

**SCHOOL OF ENGINEERING AND TECHNOLOGY
SRI PADMAVATI MAHILA VISVAVIDYALAYAM
TIRUPATI – 517 502**



M. Tech Degree Programme (CBCS) Regulations-2024 (Revised)
(To come into effect from the batch admitted in academic year 2019-2020)

CHOICE-BASED CREDIT SYSTEM (CBCS)
(In accordance with AICTE Model Curriculum)

**SCHOOL OF ENGINEERING AND TECHNOLOGY
SRI PADMAVATI MAHILA VISVAVIDYALAYAM
TIRUPATI – 517 502**



M. Tech Degree Programme (CBCS) Regulations-2024 (Revised)
(To come into effect from the batch admitted in academic year 2019-2020)

CHOICE-BASED CREDIT SYSTEM (CBCS)
(In accordance with AICTE Model Curriculum)

1. PREAMBLE

M.Tech Degree Programme offered by the School of Engineering and Technology has a duration of two academic years with each academic year being divided into two consecutive semesters. Choice-Based Credit System (CBCS) is a flexible system of learning and enables students choose elective courses from a large pool of prescribed elective courses. For every course, course objectives and course outcomes are defined following a systematic procedure. A course comprises of lecture/tutorial/laboratory work/field work/Dissertation work/viva/seminar/assignment/presentation/self-study, etc. or a combination of some of these. Under the CBCS, every course has a certain weight defined in terms of the number of credits. The requirement for awarding a degree is prescribed in terms of number of credits to be completed by the students.

2. MINIMUM QUALIFICATION FOR ADMISSION INTO M.TECH PROGRAMME

The Minimum Qualification for seeking admission into M.Tech Degree Program is B.Tech Degree, with at least 50% marks in aggregate or a minimum 5.5 CGPA awarded by SPMVV or any other university recognized by U.G.C in the appropriate Branch of Engineering.

3. SPECIALIZATIONS OF STUDY

The specializations of study in M.Tech Degree Programme are:

- Department of Computer Science and Engineering:
 - Artificial Intelligence and Data Science
- Department of Electronics and Communication Engineering
 - Wireless Communications
- Department of Electrical and Electronics Engineering:
 - Power Electronics & Drives
- Department of Mechanical Engineering
 - Robotics.

4. SEMESTER

Generally, each semester shall consist of 18 weeks with a typical academic work of 30 hours/week, equivalent to 90 actual instruction days. However, instructional days may be reduced up to 72 per semester, with increased instructional hours per course per week.

5. CREDIT DEFINITION

It is a unit by which the course work is measured. It determines the number of hours of instructions required per week per semester. The following definitions are adopted:

| | | |
|-------------------------|---|--------------------------------|
| Lecture/Tutorial | - | 1 hour/week = 1 Credit |
| Practical | - | 2 hours/week = 1 Credit |

6. A Course comprises of one or more credits depending on the quantum of syllabus to be covered in the course. The M.Tech programme comprises of basic courses (basic sciences and engineering sciences), core courses, elective courses (professional electives and open electives), skill enhancement and audit courses.

7. COURSE REGISTRATION

Every student has to register for the set of Courses offered by the Department in that Semester including those of Open Elective course offered by other Departments and MOOC courses with the total number of their Credits being limited by considering the permissible weekly contact hours (typically:30hours/week).

8. CREDITS REQUIRED FOR THE AWARD OF DEGREE

A student shall become eligible for the award of M.Tech degree, if she earns a minimum of 80 credits by passing all the courses prescribed for the programme.

- 8.1. It is mandatory for a student to complete successfully all the basic and core courses pertaining to her specialization of study.
- 8.2. A student shall choose elective courses from the list of elective courses prescribed by the department pertaining to her specialization of study. Further, she may choose elective courses offered by other engineering departments or on MOOCs platform. For every programme, the list of elective courses may be divided into the following types:
 - 8.2.1. **Professional Electives** prescribed by the department – Courses being offered as electives by the department or the courses on MOOCs platform.
 - 8.2.2. **Open Electives** – Courses offered by other departments
- 8.3. Every student is required to take certain prescribed minimum number of professional electives and open electives.
- 8.4. A student may audit a course of her interest with the permission of the teacher concerned. However, such credits are not considered as a part of the mandatory credits.

9. SCHEME OF INSTRUCTION

The Boards of Studies (BoS) of each specialization shall formulate the scheme of instruction and detailed syllabi. For every course, course objectives and course outcomes shall be defined. The syllabi of theory courses shall be organized into five units of equal weight.

