

Rules & Regulation 2015

for

**Full time Degree in Engineering & Technology
(B. Tech.)**

Tripura University
(A Central University)
Suryamaninagar, Tripura (W)

1.0. Preamble:

1.1 Engineering Education:

Engineering & Technology (E & T) professionals are key personnel in any country responsible for its economic progress and prosperity, leading to increased comfort and satisfaction levels of its people and the society at large. The developed countries have already benefitted from their *knowledge and skills* and have demonstrated the crucial role played by these professionals in strengthening their R&D, industries and economies. As India is now engaged in such an endeavour and has prepared a road map for becoming a developed nation by the year 2020, serious efforts are now going on in the country in this direction. In this context, the education and training of *E&T* professionals are now receiving much attention here. But, there are some challenges being faced which require appropriate orientation of *E&T* education and research in the country at all levels, particularly at UG, so that *E&T* professionals of the 21st century are equipped to face the challenges with determination and courage becoming ready in a short time to contribute to national development.

1.2. Approach to Curriculum:

As a major objective of *E&T* education in India now is to develop *E&T* professionals having competencies, intellectual skills and knowledge equipping them to contribute to the society through productive and satisfying careers as *innovators, decision makers and leaders* in the national and global economies of the 21st century. According to the model scheme of instruction and syllabi proposed by AICTE, the *Approach to Curriculum for UG of E&T Degree Programs* needs to lay special emphasis on the following objectives.

1.3. Objectives:

- To prepare the students to excel in various educational programs or to succeed in industry / technical profession through further education/training.
- To provide the students with a solid foundation in mathematical, scientific and *E&T* fundamentals required to solve *E&T* related problems.
- To train the students with a breadth of scientific and *E&T* knowledge to comprehend, analyze, design & create novel products and solutions for real life problems.
- To inculcate in the students professional/ethical attitude, effective team work skills, multidisciplinary approach and to relate *E&T* issues to a broader context.
- To provide the students with academic environment of excellence leadership, ethical guidelines and life-long learning needed for a long/productive career.

1.4. Expected Educational Outcomes:

The following ten educational outcomes from the E&T students are expected-

- Ability to apply the knowledge acquired in subject areas like, Mathematics, Basic Sciences, Engineering Sciences, Professional Subjects and Environmental Issues;
- Strong foundation in theoretical/experiential work for being able to analyze, synthesize and design engineering products, processes and systems as desired;
- Expertise in collecting field data, designing and conducting experiments in the laboratory/elsewhere and analyzing/interpreting the results;
- Capacity to function in multi/inner-disciplinary teams with a spirit of tolerance, patience and understanding so necessary for team work;
- Competence to acquire knowledge on one's own through libraries/data bases for contributing to knowledge assimilation, creation, dissemination & life-long learning;
- Better understanding and acceptance of professional, social, moral and ethical responsibilities and good knowledge of contemporary issues;

- Familiarity with ICT and seeking pollution –free and/or environment-and energy-friendly solutions to day-to-day problems faced by the society at large, based on ICT;
- Broad education is necessary to get a perception of the impact of solutions provided for developmental issues in a global/societal context;
- Capacity for rational, objective, orderly and logical thinking and ability to communicate with fellow professionals/society effectively in written/oral forms; and,
- Good attitudes and skills in personnel management and maintenance of human relations’ required in every ones working life.

1.5. Major Groups of Subjects:

To fulfil the above objectives and outcomes of pass out U.G. of E & T students all the subjects are divided in the following major groups alongwith percentage representation in total credits-

- Humanities & Social Science(HS) – 5% to 10% of total credit
- Basic Sciences(BS) – 15% to 20% of total credit
- Engineering Sciences(ES) – 15% to 20% of total credit
- Professional Core Subjects(PC) – 30% to 40% of total credit
- Professional Elective Subjects(PE) – 10% to 15% of total credit
- Open Elective Subjects(OE) – 5% to 10% of total credit
- Project Work – 10% to 15% of total credit
- Mandatory Courses(MC) – Non-credit

2.0 Introduction to Bachelor of Technology (B. Tech.) Programmes:

There shall be a program of study leading to the Bachelor of Technology (B. Tech.) Program offered by the Tripura University in order to fulfil the objectives of creating quality manpower, both National and International, for producing Degree Engineer in the branches as mentioned below. This curriculum along with rules and regulation will be in force w.e.f academic year 2015-16.

