are not completely defined.                                     | Problem statement is clear and objectives are completely defined                                                         |
| 2.1.2   | Identify engineering systems, variables, and parameters to solve the problems - IA                                                     | 02    | Engineering systems are not identified. Variables, and parameters to solve the problems are not defined                                     | Engineering systems are identified but not clear. Variables, and parameters to solve the problems are not defined                               | Engineering systems are clear. Variables, and parameters to solve the problems are not defined                                    | Engineering systems are identified. Variables, and parameters to solve the problems are partially defined | Engineering systems are identified. Variables, and parameters to solve the problems are completely defined               |
| 2.2.3   | Identify existing processes/ solution methods for solving the problem, including forming justified approximations and assumptions - GA | 02    | Not able to identify existing solution for solving the problem. The assumptions, approximations and justifications are also not identified. | Not able to identify existing solution for solving the problem. The assumptions, approximations and justifications are identified but not clear | Not able to identify existing solution for solving the problem. But assumptions and approximations are aligned to the objectives. | Able to identify existing solution for solving the problem. Assumptions, and approximations are clear     | Able to identify existing solution for solving the problem. But assumptions, approximations and justifications are clear |
| 2.2.4   | Compare and contrast alternative solution processes to select the best process - GA                                                    | 02    | Not able to identify alternative solution processes                                                                                         | Not able to compare alternative solution processes                                                                                              | Able to compare alternative solution processes but could not contrast clearly                                                     | Able to compare alternative solution processes and contrast clearly but not able to select best process   | Able to compare alternative solution processes, contrast it and also able to select best process                         |
| 10.1.1  | Read, understand and interpret technical and non-technical information - GA                                                            | 02    | Not able to identify technical and non-technical information                                                                                | Able to identify non-technical information                                                                                                      | Able to read technical and non-technical information, but could not understand and interpret                                      | Able to read, understand technical and non-technical information, but could not interpret                 | Able to read, understand and interpret technical and non-technical information                                           |

## RUBRICS FOR REVIEW – II

| PI Code | PI                                                                                                                                                         | Marks | Very Poor<br>Up to 20%                                  | Poor<br>Up to 40%                                          | Average<br>Up to 60%                                              | Good<br>Up to 80%                                                       | Very good<br>Up to 100%                                 |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------|
| 3.2.1   | Apply formal idea generation tools to develop multiple engineering design solutions - GA                                                                   | 02    | Not able to identify tools to develop solutions         | Able to identify but not able to use it effectively        | Able to use the tool but not able to generate engineering designs | Able to generate engineering designs but not able to justify            | Able to generate engineering designs with justification |
| 3.2.3   | Identify suitable criteria for evaluation of alternate design solutions - GA                                                                               | 02    | Not able to identify criteria                           | Able to identify criteria but not able to use them         | Able to use criteria but not able to compare alternatives         | Not able to justify the comparison with criteria                        | Able to justify the comparison with criteria            |
| 3.3.1   | Apply formal decision-making tools to select optimal engineering design solutions for further development - GA                                             | 02    | Not able to identify decision-making tools              | Able to identify but not able to choose optimum one        | Able to identify optimum one but not able to use it               | Able to use optimum one but not able to justify                         | Able to use optimum one with justification              |
| 3.2.2   | Build models/ prototypes to develop diverse set of design solutions - IA                                                                                   | 02    | Not able to identify tool to build model/ prototype     | Able to choose the tool but not able to use it effectively | Able to use the tool but not able to generate alternatives        | Able to generate alternatives but not able to justify the best solution | Able to generate and justify the best solution          |
| 13.1.1  | Develop 2D drawings of components/ systems using modern CAD tools - IA                                                                                     | 02    | Not able to identify CAD tools                          | Able to identify but not able to use CAD tool              | Able to use CAD tool but not able to generate drawings            | Able to generate drawings but not able to follow drawing standards      | Able to generate drawings with standards                |
| 13.1.2  | Develop 3D models of components/systems using modern CAD tools - IA                                                                                        | 03    | Not able to identify CAD tools                          | Able to identify but not able to use CAD tool              | Able to use CAD tool but not able to generate 3D models           | Able to generate models but not able to follow standards                | Able to generate models with standards                  |
| 13.1.3  | Apply GD&T principles as per ASME standards to manufacturing drawings, with all relevant data like material, hardness, surface finish, and tolerances - IA | 02    | Not able to extract GD&T principles from ASME standards | Able to extract but not able to understand them            | Able to understand but not able to apply GD&T standards           | Able to apply GD&T standards to drawings but not able to justify        | Able to apply and justify GD&T standards to drawings    |

**RUBRICS FOR REVIEW – III**

| PI Code | PI                                                                                                        | Marks | Very Poor<br>Up to 20%                                | Poor<br>Up to 40%                                                            | Average<br>Up to 60%                                                      | Good<br>Up to 80%                                                                     | Very good<br>Up to 100%                                                                           |
|---------|-----------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 3.4.2   | Generate information through appropriate tests to improve or revise design - GA                           | 02    | Not able to identify suitable tests to be done        | Able to identify but not able to follow testing procedure                    | Able to follow testing procedures but not able to collect information     | Able to collect information but not able to apply it for improvement                  | Able to apply information for the improvement                                                     |
| 4.3.1   | Use appropriate procedures, tools and techniques to conduct experiments and collect data - GA             | 04    | Not able to identify tools, techniques and procedures | Able to identify but not able to conduct experiments                         | Able to conduct experiments but not able to follow procedure              | Able to follow procedure but not able to collect data                                 | Able to collect data as per the standards                                                         |
| 4.3.2   | Analyze data for trends and correlations, stating possible errors and limitations - GA                    | 03    | Not able to understand data                           | Able to understand but not able to analyze data                              | Able to analyze data but not able to correlate them                       | Able to correlate but not able to identify errors and limitations                     | Able to identify errors and limitations                                                           |
| 10.2.2  | Deliver effective oral presentations to technical and non-technical audiences - IA                        | 03    | Could not deliver effective presentations.            | Could not deliver presentation, but presentation was prepared and attempted. | Able to deliver fair presentation but not able to answer to the audiences | Deliver effective presentations but able to answer partially to the audience queries. | Deliver effective presentation and able to answer all queries of the audience.                    |
| 9.3.1   | Present results as a team, with smooth integration of contributions from all individual efforts – GA + IA | 03    | No Contribution from an individual to a team          | Contributions from an individual to a team is minimal                        | Contributions from an individual to a team is moderate                    | A contribution from an individual to a team is good but not well groomed in team.     | Contribution from an individual to a team is good and results in an integrated team presentation. |

## AICTE COMMITTEE ON EXAMINATION REFORMS

### Members of the Committee

1. **Prof. Ashok S. Shettar, Chairman**  
Vice Chancellor, KLE Technological University, Hubballi, Karnataka
2. **Prof. Rama Krishna Challa,**  
Head, Dept. of Computer Science and Engineering, NITTTR, Chandigarh
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Dept. of Computer Engineering and Applications, NITTR, Bhopal (M.P)
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Dept. of Metallurgical & Material Engineering, MNIT, Jaipur





**ALL INDIA COUNCIL FOR TECHNICAL EDUCATION**  
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# Visvesvaraya Technological University

"Jnana Sangama", Belagavi - 590 018, Karnataka State

Prof. A S. Deshpande B.E. M.Tech., Ph.D.  
REGISTRAR

Phone : (0831) 2498100

Fax : (0831) 2405467

Ref VTU/BGM/Aca-OS/Gen-Cirs/2019-20/ 3013

Date : 21 AUG 2019

## NOTIFICATION

**Sub: Regulations Governing the Degree of B.E./ B.Tech.  
under OBE and CBCS (Revised-2018) - reg...**

**Ref: Executive Council Resolution. No. 2.2.1 dt: 30<sup>th</sup> May, 2019**

Pursuant to the aforesaid Executive Council Resolution, the "Regulations Governing the Degree of B.E./ B.Tech. under outcome Based Education and Choice Based Credit System - (Revised - 2018) " are hereby notified.

These Regulations are applicable for the following students:

1. Admitted to I semester/I year from the academic year 2018-19 (i.e. USN XXX18XXXXX)
2. Admitted to III semester/II year from the academic year 2019-20 (i.e. USN XXX19XX4XX)

You are hereby directed to bring the same to the notice of all the concerned and to follow them scrupulously.

The previous regulations in this regard (published on VTU website and printed in syllabus books are treated as null and void.