- Civil Engineering
- Mechanical Engineering
- Electronics & Communication Engineering
- Computer Science & Engineering
- Electrical Engineering

New more branches may also be introduced in future as per requirements.

3.0 Salient Features of the Bachelor of Technology Programmes :

- 3.1. **Semester Scheme:** Degree Programme is of 4 academic years (=8 Semesters), with the year being divided into two Semesters of ~ 20 weeks (>=90 working days) each for course work, followed by Continuous Internal Evaluation (CIE) in the Semester & Semester End Examination (SEE).

- 3.2. **Credit System:** The Degree Programme is credit based system enabling quantification of course work, with specified credit being assigned to each unit after a student completes its teaching-learning process, followed by passing in both CIE & SEE.
- 3.3. **Credit Courses:** Students are to register in each semester for the courses assigned to the semester. Students earn One Credit by registering and passing:
- (i) One hour/week/Semester for Theory/Lecture (L) Courses; and,
 - (ii) Two hours/week/Semester for Laboratory/Practical(P) Courses or Tutorials (T);
- 3.4. **Course Load:** First to sixth semester will have about 8-11 courses in each semester. However number courses in the two semesters of 4th year are lesser. Minimum 20 credit subjects are assigned in a semester. A minimum total credit of any degree in engineering programme is 176. Typical weekly Contact Hours in a semester is 30/Week. First & Second semester of the degree programs will have common curriculum with credit 21.
- 3.5. **Mandatory Courses:** Course work on peripheral subjects in a program, wherein familiarity considered mandatory; is included as *non-Credit, Mandatory Courses*, with only a *pass* in each required to qualify for Degree award. Summer internship in relevant industry(s) for a total period of one month during the semester break between sixth and seventh is part of the mandatory courses.
- 3.6. **Course Evaluation:** CIE and SEE to constitute the major evaluations prescribed for each Course, with only those students maintaining a minimum standard in CIE being permitted to appear in SEE of the Course; CIE and SEE to carry 40% and 60% weightage respectively, to enable each Course to be evaluated for 100 marks, irrespective of its Credits (except project work). A student is to obtain minimum 40% of CIE in each course of a semester to enable the student to appear in SEE of the course.

3.7. **CIE:** Break up of CIE

Subject Category	Type of evaluation	Frequency of examination/semester	Percentage of marks assigned	Remarks
Theoretical	Mid Semester Examination (MSE)	1	50 % of CIE	To be conducted centrally at Institute level
	Quiz/Seminar/group discussion	2	20% of CIE	To be conducted by the Course Instructor
	Class test	1	20% of CIE	
	Assignment	1	10% of CIE	
Sessional Practical	Laboratory work performance	Each week	30% of CIE	To be conducted by the Course Instructor
	Laboratory Record Book	Each week	30% of CIE	
	Practical Assignment	2	40% of CIE	

- 3.8. **SEE:** To be conducted by the University and cover the entire *Course Syllabi*. There will be four modules in a theoretical course. SEE questions to be set from each module giving equal weight with choice if any, to be confined to module concerned only. The questions to be

comprehensive emphasizing analysis, synthesis, design, problems & numerical quantities. The distribution of weightage for SEE is as follows:

Subject Category	Type of evaluation	Frequency of examination/ semester	Percentage of marks assigned	Remarks
Theoretical	Semester End Examination (SEE)	1	100 % of SEE	To be conducted centrally at Institute level
Sessional /Practical	End Semester Practical Examination (As suggested by BUGS)	1	50% of SEE	To be conducted by the Course Instructor
	Viva - voce	1	50% of SEE	To be conducted jointly by the Course Instructor and another Faculty of the department nominated by HOD.

3.9. **Relative Grading and Grade Points:** Relative Grading system is adopted for rational evaluation and better interest of the students. The average of actual marks obtained by the candidates for a particular subject/course is treated as equivalent to 75% marks. Marks of an individual candidate to be converted to relative percentage on the basis of above scale as below-

$$\text{Relative Percentage} = (\text{Actual mark obtained}/\text{Average mark}) \times 75$$

[Subject to maximum is 100]