**Encl: as above**

**BY ORDER**

01.08.2019  
**REGISTRAR**

**To,**

**The of Principals of All Engineering Colleges under the ambit of VTU, Belagavi**

**Copy to:**

1. Hon'ble Vice-Chancellor through the Secretary to VC, VTU, Belagavi for kind information
2. The Registrar (Evaluation), VTU, Belagavi
3. The Regional Directors (I/C) of all the Regional Offices of VTU for circulation
4. The Computer Network Centre, VTU, Belagavi- to upload on VTU website
5. PS to Registrar, VTU, Belagavi
6. All the concerned Special Officer and Case-workers of Academic Section, VTU, Belagavi

### **Definitions of Keywords**

The following are the definitions/descriptions that have been followed for the different terms used in the Regulations of B.E./B.Tech. Programmes:

- 1) **Programme:** Is an educational Programme in a particular stream/ branch of Engineering/branch of specialization leading to award of the Degree. It involves events/activities, comprising of lectures/tutorials/laboratory work/field work, outreach activities/project work/vocational training/viva voce/ seminars/ internship/assignments/ presentations/ self-study etc., or a combination of some of these.
- 2) **Branch:** Means Specialization or discipline of B.E./B.Tech. Degree Programme, like Civil Engineering, Mechanical Engineering, Textile Engineering, etc.
- 3) **Semester:** Refers to one of the two sessions of an academic year (vide: serial number 4), each session being of sixteen weeks duration (with working days greater than or equal to ninety). The odd and even semesters shall be as per the University academic calendar.
- 4) **Academic Year:** Refers to the sessions of two consecutive semesters (odd followed by an even) including periods of vacation.
- 5) **Course:** Refers to usually referred to as 'papers' and is a component of a Programme. All Courses need not carry the same weight. The Courses should define learning objectives and learning outcomes. A Course may be designed to comprise lectures/ tutorials/ laboratory work/ field work/ outreach activities/project work/ vocational training/ viva voce/ seminars/ term papers/assignments/ presentations/ self-study etc., or a combination of some of these.
- 6) **Credit:** Refers to a unit by which the Course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of lecture or two hours of laboratory/practical Courses/ tutorials/ fieldwork per week etc.
- 7) **Audit Courses:** Means the Knowledge/ Skill enhancing Courses without the benefit of a grade or credit for a Course.
- 8) **Choice Based Credit System (CBCS):** Refers to customizing the Course work, through Core, Elective and soft skill Courses, to provide necessary support for the students to achieve their goals.
- 9) **Course Registration:** Refers to formal registration for the Courses of a semester (Credits) by every student under the supervision of a Faculty Advisor (also called Mentor, Counsellor etc.) in each semester for the Institution to maintain proper record.
- 10) **Course Evaluation:** Means Continuous Internal Evaluation (CIE) and Semester End Examinations (SEE) to constitute the major evaluations prescribed for each Course. CIE and SEE to carry 40 % and 60 % respectively, to enable each Course to be evaluated for 100 marks, irrespective of its Credits.
- 11) **Continuous Internal Evaluation (CIE):** Refers to evaluation of students' achievement in the learning process. CIE shall be by the Course Instructor and includes tests, homework, problem solving, group discussion, quiz, mini-project and seminar throughout the semester, with a weightage for the different components being fixed by the University.
- 12) **Semester End Examinations (SEE):** Refers to the examinations conducted by the University covering the entire Course Syllabus. For this purpose, Syllabi to be modularized and SEE questions to be set from each module, with a choice confined to the concerned module only. SEE is also termed as University examination.
- 13) **First Attempt:** Refers to a student who has completed all formalities and has become eligible to attend the SEE and has attended at least one head of passing, such attempt shall be considered as first attempt.

**Regulations Governing the Degree of Bachelor of Engineering/Technology (B.E./B.Tech.)  
Under Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
Effective from the Academic Year 2018 – 19**

- 14) **Credit Based System (CBS):** Refers to quantification of Course work, after a student completes teaching – learning process, followed by passing in both CIE and SEE. Under CBS, the requirement for awarding degree is prescribed in terms of total number of credits to be earned by the students.
- 15) **Credit Representation:** Refers to the Credit Values for different academic activities considered, as per the Table.1 Credits for seminar, project phases, project viva-voce and internship shall be as specified in the Scheme of Teaching and Examinations.
- 16) **Letter Grade:**

| Table 1: Credit Values                       |                                        |                                                   |                    |                  |
|----------------------------------------------|----------------------------------------|---------------------------------------------------|--------------------|------------------|
| Theory/Lectures (L)<br>(hours/week/Semester) | Tutorials (T)<br>(hours/week/Semester) | Laboratory/Practical (P)<br>(hours/week/Semester) | Credits<br>(L:T:P) | Total<br>Credits |
| 4                                            | 0                                      | 0                                                 | 4:0:0              | 4                |
| 3                                            | 0                                      | 0                                                 | 3:0:0              | 3                |
| 2                                            | 2                                      | 0                                                 | 2:1:0              | 3                |
| 2                                            | 0                                      | 2                                                 | 2:0:1              | 3                |
| 2                                            | 2                                      | 2                                                 | 2:1:1              | 4                |
| 0                                            | 0                                      | 6                                                 | 0:0:3              | 3                |

**NOTE:** Activities like, practical training, study tour and participation in Guest lectures not to carry Credits.

It is an index of the performance of students in a said Course. Grades are denoted by letters S, A, B, C, D, E and F.

- 17) **Grading:** Grade refers to qualitative measure of achievement of a student in each Course, based on the percentage of marks secured in CIE and SEE. Grading is done by Absolute Grading [Refer: 18 OB 6.0]. The rubrics attached to letter grades are as follows: S – Outstanding, A – Excellent, B – Very Good, C – Good, D – Above Average, E – Average and F – Fail.
- 18) **Grade Point (GP):** Refers to a numerical weightage allotted to each letter grade on a 10-point scale as under.

| Letter Grade and corresponding Grade Points on a typical<br>10 – Point scale |    |    |    |    |    |    |    |
|------------------------------------------------------------------------------|----|----|----|----|----|----|----|
| Letter Grade                                                                 | S  | A  | B  | C  | D  | E  | F  |
| Grade Point                                                                  | 10 | 09 | 08 | 07 | 06 | 04 | 00 |

- 19) **Passing Standards:** Refers to passing a Course only when getting GP greater than or equal to 04 (as per serial number 18).
- 20) **Credit Point:** Is the product of GP and number of credits for a Course i.e.,  
Credit points (CrP) = GP × Credits for the Course.
- 21) **Semester Grade Point Average (SGPA):** Refers to the measure of academic performance of student/s in a semester. [Refer:18OB6.2]
- 22) **Cumulative Grade Point Average (CGPA):** Is a measure of overall cumulative performance of a student over all semesters. [Refer:18OB6.2]
- 23) **Grade Card:** Refers to the certificate showing the grades earned by a student. A grade card shall be issued to all the registered students after every semester end examination. The grade card will display the Programme details (Course code, title, number of credits, grades secured) along with SGPA of that semester and CGPA earned till that semester.
- 24) **University:** Visvesvaraya Technological University (VTU), Belagavi.

**Regulations Governing the Degree of Bachelor of Engineering/Technology (B.E./B.Tech.)  
Under Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
Effective from the Academic Year 2018 – 19**

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>18OB1.0</b> | <b>Title, Duration and Credits of the Programme of Study.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>18OB1.1</b> | The Programme of study shall be called the degree of Bachelor of Engineering /Bachelor of Technology, abbreviated as B.E./B.Tech.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>18OB1.2</b> | <p>(a) The Programme to which students are admitted to First semester of B.E./B.Tech. Programme shall be of four academic year duration divided into eight semesters. The actual Teaching and Learning days shall be for at least 90 working days in a semester.</p> <p>(b) The Programme to which students are admitted to third semester of B.E./B.Tech. Programme under lateral entry shall be of three academic year duration, divided into six semesters. The actual Teaching and Learning days shall be at least 90 working days in a semester.</p> <p>(c) The Programme (conducted during evening) to which students are admitted to third semester of B.E./B.Tech. Programme under lateral entry scheme shall be of three academic year duration, divided into six semesters. The actual Teaching and Learning days shall be for at least 90 working days in a semester. The deficit contact hours of the Programme, conducted during evening on all working days, shall be compensated on all Sundays (except on general holidays).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>18OB1.3</b> | The calendar of events in respect of the Programme of study shall be notified by the University in advance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>18OB1.4</b> | <p><b>Maximum Duration for Programme Completion:</b></p> <p>(a) <b>In case of students admitted to First semester of First year B.E./B.Tech. Programme</b></p> <p>(i) Students admitted to First year first semester B.E./B.Tech. shall complete the Programme within a period of eight academic years from the date of first admission, failing which they have to discontinue the Programme.</p> <p>(ii) A student who has not obtained eligibility to third semester even after three academic years from the date of first admission to first semester shall discontinue the Programme or get readmitted to first semester of first year B.E./B.Tech. with a revised University Seat Number having the same year of admission but serial number of the student starting with SIX hundred series (6XX).</p> <p>(iii) A student who has joined first year (to I or II semester) as a repeater and has not obtained eligibility to third semester even after three academic years from the date of readmission to first year shall discontinue the Programme or get readmitted to first semester of first year B.E./B.Tech., subject to the provision of 18OB1.4 (a)( i), with a revised University Seat Number having the same year of admission but serial number of the student starting with SIX hundred series (6XX).</p> <p>(iv) A student, who has been readmitted to First year [as per 18OB1.4 (a) (ii)and (iii)], does not get eligibility to third semester even after two academic years from the date of readmission, he/she shall discontinue the Programme or seek fresh admission following the prevailing admission procedure at that time.</p> <p>(v) A student who gets admitted to III semester from I year in three or less than three years shall complete the Programme, with or without break, within a period of eight academic years from the date of first admission, failing which they have to discontinue the Programme or seek fresh admission following the prevailing admission procedure at that time.</p> <p>(b) <b>In case of lateral entry students admitted to Third semester of Second year B.E./B.Tech. Programme.</b></p> <p>(i) Students admitted to second year third semester B.E./ B.Tech. shall complete the Programme within a period of six academic years from the date of first admission, failing which they have to discontinue the Programme.</p> <p>(ii) A student who has not obtained eligibility to fifth semester even after two academic years from the date of first admission to third semester shall discontinue the Programme or get readmitted to third semester of second year B.E./B.Tech. with a revised University Seat Number having the same year of admission but serial number of the student starting with SEVEN hundred series (7XX).</p> <p>(iii) A student who has joined second year (to III or IV semester) as a repeater and has not</p> |

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|                | <p>obtained eligibility to fifth semester even after three academic years from the date of readmission to second year shall discontinue the Programme or get readmitted to third semester of second year B.E./B.Tech., subject to the provision of 18OB1.4 (b) (i), with a revised University Seat Number having the same year of admission but serial number of the student starting with SEVEN hundred series (7XX).</p> <p>(iv) A student, who has been readmitted to second year [as per 18OB1.4 (b) (ii) and (iii)], does not get eligibility to fifth semester even after two academic years from the date of readmission to second year, he/she shall discontinue the Programme or seek fresh admission following the prevailing admission procedure at that time.</p> <p>(v) A student who gets admitted to V semester from II year in two or less than two years shall complete the Programme, with or without break, within a period of six academic years from the date of first admission, failing which they have to discontinue the Programme or seek fresh admission following the prevailing admission procedure at that time.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>18OB1.5</b> | <p><b>Prescribed Number of Credits for the Programme</b> [to be read along with 18OB12.2]:</p> <p>(a) The number of credits to be completed by students admitted to first semester of B.E./B.Tech. Programme shall be 175.</p> <p>(b) The number of credits to be completed by students admitted to third semester of B.E./B.Tech. Programme under lateral entry scheme shall be 135.</p> <p>(c) A student shall be eligible to get Undergraduate degree with Honours, if he/she earns additional 20 credits, as per VTU norms issued from time to time regarding the earning of additional credits. [To be read along with Regulations Governing the award of Honours' in B.E./B.Tech. Degree Programmes.]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>18OB1.6</b> | <p><b>(a) Definition of Credits:</b></p> <p>(a.1) 1 hour Lecture (L) per week per semester = 1 Credit</p> <p>(a.2) 2 hours Tutorial (T) per week per semester = 1 Credit</p> <p>(a.3) 2 hours Practical/Laboratory/Drawing (P) per week per semester = 1 Credit.</p> <p>(a.4) Four credit theory courses shall be designed for 50 hours of Teaching – Learning process.</p> <p>(a.5) Three credit theory courses shall be designed for 40 hours of Teaching – Learning process.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>18OB2.0</b> | <p><b>Eligibility for Admission to B.E./B.Tech. Programmes (As per the Government orders issued from time to time)</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>18OB2.1</b> | <p><b>(a) Day Engineering College (Eligibility: Candidates who have Passed Second PUC/ Twelfth standard)</b></p> <p>(i) Passed Second PUC/12<sup>th</sup> standard/Equivalent examination with English as one of the Languages and obtained a minimum of 45 % of Marks in aggregate in Physics and Mathematics along with Chemistry/Bio-Technology/Biology/Electronics/Computer. 40 % for SC, ST, Category – 1, 2A, 2B, 3A and 3B category candidates of Karnataka only.</p> <p>(ii) Those students, who have passed a qualifying examination other than the PUC II examination of the Pre-University Education Board of Karnataka, have to obtain eligibility certificate for seeking admission to B.E./B.Tech. Degree Programme from Visvesvaraya Technological University, Belagavi.</p> <p><b>(b) Day Engineering College (Eligibility: Candidates who have Passed 3 year Diploma)</b></p> <p>(i) A candidate who has passed any Engineering diploma examination or equivalent examination and obtained an aggregate minimum of 45 % marks taken together in all the subjects of the final year (Fifth and Sixth semester) diploma examination (qualified examination) is eligible for admission to B.E./B.Tech. Programmes, in respective branch of Engineering (as notified by the Government of Karnataka for admission to 3rd semester / 2nd year B.E./B.Tech.) and 40 % of marks in qualified examination in case of SC, ST and Backward Classes of Karnataka candidates.</p> <p>(ii) Those candidates who have completed Engineering Diploma from other than Karnataka state shall provide the Equivalence/ Eligibility Certificate issued from the Director of Technical Education, Karnataka.</p> |