Letter Grades are used on the basis of relative grading to quantify the qualitative measure of achievement in each Course. *O(Outstanding)*, *A+(Excellent)*, *A(Very Good)*, *B+(Good)*, *B(Average)*, *C(Poor)* & *F(Fail)* are the letter grades based on relative percentage(%) scored in (CIE+SEE) of the Course. and conversion to Grade done by Absolute Grading. Following table shows the conversion of relative percentage of mark into the above Letter Grades and corresponding 10 point scale of Grade Point (GP). A student is declared to pass a *Course* only when the student secures $GP \geq 05$ (*C Grade*);

Range of Relative Percentage	Letter Grade	Grade Point (GP)
91-100	<i>O(Outstanding)</i>	10
81-90	<i>A+(Excellent)</i>	9
71-80	<i>A(Very Good)</i>	8
61-70	<i>B+(Good)</i>	7
51-60	<i>B(Average)</i>	6
40-50	<i>C(Poor)</i>	5
0-39	<i>F(Fail)</i>	0

3.10. **First Class:** A student securing letter Grade *B+* and above (equivalently grade point 7 or above) is treated to be placed in 1st Class.

3.11. **Grade Point Average (GPA):** Computation of *Semester GPA (SGPA)* to be done by dividing

the sum of Credit Points ($CrP = GP \times Credit$) of all Courses of a particular semester by the total number of credits registered in that Semester.

3.12. **Cumulative Grade Point Average (CGPA):** Average of all (eight) semesters of the entire courses is defined to be CGPA and is computed as $CGPA = (CrP_1 + CrP_2 + \dots + CrP_8) / (Credit_1 + Credit_2 + \dots + Credit_8)$ where CrP_1, CrP_2, \dots represent credit points of all the semesters. Similarly $Credit_1, Credit_2, \dots$ represent credits of all the semesters of entire course.

3.13. **Passing Standards:** Both *SGPA* & *CGPA* serving as useful performance measures in the Semester System. At the **Semester-end** a student be allowed to continue in the next semester only when getting *SGPA* ≥ 5.00 irrespective of number of subjects with grade F in the particular semester or in previous semesters. Similarly, student be declared successful at the **Programme-end** only when getting *CGPA* ≥ 5.00 with none of the Courses registered in any Semester remaining with F Grade for Award of the Degree.

A special supplementary examination will be conducted within next three months from the date of publication of eighth semester result to facilitate the final year students to clear their back paper(s) with grade F of seventh and eighth semesters, if any, for successful completion of degree program.

Equivalent percentage against a *SGPA* or *CGPA* earned can be computed as-

$$\% \text{ of Marks} = 9.5 \times (\text{SGPA or CGPA})$$

3.14. **Credits Required for Degree Award:** The minimum number of Credits to be earned by a student for the *B. Tech. Degree Awarded* by Tripura University is 176. Also, each student has to successfully pass in the *mandatory courses* as prescribed in the syllabus to qualify for the Degree.

4.0 Eligibility Criteria for Admission :

- 4.1 Candidates who have passed Higher Secondary (10+2) or equivalent Examination with Physics, Chemistry and Mathematics from any recognized Board with required percentage of marks as suggested by AICTE time to time, are eligible for admission to First Semester of any B. Tech. Program. Candidate has to be nominated by the Joint Entrance Board constituted by the Government on the basis of merit position of Joint Entrance Examination or as nominated by the Govt. of Tripura.
- 4.2 Candidate must satisfy minimum medical fitness required to continue the respective courses.

5. Curricular structure and Syllabus:

The subjects of study in each semester, the number of lecture/tutorial/ practical periods allotted per week to each subject, the total marks and credit allotted etc. for the University examinations shall be in accordance to the approved curricular structure & syllabus of the Programme.

The syllabi may be modified from time to time.

6. Eligibility criteria for appearing at the End Semester Examination:

- 6.1. A candidate has to attend a regular course of study in Theory, Practical and Sessional with a minimum overall attendance of 80%.
- 6.2. Student having less than 80% but more than 60% attendance shall be known as non-collegiate student. Such students shall have to pay non-collegiate fees as prescribed by the university from time to time.
- 6.3. Students having attendance less than 60% shall be termed as dis-collegiate students. Such student shall not be allowed to fill up the examination forms and sit for SEE. They have to take admission afresh in the appropriate semester next time.
- 6.4 Period of involvement of a student in co-curricular/extracurricular activities with permission of appropriate authority be considered for calculating attendance percentage.
- 6.5 Students to appear in Mid Semester examination should have at least 60% attendance in each courses of the ensuing semester up to the date of commencement of Mid Semester examination.
- 6.6 No refund/adjustment of any fees paid to the University is permitted.
- 6.7 A candidate has to complete the Degree Programme within seven years from the year of first admission in the Program; otherwise his Registration in that Programme shall automatically be cancelled.