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|                | <p><b>(c) Evening Engineering College (Eligibility: Candidates who have Passed 3 year Diploma):</b></p> <p>(i) A candidate who has passed any Engineering diploma examination or equivalent examination and obtained an aggregate minimum of 45 % marks taken together in all the subjects of the final year (Fifth and Sixth semesters) diploma examination (qualified examination) is eligible for admission to B.E./B.Tech. Programmes, in respective branch of Engineering (as notified by the Government of Karnataka for admission to 3rd semester / 2nd year B.E./B.Tech.) and 40 % of marks in qualified examination in case SC, ST and Backward Classes of Karnataka candidates.</p> <p>In addition to this a candidate after passing the diploma, must have minimum of Two years full-time work experience as on 1<sup>st</sup> September of the year of admission, in a registered firm/Company/Industry/Educational Institution /Government/Autonomous Organizations in the branch of Engineering/Technology, in which the candidates holds a diploma and in which admission is sought by him/her.</p> <p>Professional experience refers to the experience earned as an employee on regular basis in Government, Government Undertaking, Public Sector Undertaking, Corporation or Private company registered under the Directorate of Industries and Commerce or the Directorate of Small Scale Industries or Government recognized Institutions as technical staff. Provided that the period of apprenticeship undergone shall also be treated as professional experience , if sponsored by the Board of Apprenticeship Training, Southern Region, Chennai or by Government, Government Undertakings and Public Sector Undertakings.</p> <p><b>Note:</b> In case where genuineness of the employment certificate is questionable, such candidates have to produce supportive documents specifying the registration details of the Industry/Company (e.g., SSI Registration) and or identity cards provided to them together with latest salary certificate and provident fund certificate. However, the employer has to fill up the NOC duly signed by the company authority.</p> <p><b>(d) Day Engineering College (Eligibility: Candidates who have Passed B.Sc Degree)</b></p> <p>Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks (40% in case of candidates belonging to reserved category) and passed 10+2 examination with Mathematics as a subject.</p> |
| <b>18OB2.2</b> | With regard to the qualification earned from foreign countries, Equivalence certificate from the University/ Association of Indian Universities is mandatory for admission to B.E./B.Tech. Programmes. In case of any dispute about the equivalence in qualification earned from foreign countries, the decision of the University Equivalence Committee shall be the final in establishing the eligibility of the student.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>18OB3.0</b> | <b>Courses</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>18OB3.1</b> | <p>There shall be the following types of Courses:</p> <p>(a) Humanities, Social Sciences and Management Courses (HSMC): These are mandatory for all disciplines.</p> <p>(b) Basic Sciences Courses (BSC): Physics, Chemistry and Mathematics. These are mandatory for all disciplines.</p> <p>(c) Engineering Science Courses (ESC): Materials, Workshop, Drawing, and Basics of Electrical/ Electronics/ Instrumentation/ Civil/ Mechanical/ Computer Engineering etc. These are mandatory for all disciplines.</p> <p>(d) Professional Core Courses (PCC) – Core: Are the professional Core Courses, relevant to the chosen specialization/ branch. The core Courses are to be compulsorily studied by students and are mandatory to complete them to fulfill the requirements of a Programme.</p> <p>(e) Professional Elective Courses (PEC): Are the professional Electives, relevant to the chosen specialization / branch and can be chosen from the pool of papers. It shall be supportive to the discipline providing extended scope/enabling an exposure to some other discipline /domain and nurturing student proficiency skills.</p> <p>(f) Open Elective Courses (OEC): Are the Elective Courses from other technical areas and/ or from emerging fields.</p> <p>(g) Project Work (PROJ): Mini project and Main Project. Carried out at the Institution or elsewhere without affecting with the regular classwork.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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|                 | <p>(h) Seminar: Deliverable at the Institution under the supervision of a Faculty.</p> <p>(i) Internship: Preferably at an industry/R and D organization/IT company/Government organization or elsewhere of significant repute for a specified period as mentioned in Scheme of Teaching and Examinations.</p> <p>(j) Mandatory Courses (MC): These Courses are mandatory, without the benefit of a grade or credit, for students admitted to B.E./B.Tech. Programme. A pass in each mandatory Course is required to qualify for the award of degree.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>18OB3.2</b>  | <p>The minimum number of students registered to any Elective Course offered by the Departments shall be not less than ten.</p> <p>However, the above condition shall not be applicable to Programmes having class strength of less than 10. In such cases, only one elective course shall be offered.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>18OB3.3</b>  | <p>A student shall exercise his option in respect of Elective Course/s and registered for the same at the beginning of the concerned semester. The student may be permitted to opt for a change of Elective Course/s within 15 days from the date of commencement of the semester as per the calendar of the University.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>18OB3.4</b>  | <p><b>Course Registration:</b></p> <p>In order to maintain proper academic record of each student at the Institution, every student shall register for the Courses of a semester (Credits) under the supervision of a Faculty Advisor (also called Mentor, Counselor, etc.,) in each semester.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>18OB4.0</b>  | <b>Internship/Professional Practice</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>18OB4.1</b>  | <p>Internship / Professional Practice</p> <p>The Internship shall be completed during the period specified in the Scheme of Teaching and Examinations.</p> <ol style="list-style-type: none"> <li>1) The internship shall preferably be at an industry/R and D organization/IT company/ Government organization of significant repute for a specified period as mentioned in Scheme of Teaching and Examinations.</li> <li>2) The Department/college shall nominate staff member/s to facilitate, Guide and supervise students under internship.</li> <li>3) The students shall report progress of the internship to the Guide in regular intervals and seek his/her advice. The Guide shall maintain the progress record of the candidates undergoing internship.</li> <li>4) After the completion of Internship, students shall submit a report with completion certificate and attendance certificate to the Head of the Department with the approval of both internal and external Guides.</li> <li>5) There shall be 40 marks for CIE and 60 marks for SEE. The minimum requirement of CIE marks shall be 50% of the maximum marks.</li> <li>6) The internal Guide shall be the internal examiner for the SEE.</li> <li>7) The external Guide for Internship shall be the external examiner for SEE. Examination for internship shall be conducted at the college and the date shall be fixed in consultation with the external Guide. The Examiners shall jointly award the SEE marks. [To be read along with 18OB8.9 (f)]</li> <li>8) In case the external Guide expresses his inability to conduct the Examination, the Principal /Chief Superintendent of the Institute shall appoint a senior faculty of the Department to conduct the Examination along with the internal Guide.</li> <li>9) Non-availability of Internal guide due to inevitable situations for the conduct of SEE, the Principal /Chief Superintendent of respective institute shall appoint a senior faculty of the Department to conduct the Examination.</li> <li>10) The students are permitted to carry out the internship anywhere in India or abroad. The University will not provide any kind of financial assistance to any student for carrying out the Internship.</li> </ol> |
| <b>18OB 5.0</b> | <b>Technical Seminar and Project</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>18OB 5.1</b> | <p><b>Technical Seminar:</b> Technical Seminar is one of the head of passing.</p> <ol style="list-style-type: none"> <li>(i) Each candidate shall deliver Technical seminar as per the Scheme of Teaching and Examinations on the topic chosen from the relevant field.</li> <li>(ii) The Head of the Department shall make arrangements for the conduct of seminars</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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|                                        | through concerned faculty members of the Department. The committee, constituted for the purpose by the Head of the Department, shall award the CIE marks for the seminar. The committee shall consist of two senior faculty members of the Department and the senior most acting as the Chairperson. [To be read along with 18OB8.2 (e)]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |             |                   |                     |                                     |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
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| 18OB 5.2                               | <b>Project: Project (Mini and Main) is one of the head of passing.</b><br>Mini Project Work and Main Project Work shall preferably be batch wise, the strength of each batch shall not exceed a maximum of four students. [To be read along with 18OB 8.2 (f), (g) 18OB8.9 (f) and the details mentioned in Scheme of Teaching and Examinations.]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |             |                   |                     |                                     |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| 18OB 5.3                               | Examinations in Mini Project Work and Main Project Work shall be conducted batch-wise.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |             |                   |                     |                                     |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| 18OB 6.0                               | <b>Computation of SGPA and CGPA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |             |                   |                     |                                     |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| 18OB 6.1                               | <p>(i) The University adopts absolute grading system wherein the marks are converted to grades, and every semester results shall be declared in terms of Semester Grade Point Average (SGPA) considering all the courses appeared in that Semester End Examinations including backlog course/s/arrear papers (refers to courses other than the current semester courses that have not yet been completed) and Cumulative Grade Point Average (CGPA). The CGPA will be calculated for every semester, except for the first semester.</p> <p>(ii) The grading system with the letter grades and the assigned range of marks under absolute grading system shall be as given below:</p> <table><tr><th>Level</th><th>Outstanding</th><th>Excellent</th><th>Very Good</th><th>Good</th><th>Above Average</th><th>Average</th><th>Fail</th></tr><tr><td>Letter Grade</td><td>S</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr><tr><td>Grade Points</td><td>10</td><td>9</td><td>8</td><td>7</td><td>6</td><td>4</td><td>00</td></tr><tr><td rowspan="2">Percentage of Marks Scored in a Course</td><td>≥ 90</td><td>&lt;90<br/>≥80</td><td>&lt; 80<br/>≥70</td><td>&lt; 70<br/>≥60</td><td>&lt; 60<br/>≥45</td><td>&lt; 45<br/>≥40</td><td>&lt; 40</td></tr><tr><td>(90 -100)</td><td>(80 - 89)</td><td>(70 - 79)</td><td>(60- 69)</td><td>(45 - 59)</td><td>(40 - 44)</td><td>(0 - 39)</td></tr></table> <p>(iii) A student obtaining Grade F in a Course shall be considered fail and is required to reappear in the subsequent SEE. Whatever the letter grade secured by the student during his /her reappearance shall be awarded. The number of attempts taken to clear Course/s shall be indicated in the grade card.</p> | Level                       | Outstanding | Excellent         | Very Good           | Good                                | Above Average       | Average    | Fail | Letter Grade | S         | A | B | C      | D                                   | E | F     | Grade Points | 10        | 9 | 8      | 7 | 6     | 4         | 00 | Percentage of Marks Scored in a Course | ≥ 90   | <90<br>≥80 | < 80<br>≥70 | < 70<br>≥60 | < 60<br>≥45 | < 45<br>≥40 | < 40   | (90 -100) | (80 - 89) | (70 - 79) | (60- 69) | (45 - 59) | (40 - 44) | (0 - 39) |
| Level                                  | Outstanding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Excellent                   | Very Good   | Good              | Above Average       | Average                             | Fail                |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| Letter Grade                           | S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A                           | B           | C                 | D                   | E                                   | F                   |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| Grade Points                           | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 9                           | 8           | 7                 | 6                   | 4                                   | 00                  |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| Percentage of Marks Scored in a Course | ≥ 90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <90<br>≥80                  | < 80<br>≥70 | < 70<br>≥60       | < 60<br>≥45         | < 45<br>≥40                         | < 40                |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
|                                        | (90 -100)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | (80 - 89)                   | (70 - 79)   | (60- 69)          | (45 - 59)           | (40 - 44)                           | (0 - 39)            |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| 18OB6.2                                | <b>Computation of SGPA and CGPA</b><br><br>The following expressions shall be used to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) respectively:<br>$SGPA = \frac{\sum [Course Credits \times Grade Points] \text{ for all the Courses in that Semester}}{\sum [Course Credits] \text{ for all the Courses in that Semester}}$ $CGPA = \frac{\sum [Course Credits \times Grade Points] \text{ for all Courses excluding those with F grades until that Semester}}{\sum [Course Credits] \text{ for all Courses excluding those with F grades until that semester}}$<br><br>The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the grade cards.<br><br><b>(a) SGPA and CGPA Calculations: An Illustrative Example for one academic year</b> <table><tr><th>Semester (Odd :I, Even: II)</th><th>Course Code</th><th>Credits</th><th>Grade</th><th>Grade Points (GP)</th><th>Credit Points (CrP)</th><th>SGPA, CGPA</th></tr><tr><td>I</td><td>XX101</td><td>5:0:0 = 5</td><td>B</td><td>8</td><td>5x8=40</td><td rowspan="4"><math>SGPA = \frac{117}{25}</math><br/><math>= 4.68</math></td></tr><tr><td>I</td><td>XX102</td><td>3:2:0 = 5</td><td>Absent(F)</td><td>0</td><td>5x0=00</td></tr><tr><td>I</td><td>XX103</td><td>3:0:0 = 3</td><td>A</td><td>9</td><td>3x9=27</td></tr><tr><td>I</td><td>XX104</td><td>0:1:1 = 2</td><td>F</td><td>0</td><td>2x0=00</td></tr></table>                                                                                                                                                                                                                                                                                           | Semester (Odd :I, Even: II) | Course Code | Credits           | Grade               | Grade Points (GP)                   | Credit Points (CrP) | SGPA, CGPA | I    | XX101        | 5:0:0 = 5 | B | 8 | 5x8=40 | $SGPA = \frac{117}{25}$<br>$= 4.68$ | I | XX102 | 3:2:0 = 5    | Absent(F) | 0 | 5x0=00 | I | XX103 | 3:0:0 = 3 | A  | 9                                      | 3x9=27 | I          | XX104       | 0:1:1 = 2   | F           | 0           | 2x0=00 |           |           |           |          |           |           |          |
| Semester (Odd :I, Even: II)            | Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Credits                     | Grade       | Grade Points (GP) | Credit Points (CrP) | SGPA, CGPA                          |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| I                                      | XX101                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5:0:0 = 5                   | B           | 8                 | 5x8=40              | $SGPA = \frac{117}{25}$<br>$= 4.68$ |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| I                                      | XX102                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3:2:0 = 5                   | Absent(F)   | 0                 | 5x0=00              |                                     |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| I                                      | XX103                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3:0:0 = 3                   | A           | 9                 | 3x9=27              |                                     |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |
| I                                      | XX104                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0:1:1 = 2                   | F           | 0                 | 2x0=00              |                                     |                     |            |      |              |           |   |   |        |                                     |   |       |              |           |   |        |   |       |           |    |                                        |        |            |             |             |             |             |        |           |           |           |          |           |           |          |

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|                                                                                                                                                                                       |       |           |       |      |        |                                                              |      |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|-------|------|--------|--------------------------------------------------------------|------|------|
| I                                                                                                                                                                                     | XX105 | 4:1:0 = 5 | D     | 6    | 5x6=30 |                                                              |      |      |
| I                                                                                                                                                                                     | XX106 | 5:0:0 = 5 | E     | 4    | 5x4=20 |                                                              |      |      |
| Total                                                                                                                                                                                 |       | 25(18*)   | Total |      | 117    |                                                              |      |      |
| (18*): Total credits of the semester excluding the credits of the courses under F grade. Considered for the calculation of CGPA of the two consecutive semesters under consideration. |       |           |       |      |        |                                                              |      |      |
| II                                                                                                                                                                                    | XX107 | 3:1:1=5   | C     | 7    | 5x7=35 | $SGPA = \frac{201}{32} = 6.28$                               |      |      |
| II                                                                                                                                                                                    | XX108 | 4:0:0=4   | B     | 8    | 4x8=32 |                                                              |      |      |
| II                                                                                                                                                                                    | XX109 | 3:0:0=3   | D     | 6    | 3x6=18 |                                                              |      |      |
| II                                                                                                                                                                                    | XX110 | 4:1:0=5   | E     | 4    | 5x4=20 |                                                              |      |      |
| II                                                                                                                                                                                    | XX111 | 2:1:1=4   | A     | 9    | 4x9=27 |                                                              |      |      |
| II                                                                                                                                                                                    | XX112 | 2:0:0=2   | F     | 0    | 2x0=00 | $CGPA = \frac{(117 + 201)}{18 + 30} = \frac{318}{48} = 6.63$ |      |      |
| II                                                                                                                                                                                    | XX113 | 0:2:0=2   | B     | 8    | 2x8=16 |                                                              |      |      |
| <b>I semester</b>                                                                                                                                                                     |       |           |       |      |        |                                                              |      |      |
| I                                                                                                                                                                                     | XX102 | 3:2:0=5   | D     | 6    | 5x6=30 |                                                              |      |      |
| I                                                                                                                                                                                     | XX104 | 0:1:1=2   | C     | 7    | 2x7=14 |                                                              |      |      |
| Total                                                                                                                                                                                 |       | 32 (30*)  | Total |      | 201    |                                                              |      |      |
| (30*): Total credits of the semester excluding the credits of the courses under F grade. Considered for the calculation of CGPA of the two consecutive semesters under consideration. |       |           |       |      |        |                                                              |      |      |
| <b>(b) CGPA Calculation of the Programme: An Illustrative Example</b>                                                                                                                 |       |           |       |      |        |                                                              |      |      |
| Semester                                                                                                                                                                              | I     | II        | III   | IV   | V      | VI                                                           | VII  | VIII |
| Credits of the semester                                                                                                                                                               | 20    | 20        | 24    | 24   | 25     | 24                                                           | 20   | 18   |
| SGPA                                                                                                                                                                                  | 4.68  | 6.28      | 9.20  | 6.86 | 8.18   | 7.73                                                         | 9.18 | 9.40 |
| ΣCrP                                                                                                                                                                                  | 117   | 201       | 22    | 165  | 204    | 185                                                          | 184  | 169  |
| $CGPA = \frac{[117 + 201 + 220 + 165 + 204 + 185 + 184 + 169]}{175} = \frac{[1445]}{175} = 8.26$                                                                                      |       |           |       |      |        |                                                              |      |      |

18OB6.3

Grade Card: Based on the secured letter grades, grade points, SGPA and CGPA, a grade card for each semester and a consolidated grade card indicating the performance in all semesters shall be issued.

18OB7.0

Conversions of CGPA into Percentage of marks and Class Equivalence

18OB7.1

Formula for the conversion of CGPA into percentage of marks.  
Percentage of marks secured,  $P = [CGPA \text{ Earned} - 0.75] \times 10$   
Illustration for a CGPA of 8.20:  
 $P = [CGPA \text{ Earned } 8.20 - 0.75] \times 10$   
 $= 74.5 \%$

18OB7.2

Class Equivalence:  
Subsequent to the conversion of final CGPA, after successful completion of the Programme, into percentage of marks (P), a graduating student is reckoned to have passed in  
(i) First Class with Distinction (FCD) if  $P \geq 70\%$   
(ii) First Class (FC) if  $P \geq 60\%$  but  $< 70\%$  and  
(iii) Second Class (SC) if  $P < 60\%$ .

18OB8.0

Continuous Internal Evaluation, Semester End Evaluation and Minimum CIE and SEE Marks

18OB8.1

Continuous Internal Evaluation Marks and Minimum CIE Marks:  
(a) For Vyavaharika Kannada (Balake Kannada)/Aadalitha Kannada (Samskruthika Kannada) the maximum CIE marks shall be 100. For the award of credit, the minimum CIE marks to be secured shall be 40 % of the maximum marks i.e., 40 marks.  
(b) For Project work Phase -I and Technical seminar the maximum CIE marks shall be 100. For the award of credit, the minimum CIE marks to be secured shall be 50 % of the maximum marks i.e., 50 marks.

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|         | <p>(c) For Practical/ Mini-project/Internship/Project work– Phase 2 the maximum CIE marks shall be 40. To appear for the SEE, the minimum CIE marks to be secured shall be 50 % of the maximum marks i.e., 20 marks.</p> <p>(d) For all other theory Courses of the Programme, the maximum CIE marks shall be 40. To appear for the SEE, the minimum CIE marks to be secured shall be 40 % of the maximum marks i.e., 16 marks.</p> <p>(f) For Additional Mathematics I and II (to be completed by diploma lateral entry students) the maximum CIE marks shall be 40. To appear for the SEE, the minimum CIE marks to be secured shall be 40 % of the maximum marks i.e., 16 marks.</p> <p>(g) For Engineering Graphics and Elements of Civil Engineering and Mechanics (of First Year Engineering and to be completed by B.Sc graduates under lateral entry) the maximum CIE marks shall be 40. To appear for the SEE, the minimum CIE marks to be secured shall be respectively 50 % and 40 % of the maximum marks i.e., 20 and 16 marks.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 18OB8.2 | <p><b>Continuous Internal Evaluation Procedure:</b> [To be read along with 18 OB 8.1 and 8.3]</p> <p><b>(a) Theory Courses:</b></p> <p>(i) CIE Marks in each theory Course [including ‘Technical English I and II’, ‘Constitution of India, Professional Ethics and Cyber Law’, ‘Environmental Studies’, ‘Additional Mathematics I and II’], shall be the sum of marks prescribed for tests and assignments. Marks prescribed for tests shall be 30 and that for assignments 10.</p> <p>(ii) The CIE marks awarded for tests in the theory Courses shall be based on three tests generally conducted at the end of fifth, tenth and fifteenth week of each semester. Each test shall be conducted for a maximum of 50 marks and the final test marks shall be the average of three tests, proportionately reduced to a maximum of 30 marks.</p> <p>(iii) The remaining 10 marks shall be awarded based on the evaluation of assignments/unit tests/written quizzes that support to cover both lower and higher order thinking skills as per Revised Bloom’s Taxonomy.</p> <p>(iv) Final CIE marks awarded shall be the sum of 18OB8.2 (a) (ii) and (iii) for a maximum of 40 marks.</p> <p>(v) The candidates shall write the tests, assignments/unit-tests /written quizzes in Blue Books which shall be preserved by the Principal/ Head of the Department for at least six months after the announcement of University results and shall be made available for verification at the direction of the Registrar (Evaluation).</p> <p><b>(b) Engineering Graphics/ Drawing/Field work Courses:</b></p> <p>The CIE marks awarded for I year Engineering Graphics Course shall be based on</p> <p>(i) Classwork for 24 marks (sketching and Computer Aided Engineering Drawing).</p> <p>(ii) Two Tests conducted in the same pattern as that of SEE for 16 marks (The marks secured can be taken as best of the two tests).</p> <p>(iii) Final CIE marks awarded for Engineering Graphics shall be the sum of 18OB8.2 (b) (i) and (ii) for a maximum of 40 marks.</p> <p>(iv) The CIE marks awarded for higher semester Drawings/ Design Drawings offered by various branches shall be based on the evaluation of the sheets and one test in the ratio 60:40.</p> <p>(v) The CIE marks awarded for field work (like Surveying Practice) shall be based on the evaluation of the associated field work and one test in the ratio 60:40.</p> <p><b>(c) Practical Courses:</b></p> <p>The CIE marks awarded in case of Practical shall be based on the weekly evaluation of laboratory journals/ reports after the conduction of every experiment and one practical test in the ratio 60:40.</p> <p><b>(d) Internship:</b></p> <p>The CIE marks awarded for internship shall be based on the evaluation of Internship Report, Presentation skill and Question and Answer session in the ratio 50:25:25.</p> <p><b>(e) Technical Seminar:</b></p> <p>The CIE marks awarded for Technical Seminar shall be based on the evaluation of Seminar Report, Presentation skill and Question and Answer session in the ratio 50:25:25.</p> <p><b>(f) Mini – Project:</b></p> |