7. Conduct of the Examination:

- 7.1. There shall be SEE examination after each semester conducted by Tripura University.
- 7.2. A candidate who has fulfilled all the conditions shall submit application in the prescribed format to the Controller of Examinations along with the requisite fees prescribed by the university from time to time. The head of the Institute while forwarding such application form shall certify the entire requirement mentioned in the prescribed form.
- 7.3. For smooth conduct of the examination there shall be one Centre-in-Charge to be appointed by the Controller of Examinations. The Centre-in-Charge shall be responsible for keeping the answer scripts in sealed covers and handing over the same to the Controller of Examinations immediately after completion of the examinations.
- 7.4. The head of the Institute shall arrange to forward the sessional and internal assessments marks to the Controller of Examinations immediately after completion of the examinations.
- 7.5. Candidate shall not be admitted into the examination hall without valid admit card. However, the candidate may be allowed if the Centre-in-Charge is otherwise satisfied on the identity of the candidate.
- 7.6. Permission to appear at any University examination may be withdrawn before or during the course of the examination for any misconduct and for adopting any unfair means in the Examination hall. Centre-in-Charge may immediately expel such candidate issuing a notice for common circulation and intimating the Controller of Examinations with relevant papers immediately.

8. Appointment of Paper Setters, Moderators and Examiners for SEE.

8.1. The Controller of Examinations on recommendation of the Board of Undergraduate Studies (BUGS) shall appoint two paper setters for each paper. Both the Examiners shall submit the manuscripts of question paper to the Controller of Examinations.

8.2. The Controller of Examinations on recommendation of the BUGS shall constitute a Board of Moderators for finalizing each and every question of theory papers of SEE.

8.3. The Controller of Examinations on the recommendation of BUGS shall appoint the required number of examiners for evaluation of papers.

9. Distribution of Marks and Question Pattern in Theory Papers:

9.1. Each theory paper of 100 marks shall have two parts: *CIE* and *SEE*. *CIE* will be made on 40 whereas *SEE* will be made on 60 as per the break-up given in Section 3.7 and 3.8.

9.2 The syllabus of each theoretical paper is comprised of **four** modules. Questions to be set from each module giving equal weight with choice(s) confined to concerned module only. Each such question will carry 12 marks which can be distributed suitably into sub-parts if required. There shall be an another compulsory question containing **six** short questions each carrying 2 marks covering the all four modules of the syllabus.

9.3. Each Practical / Sessional paper will be of 100 marks (except project work) which is divided in two parts *CIE* and *SEE* in the manner described in 3.7 and 3.8.

9.4. The assessment of project work to be carried out in the following manner:

Type of Examination	Type of evaluation	Frequency of examination/semester	Percentage of marks assigned	Remarks
CIE	Presentation /Demonstration by project group	2	50 % of CIE	To be conducted at department level. Assessment to be made by at least two teachers and the concerned project guide.
	Assessment by Respective Project Guide	1	50% of CIE	To be evaluated by the concerned Project guide
SEE	Project Report	1	50% of SEE	To be evaluated by at least two teachers and the concerned project guide.
	Final Presentation /Demonstration	1	50% of SEE	

10. Publication of Result:

10.1. The University shall publish the list of successful candidate by the recommendation of the Board of Examiners and after the meeting of the Technical Committee. However, The Controller of Examinations shall issue a notice mentioning the date of the meeting of the Board of Examiners.

10.2. Each candidate shall receive a Grade sheet mentioning the grade the candidate obtained in each paper. The SGPA of the semester shall be mentioned in the Grade sheet.

10.3. In order to pass a course, a candidate has to secure at least **C** grade in a course being registered.

10.4. If anybody is awarded with **F** Grade in a course, the candidate has to repeat the course through by appearing special examination/examination in next appropriate Semester.

10.5. A candidate shall be awarded Distinction with **O** Grade, if the student secures grade point equal to 9.0 or above in CGPA without having any back paper in any Semester.

11. For interpretation of any clause in the present Rules and Regulations and for settlement of any dispute, the decision of the Vice – Chancellor, Tripura University shall be considered as final.