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|                | <p>The CIE marks awarded for Mini - Project, shall be based on the evaluation of Mini - Project Report, Project Presentation skill and Question and Answer session in the ratio 50:25:25. The marks awarded for Mini - Project report shall be the same for all the batch mates.</p> <p><b>(g) Main Project Work:</b></p> <p><b>(i) Project Work Phase – 1</b><br/>The CIE marks awarded for project work phase -1 shall be based on the evaluation of project work phase -1 Report, Project Presentation skill and Question and Answer session in the ratio 50:25:25. The marks awarded for the Project report shall be the same for all the batch mates.</p> <p><b>(ii) Project Work Phase - 2</b><br/>The CIE marks awarded for project work phase -2 shall be based on the evaluation of project work phase -2 Report, Project Presentation skill and Question and Answer session in the ratio 50:25:25. The marks awarded for Project report shall be the same for all the batch mates.</p>                                                                                                                                                                                                                                                                                                                                                            |
|                | <p><b>(h) Vyavaharika Kannada (Balake Kannada)/Aadalitha Kannada (Samskruthika Kannada)</b></p> <p><b>(i)</b> CIE Marks in Vyavaharika Kannada (Balake Kannada)/Aadalitha Kannada (Samskruthika Kannada) shall be the sum of marks prescribed for tests and assignments. Marks prescribed for tests shall be 75 and that for the assignments shall be 25.</p> <p><b>(ii)</b> The CIE marks awarded for the tests shall be based on three tests generally conducted at the end of fifth, tenth and fifteenth week of each semester. Each test shall be conducted for a maximum of 25 marks and the final CIE marks shall be the sum of the marks of all the three tests.</p> <p><b>(iii)</b> The remaining 25 marks shall be awarded based on the evaluation of assignments/oral discussions/ quizzes that supports communication skills.</p> <p><b>(iv)</b> Final marks awarded shall be the sum of 18OB8.2 (h) (ii) and (iii) for a maximum of 100 marks.</p> <p><b>(v)</b> Students shall write the tests in Blue Books and complete the exercises/activates/ questions given in the University Kannada textbook. These shall be preserved by the Principal/ Head of the Department for at least six months after the announcement of University results and shall be made available for verification at the direction of the Registrar (Evaluation).</p> |
| <b>18OB8.3</b> | <p><b>(a)</b> The CIE marks in the case of Internship/Technical Seminar/Mini-Project and Project Work Phase 1 and 2 shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.</p> <p><b>(b)</b> A committee constituted by the Head of the Department of Humanities and Social Science shall inspect and authenticate the award the CIE marks for the Course Vyavaharika Kannada (Balake Kannada)/Aadalitha Kannada (Samskruthika Kannada). The committee shall consist of two senior faculty members of the Department and the senior most acting as the Chairperson.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>18OB8.4</b> | <p><b>(i)</b> Students satisfying the attendance requirement but failing to secure the minimum percentage of CIE marks, in any Course/s, shall not be eligible for the SEE conducted by the University and they shall be considered as fail in that Course /those Courses. However, they can appear for University examinations conducted in other Courses of the same semester and backlog Course/s if any.</p> <p><b>(ii)</b> Students who have satisfied the attendance requirement but not the CIE requirements shall be permitted to register afresh and appear for SEE after satisfying the CIE requirements in the same Course/s (with or without satisfying the attendance requirement) when offered during subsequent semester/s.</p> <p><b>(iii)</b> Each appearance to SEE to complete a course shall be treated as an attempt.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>18OB8.5</b> | <p>CIE marks of those students, who come under 18OB8.4, shall also be sent to the Registrar (Evaluation) along with other course CIE Marks.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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| 18OB8.6 | <p>(i) The final list, incorporating corrections (if any), of CIE marks awarded to the students in the Theory/Practical/Internship/ Technical Seminar / Mini – Project/Project work –phase 1 and 2, shall be displayed on the notice board of the college much before the closure of the semester.</p> <p>(ii) The institution shall enter the CIE marks of each semester in the format of the VTU online CIE marks portal and submit a certified copy of the same to the University Examination Section within the stipulated date notified by University. Every page of the CIE marks sheet (hardcopy) shall bear the signatures of the concerned Teacher/Teachers, Head of the Department and Principal.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 18OB8.7 | Any corrections or overwriting of CIE marks shall bear the signature(s) of concerned Teacher(s) and in such cases the Head of the Department shall indicate the number of corrections on every sheet and attest it with his/her signature.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 18OB8.8 | CIE marks shall reach the University before the commencement of examination as per the notification from the office of the Registrar (Evaluation) from time to time. After the submission of CIE marks to the University, any request under any circumstances for change of CIE marks shall not be considered.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 18OB8.9 | <p><b>Semester End Examination Marks and Passing standards</b></p> <p>(a) University examination for all Courses under SEE shall be conducted for a maximum of 100 Marks. The marks secured by the students for 100 marks shall be proportionately reduced to a maximum of 60 marks to add the same with the CIE marks for the award of letter grade.</p> <p>(b) The University examinations for all the Programmes of study shall be conducted at the end of each semester for all the eight semesters.</p> <p>(c) Students having no backlog course/s, may not have more than one examination on the same day. However, students having backlog course/s may face a situation where they may have</p> <p>(i) Two examinations scheduled at the same time of the day.</p> <p>(ii) To take two examinations on the same day, one during the morning session and the other in the afternoon session, and</p> <p>(iii) Examinations on consecutive days.</p> <p>As changing the examination dates is not an option, the examination time table shall not be modified/ altered/ adjusted in any of the above three cases. In the first case, the students shall select any one of the clashing courses and in second and third cases, the students shall manage the examinations as per their decision.</p> <p>(d) The pattern of the SEE question paper for Courses Technical English I and II, Constitution of India, Professional Ethics and Cyber Law, and Environmental Studies shall be objective type [Multiple Choice Questions (MCQ)].</p> <p>(e) For a pass in a theory Course/Drawing, students shall secure a minimum 35 % of the maximum marks prescribed for the University examination and in total 40 % of the Course maximum marks, i.e., the sum of the CIE and SEE marks prescribed for the Course.</p> <p>(f) For a pass in Practical/ Mini-project / Internship/Technical Seminar/Project work, students shall secure a minimum of 40 % of the Course maximum marks prescribed for the University examination (SEE).</p> <p>(g) Students who satisfy the conditions 18OB8.9 (e) and (f), and obtain any grade from S to E in a Course shall be considered to have passed that Course.</p> <p>(h) A student shall be declared fail if the candidate</p> <p>(h.a) Fails to satisfy the conditions 18OB8.9 (g).</p> <p>(h.b) Absents himself / herself to the University examination.</p> <p>(h.c) Is held guilty of examination malpractice and for any other reasons and declared the performance of any Course/s null and void by a competent authority.</p> <p>(i) If a student secures F grade in any of the Course/s, he/she shall reappear for that Course/s during the subsequent SEE. The CIE marks awarded to the student at first attempt in the concerned Course/s shall be carried forward. Revised CIE marks is considered only in cases under the provision of 18OB8.4 (ii).</p> |

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| <b>18OB8.10</b> | Students who pass a Course of a semester as per 18OB8.9 (g) shall not be allowed to appear for any individual Course again, unless they opt for rejection of results of entire semester. However, students who have CGPA less than 5.00 at the end of academic Programme, subject to the provision 18OB1.4, shall be allowed to appear for only SEE of Course/s to make up the deficiency in CGPA.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>18OB8.11</b> | A student may, at his/her desire, can reject the total performance of a semester (including CIE marks) or reject only the result of his/her performance in University examinations of a semester. The rejection is permitted only once during the entire Programme of study.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>18OB8.12</b> | <p>Students who desire to reject the SEE results of a semester shall reject the total performance (irrespective of the earned Course grades) in all the Courses of the semester either rejecting or retaining the CIE marks. However, rejection of the performance of VIII semester project shall not be permitted.</p> <p>(i) Students, who desire to reject the total SEE performance of an odd or even semester including CIE marks, have to repeat that odd or even semester of the prevailing scheme by taking readmission during the subsequent academic year/s. They shall also be governed by 18OB12.1, 12.2 and 1.4.</p> <p>(ii) If the rejection of SEE results excluding CIE marks is of odd semester, students shall be allowed to take admission to the immediate next even semester.</p> <p>(iii) If the rejection of SEE results excluding CIE marks is of even semester, then students shall not be allowed to take admission to the next odd semester as per 18OB10.3. In such cases, students shall take admission to the next odd semester of the prevailing scheme during the subsequent academic year/s, after obtaining the eligibility to move to higher semester. They shall also be governed by 18OB12.1, 12.2 and 1.4.</p> <p>(iv) Readmission to odd/even semester as per 18OB8.12 (i) and (iii) shall not be considered as fresh admission and therefore students shall continue to have the same University Seat Number, which was allotted earlier. The maximum duration of the Programme (as per 18OB1.4) shall be counted with reference to old University Seat Number.</p> <p>(v) Applications for rejection and approval to reappear for University examinations shall be sent to the Registrar (Evaluation) through the Principal of the College within 30 days from the date of announcement of the results. Late submission of applications shall not be accepted for any reasons.</p> <p>(vi) Application for approval of readmission shall be sent to the Registrar through the Principal of College within 30 days from the date of the announcement of the results. Late submission of application shall not be accepted for any reasons.</p> |
| <b>18OB8.13</b> | Students who opt for rejection of results of University examination shall be eligible for the award of degree and not for the award of ranks and Honours Degree.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>18OB9.0</b>  | <b>Attendance Requirement</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>18OB9.1</b>  | Each semester shall be considered as a unit for calculation of the attendance and the Candidates have to put in a minimum attendance of 85% in each Course with a provision of condonation of 10% of the attendance by the Vice-Chancellor on the specific recommendations of the Principal of the college where the candidate is studying, based on medical grounds, participation in University/State/ National/ International level sports and cultural activities, seminars, workshops, paper presentation etc., of significant value. The supporting documents for condoning the shortage of attendance shall be submitted along with the recommendations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>18OB9.2</b>  | <p>(a) The basis for the calculation of attendance shall be the period prescribed by the University by its calendar of events and as notified by the Registrar (Evaluation) from time to time.</p> <p>(b) In case of late admissions, approved by competent authority (DTE/VTU), to I semester/ III semester (lateral entry scheme) of day college/III semester (lateral entry scheme) of Engineering Programme conducted during evening, the attendance shall be reckoned from the date of admission to the Programme.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| <b>18OB9.3</b>  | The Course Instructor/ Mentor/College shall inform the students as well as their parents /guardians about the attendance status periodically. Students who are facing the shortage of attendance shall be mentored to make up the shortage. Principals shall also notify every month, the list of candidates who are under short of attendance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>18OB9.4</b>  | A candidate, who does not satisfy the attendance requirement (in one or more Courses and including the Courses Additional Mathematics I and II) as mentioned in 18OB 9.1 shall not be eligible to appear for the Semester End Examinations of that semester and shall not be permitted to take admission to next higher semester. The candidate shall be required to repeat that semester during the subsequent year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>18OB10.0</b> | <b>Vertical Progression (Promotion/ Eligibility to higher semesters)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>18OB10.1</b> | There shall be no restriction for promotion from an odd semester to the next even semester, provided the student has fulfilled the attendance requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>18OB10.2</b> | Along with the reasons specified at 18OB8.9 (h), a student shall be declared fail if he/she<br>(i) Has not satisfied the CIE requirements of any Course/s.<br>(ii) Has not registered for the SEE even after satisfying the attendance and CIE requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>18OB10.3</b> | <p><b>(A) Vertical Progression in case of students admitted to First year:</b></p> <p>(a) Students having not more than four F grades in the two semesters of first year of the Programme shall be eligible to move to second year.</p> <p>(a.1) Students having not more than four F grades in the four semesters of I and II year shall be eligible to move to III year.</p> <p>(a.2) Students who have earned all the prescribed credits of I year, and having not more than four F grades in the four semesters of II and III year shall be eligible to move to IV year.</p> <p><b>(B) Vertical Progression in case of Diploma students admitted to Second year (lateral entry):</b></p> <p>(a) Students having not more than four F grades (excluding the Fail or pass status of Additional Mathematics I and II) in the two semesters of II year of the Programme shall be eligible to move to III Year.</p> <p>(a.1) Students having not more than four F grades (excluding the Fail or pass status of Additional Mathematics I and II, if any) in the four semesters of II and III year shall be eligible to move to IV year.</p> <p>(b) The mandatory non – credit Courses Additional Mathematics I and II prescribed at III and IV semesters respectively, to lateral entry Diploma holders admitted to III semester of B.E./B.Tech. Programmes shall attend the classes during the respective semesters to satisfy attendance and CIE requirements and to appear for the University examinations.</p> <p>(b.1) In case, any student fails to satisfy the attendance requirement of the Courses Additional Mathematics I and II, he/she shall not be eligible to appear for the Semester End Examinations of that semester and shall not be permitted to take admission to next higher semester. The candidate shall be required to repeat that semester during the subsequent year.</p> <p>(b.2) Students who have satisfied the attendance requirement but not the CIE requirements of the Courses Additional Mathematics I and II shall be permitted to register afresh and appear for SEE after satisfying the CIE requirements in the same Course/s (with or without satisfying the attendance requirement) when offered during subsequent semester/s.</p> <p>(c) Completion of Additional Mathematics I and II shall be mandatory for the award of degree.</p> <p><b>(C) Vertical Progression in case of B.Sc students admitted to Second year (lateral entry):</b></p> <p>(a) Students having not more than four F grades (excluding the Fail or pass status of Engineering Graphics and Elements of Civil Engineering and Mechanics of First Year Engineering Programme) in the two semesters of II year of the Programme shall be eligible to move to III Year.</p> <p>(a.1) Students having not more than four F grades (excluding the Fail or pass status of Engineering Graphics and Elements of Civil Engineering and Mechanics of First Year Engineering Programme, if any) in the four semesters of II and III year shall be eligible to move to IV year.</p> |

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|                 | <p>(b) The prescribed mandatory non – credit Courses Engineering Graphics and Elements of Civil Engineering and Mechanics of First Year Engineering Programme to lateral entry B.Sc. holders admitted to III semester of B.E./B.Tech. Programmes, shall attend the classes during the respective semesters to complete CIE and attendance requirements and to appear for the University examinations.</p> <p>(b.1) In case, any student fails to satisfy the attendance requirement of the above said Courses, he/she shall not be eligible to appear for the Semester End Examinations of that semester and shall not be permitted to take admission to next higher semester. The candidate shall be required to repeat that semester during the subsequent year.</p> <p>(b.2) Students who have satisfied the attendance requirement but not the CIE requirements of the above said Courses, shall be permitted to register afresh and appear for SEE after satisfying the CIE requirements in the same Course/s (with or without satisfying the attendance requirement) when offered during subsequent semester/s.</p> <p>(c) Completion of Engineering Graphics and Elements of Civil Engineering and Mechanics shall be mandatory for the award of degree.</p> <p>The Principal of each college shall make suitable arrangements in the timetable to facilitate the B.Sc students to attend the above mentioned courses to satisfy the CIE and attendance requirements and to appear for the University examinations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>18OB11.0</b> | <b>Award of Degree</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>18OB11.1</b> | <p><b>1. B.E./B.Tech. degree</b></p> <p>(a) Students shall be declared to have completed the Programme of B.E. / B.Tech. degree and is eligible for the award of degree, provided the students have undergone the stipulated Course work of all the semesters under the Scheme of Teaching and Examinations and has earned the prescribed number of credits as per the provision 18OB1.5. [To be read along with 18 OB 12.1 and 12.2]</p> <p>(b) For the award of degree, a CGPA <math>\geq 5.00</math> at the end of Programme shall be mandatory. [To be read with 18OB11.2 (1)]</p> <p>(c) Completion of Additional Mathematics I and II, shall be mandatory for the award of degree to lateral entry diploma students.</p> <p>(d) Completion of Engineering Graphics and Elements of Civil Engineering and Mechanics of First Year Engineering Programme shall be mandatory for the award of degree to lateral entry B.Sc graduates.</p> <p>(e)(i) Over and above the academic credits, every Day College regular student admitted to the 4 years Degree Programme and every student entering 4 years Degree Programme through lateral entry, shall earn 100 and 75 Activity Points respectively through AICTE Activity Point Programme for the award of degree. Students transferred from other Universities/ Autonomous colleges under VTU to fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eight semester Grade Card.</p> <p>(ii) Activity Points (non-credit) have no effect on SGPA/CGPA and shall not be considered for vertical progression.</p> <p>In case students fail to earn the prescribed activity Points before the commencement of 8<sup>th</sup> semester examinations, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.</p> <p><b>2. B.E./B.Tech. (Honours) degree</b></p> <p>(a) A student shall be declared to have completed the Programme of B.E. / B.Tech. degree and shall be eligible to get undergraduate BE/B.Tech degree with Honours, provided.</p> <p>(a.1) The student has undergone the stipulated Course work of all the semesters under the same Scheme of Teaching and Examinations and has earned the prescribed number of credits as per the provision 18 OB1.5 (a) and (b).</p> <p>(a.2) Has earned additional 20 or more credits through University approved online Courses.</p> <p>(a.3) Satisfies the Regulations Governing the award of Honours at B.E./B.Tech. Degree Programmes.</p> |

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| 18OB11.2 | <p><b>(1) Noncompliance of CGPA <math>\geq 5.00</math> at the end of the Programme</b></p> <p>(a) Students who have completed all the courses of the Programme but not having a CGPA <math>\geq 5.00</math> at the end of the Programme, shall not be eligible for the award of the degree.</p> <p>(b) In the cases of 18OB11.2 (1) (a), students shall be permitted to appear again for SEE in course/s [other than Internship, Technical seminar, Project (Mini and Main), and Laboratories] of any Semester/s without the rejection of CIE marks for any number of times, subject to the provision of maximum duration of the Programme to make up the CGPA equal to or greater than 5.00 for the award of the Degree.</p> <p>(c) In case, the students earn improved grade/s in all the reappeared course/s, the CGPA shall be calculated considering the improved grade/s. If it is <math>\geq 5.00</math>, the students shall become eligible for the award of the degree. If CGPA <math>&lt; 5.00</math>, the students shall follow the procedure laid in 18OB11.2(1) (b).</p> <p>(d) In case, the students earn improved grade/s in some course/s and the same or lesser than the previously earned pass grade/s in the other reappeared course/s, the CGPA shall be calculated considering the improved grade/s and the pass grades earned before the reappearance. If it is <math>\geq 5.00</math>, the students shall become eligible for the award of the degree. If CGPA <math>&lt; 5.00</math>, the students shall follow the procedure laid in 18OB11.2 (1) (b).</p> <p>(e) In case, the students earn improved grade/s in some courses and fail in the other reappeared course/s, the CGPA shall be calculated by considering the improved grade/s and the previously earned pass grade/s of the reappeared course/s in which the students have failed. If it is <math>\geq 5.00</math>, the students shall become eligible for the award of the degree. If CGPA <math>&lt; 5.00</math>, the students shall follow the procedure laid in 18OB11.2 (1) (b).</p> <p>(f) In case, the students fail (i.e., earns F grade) in all the reappeared course/s, pass grade/s of the course/s earned by the students before reappearance shall be retained. In such cases, the students shall follow the procedure laid in 18OB11.2 (1) (b).</p> <p>(g) Students shall obtain written permission from the Registrar (Evaluation) to reappear in SEE to make up the CGPA equal to or greater than 5.00.</p> <p><b>(2) Noncompliance of Mini-project</b></p> <p>(a) The mini-project shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the mini-project shall be declared fail in that course and shall have to complete the same during subsequent University examinations after satisfying the Mini-project requirements. Also, mini-project shall be considered for eligibility to VII semester.</p> <p><b>(3) Noncompliance of Internship</b></p> <p>(a) All the students of B.E./B.Tech. shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credits shall be included with the credits of VIII semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared fail in that Course and shall have to complete the same during subsequent University examinations after satisfy the internship requirements.</p> |
| 18OB12.0 | <b>Temporary Discontinuation/Break in the Programme/Change in Scheme of Study</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 18OB12.1 | <p>(a) If a candidate, for any reason, temporarily discontinues the Programme or take a break from the Programme during any semester intentionally, he/she shall be permitted to continue the Programme by registering to the same semester of the prevailing scheme. The candidate from that semester shall attend and complete all the remaining Course works of all the semesters, adhering to the regulations of the prevailing scheme and subject to the provision 18OB1.4. Also the Candidates may have to complete additional Course/s, if any, as per the decision of concerned Board of Studies on establishing the equivalence between two schemes. A Grade card shall be issued to that effect. Additional Course/s shall not be considered for the eligibility criteria prescribed for promotion. Based on the individual cases, they shall be considered to decide the SGPA and CGPA to admit the student for the award of degree. Such candidates shall not be eligible for the award of rank / Honours degree.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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|                 | <p>(b) Candidates who take admission to any semester of the existing scheme from another scheme, as a repeater/fresher because of various reasons, shall attend and complete all the remaining semester/s of the Programme adhering to the regulations of the prevailing scheme, and shall complete additional Course/s, if any, as per the decision of concerned Board of Studies on establishing the equivalence between two schemes. A Grade card shall be issued to that effect. Additional Courses shall not be considered for the eligibility criteria prescribed for promotion. Based on the individual cases, they shall be considered to decide the SGPA and CGPA to admit the student for the award of degree. Such candidate shall not be eligible for the award of rank/Honours Degree.</p> <p>(c) The credits to be earned by the candidates under 18OB12.1 (a) and (b) and 18OB14.1(b) and (c) shall be decided by the University along with the additional Course/s to be completed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>18OB12.2</b> | <p>(i) The candidates who have temporarily discontinued the Programme of study or changed the scheme of study from one to another because of various reasons, or transferred from autonomous/other University to non-autonomous VTU constituent/affiliated college, shall be eligible for the award of degree provided the credits earned is equal to or greater than the credits decided by the University in the individual cases.</p> <p>(ii) In case, the credits earned is less than the credits decided by the University in the individual cases, after the completion of all the semesters of the Programme under the prevailing scheme, the candidate shall register for a Course or courses not studied earlier and make up the credits earned equal to or greater than the required for the award of degree.</p> <p>(iii) If the earned Programme credits are greater than the prescribed, the CGPA shall be proportionately reduced to the prescribed Programme credits.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>18OB13.0</b> | <b>Award of Prizes, Medals and Ranks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>18OB13.1</b> | For the award of Prizes and Medals, the conditions stipulated by the Donor shall be considered subject to the provisions of the statutes framed by the University for such awards.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>18OB13.2</b> | <p>1) For award of rank in a Specialization of Bachelor of Engineering/ Technology, the CGPA secured by the students from III to VIII semester shall be considered.</p> <p>(2) The additional credits earned for the award of Honours degree shall not have any bearing for the Rank declaration.</p> <p>(3) A student shall be eligible for a rank at the time of award of degree of Bachelor of Engineering/ Technology, provided that the student,</p> <p>(a) (i) Has passed all the Courses of I to VIII semester in first attempt only in case of Candidates admitted to I year.</p> <p>(ii) Has passed all the Courses (including Additional Mathematics I and II in case Diploma students/ Engineering Graphics and Elements of Civil Engineering and Mechanics in case of B.Sc graduates under lateral entry) of III to VIII semester in first attempt only in case of Candidates admitted under lateral entry scheme.</p> <p>(b) Is not a repeater in any semester because of rejection of result of a semester/ shortage of attendance etc.</p> <p>(c) Has completed all the Courses/semesters of the same Scheme of Teaching and Examinations without any break/discontinuity.</p> <p>(d) Has completed all the semesters (I to VIII/III to VIII) in VTU constituent college or in any VTU affiliated non-autonomous college.</p> <p>(e) Has not been transferred from any autonomous institution affiliated to VTU or from any other University.</p> <p>(4) The total number of ranks awarded shall be 10% of total number of students appeared in VIII semester subject to a maximum of 10 ranks in a Specialization.</p> <p>(5) For award of ranks in a Specialization, a minimum of 10 students should have appeared in the VIII semester examination.</p> <p><b>Illustration:</b></p> <p>(a) If 1228 students appeared for the VIII semester in Electronics and Communication Engineering Programme, the number of ranks to be awarded for Electronics and Communication Engineering shall be 10.</p> |

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|                 | <p>(b) If 90 students appeared for the VIII semester in Biomedical Engineering, the number of ranks to be awarded for Biomedical Engineering will be 09.</p> <p>(6) In case of fractional number of ranks, it is rounded to higher integer only when the first decimal place is greater than or equal to 5.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>18OB13.3</b> | Ranks shall be awarded based on the merit of the students as determined by CGPA. If two or more students get the same CGPA, the tie shall be resolved by considering the number of times a student has obtained higher SGPA. If it is not resolved even at this stage, the number of times a student has obtained higher grades like S, A, B etc., shall be taken into account to decide the order of the rank.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>18OB14.0</b> | <b>Transfer of students</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>18OB14.1</b> | <p>(a) (i) Transfer of students from one VTU affiliated non – autonomous college to another VTU non – autonomous affiliated college shall be permitted only at the beginning of third, fifth and seventh semesters, subject to availability of seats within the permitted intake in respective Colleges with the approval of the Registrar, VTU subject to the provision 18OB10.3.</p> <p>(ii) The students seeking transfer as per 18OB14.1 (a) (i) shall have to obtain No Objection certificate for admission from the University and from both the colleges before the commencement of term as notified by VTU.</p> <p>(iii) Complete the Programme subject to the provision 18OB1.4.</p> <p>(b) Transfer of students from an autonomous to non – autonomous college, affiliated to VTU is permitted with the following conditions.</p> <p>(i) Transfer shall only be at the beginning of III and V semester B.E./B.Tech. Programme.</p> <p>(ii) No transfer shall be permitted to VII semester B.E./B.Tech. Programme.</p> <p>(iii) Students who are seeking transfer must have passed in all the Courses of the previous semesters.</p> <p>(iv) Obtain No Objection certificate for admission from the University and from both the colleges before commencement of term as notified by VTU.</p> <p>(v) Complete additional Course/s, if any, as per the decision of concerned Board of Studies on establishing the equivalence between two schemes. A Grade card shall be issued to that effect. Additional Course/s shall not be considered for the Eligibility criteria prescribed for promotion, calculation of SGPA and CGPA. However, a pass in the additional Courses, if any, is mandatory before the completion of Degree.</p> <p>(vi) Earn the credits decided by the University as per 18OB12.2.</p> <p>(vii) Complete the Programme subject to the provision 18OB1.4.</p> <p>(c) In the case of students seeking transfer from Universities other than VTU, the students must have passed in all the Courses of I and II semesters for admission to III semester and all the Courses of I to IV semesters for admission to V semester. No transfer shall be permitted to VII semester B.E./B.Tech. Programme of VTU from any other Universities. The students seeking admission from other Universities to VTU shall have to</p> <p>(i) Apply for establishment of equivalence with prescribed fees as notified by the VTU and obtain No Objection certificate for admission from the University before the commencement of term as notified by VTU.</p> <p>(ii) Produce No Objection certificate for admission from both the colleges before the commencement of term as notified by VTU.</p> <p>(iii) Complete additional Course/s, if any, as per the decision of concerned Board of Studies on establishing equivalence between two schemes. A Grade card shall be issued to that effect. Additional Course/s shall not be considered for the eligibility criteria prescribed for promotion, calculation of SGPA and CGPA. However, a pass in the additional Courses, if any, is mandatory before the completion of Degree.</p> <p>(iv) Earn the credits as decided by the University as per 18OB12.2.</p> <p>(v) Complete the Programme subject to the provision 18OB1.4.</p> |
| <b>18OB14.2</b> | Transfer of students within the College from one branch to another branch at the start of III semester shall be permitted with the approval of the Registrar, VTU subject to the provisions made by the appropriate authorities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**Regulations Governing the Degree of Bachelor of Engineering/Technology (B.E./B.Tech.)  
Under Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
Effective from the Academic Year 2018 – 19**

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| <b>18OB14.3</b> | The University may prescribe fee for administration purpose, which shall be notified from time to time, for transfer from one college to another (Change of College) or one branch to another branch (change of branch within the college).                                                                |
| <b>18OB15.0</b> | <b>Applicability and Power to Modify</b>                                                                                                                                                                                                                                                                   |
| <b>18OB15.1</b> | The regulations governing the Degree of Bachelor of Engineering/Technology of Visvesvaraya Technological University shall be a binding on all concerned.                                                                                                                                                   |
| <b>18OB15.2</b> | <p>i) Notwithstanding anything contained in the foregoing, the University shall have the power to issue directions/ orders to address any difficulty.</p> <p>ii) Nothing in the foregoing may be construed as limiting the power of the University to amend, modify or repeal any or all of the above.</p> |



  
**REGISTRAR**  
**Visvesvaraya Technological University,**  
**BELAGAVI - 590 018.**