10. COURSE CODING SCHEME

Each course code is denoted by eight alpha-numerals.

| | |
|--|--|
| First two digits indicates the year of introduction of Regulations | 19 |
| Code of the Programme | M: M.Tech |
| Code of the department offering the Course | CS: Computer Science and Engineering EC: Electronics and Communication Engineering EE: Electrical and Electronics Engineering ME: Mechanical Engineering BS: Basic Sciences and Humanities |
| Nature of course | T: Theory P: Practical J: Project Work S: Seminar I: Internship M: MOOCs |
| Course Number | 01, 02, ... |

11. STRUCTURE OF CURRICULUM

Curriculum consists of a good mix of Basic, Core and Elective courses. The break-up of various types of courses and percentage of credits offered are shown in the table below. Practicals include Laboratory/Seminar/Comprehensive Viva/Dissertation Work.

| S.No | Category | AICTE | SPMVV | % |
|-------|---|------------|------------|--------|
| 1 | Programme Core, Skill Enhancement Course and Research Methodology | 30-35% | 26 | 32.5% |
| 2 | Professional Electives | 15-20% | 15 | 18.75% |
| 3 | Open Electives | 4-5% | 6 | 7.5% |
| 4 | Management Course | 4-5% | 3 | 3.75% |
| 5 | Comprehensive Viva | 2-3% | 2 | 2.5% |
| 6 | Technical Presentation and Dissertation work | 40% | 28 | 35% |
| 7 | Audit Course | Non Credit | Non Credit | - |
| Total | | | 80 | 100% |

12. DURATION OF THE PROGRAMME

Minimum duration for the completion of the programme is 2 years and the maximum duration is 4 years.

13. ATTENDANCE REQUIREMENTS

- 13.1. A student is required to complete the study of M.Tech Programme satisfying the attendance requirements in all the semesters within a period of four academic years from the year of admission to become eligible for the award of M.Tech degree failing which she forfeits her seat.
- 13.2. Normally a student should put in 100% of attendance. However, relaxation may be given up to 25% for attending to personal needs/co-curricular activities (Seminars/Conferences/workshops/hackathon, etc.) and extra-curricular activities (Sports/games /NCC/NSS, etc.)
- 13.3. A student shall be detained in a semester if she fails to satisfy the attendance requirements as given below.
 - 13.3.1. A student shall attend at least 75 percent of the hours of instruction taken for all the courses put together in that Semester.
 - 13.3.2. A student shall attend at least 50 percent of the hours of instruction for each course.
- 13.4. The Director shall condone the shortage of attendance (for reasons beyond the control of the student, Example: Health reasons) provided she satisfies the clause 13.3.2 and obtains at least 65% of overall attendance for all the courses put together in that semester.
- 13.5. A student who fails to satisfy the attendance requirements specified in clauses 13.3 and 13.4 shall be detained and she shall repeat that semester in the subsequent academic years with the written permission of the Director subject to the clause 13.1. A Student will not be promoted to the next semester /year if she is detained in a semester.
- 13.6. A student shall not be permitted to study any semester more than three times during the entire programme of study.
- 13.7. A student who satisfies the attendance requirements specified in either of the clauses 13.3 and 13.4 in any semester may be permitted to repeat that semester by cancelling the previous attendance and sessional marks of that semester with the written permission of the Director. However, this facility shall not be extended to any student more than twice during the entire programme of study as specified in clause 13.1.
- 13.8. Gap year(s) shall be over and above maximum period of four academic years (see clause 21).
- 13.9. Maternity leave shall be granted only once during the entire programme. Such candidates have to put up a minimum of 45% attendance course-wise and a minimum aggregate of 45%.

14. EVALUATION

- 14.1. Evaluation for theory courses shall be done on a continuous basis i.e. through Continuous Internal Evaluation (CIE) in the Semester and Semester End Examination (SEE).

- 14.1.1. Continuous internal evaluation comprises two sessional tests of two hours duration each and at least two assignments. It is mandatory for a student to attend both the sessional tests in each theory course.
- 14.1.1.1. Sessional Test I shall be held in the middle of the semester i.e. after the completion of 50% of actual instruction days and generally after completing 50% of the syllabus. Sessional Test I shall be for 30 marks and 10 marks for the first assignment.
- 14.1.1.2. Sessional Test II shall be held immediately after the completion of instructional days. Sessional Test II shall be for 30 marks and 10 marks for the second assignment.
- 14.1.2. Sessional marks for a maximum of 40 shall be awarded based on the performance of the two sessional tests and two assignments. If a student is absent for any of the internal test/assignment for whatsoever reason, the marks for that test/assignment shall be zero. The sessional marks calculation procedure is as shown below.

Sessional marks calculation procedure

| Sessional – I (40 Marks) | | Sessional – II (40 Marks) | | Internals (40 Marks) |
|--------------------------|--------------------------|---------------------------|--------------------------|---|
| Test (30 Marks) | Assignment (10 Marks) | Test (30 Marks) | Assignment (10 Marks) | $0.8 * (\max(\text{Sessional – I, Sessional – II})) + 0.2 * (\min(\text{Sessional – I, Sessional – II}))$ |

- 14.1.3 The Semester end examination shall be conducted by the controller of Examinations. The Semester End Examination will be for 3 hours duration carrying 60 marks which will be conducted by the university. Each external theory paper will have a maximum of 60 marks. A student has to obtain a minimum of 40% i.e., 24 marks out of 60 marks to pass that examination. Also, the student has to obtain a minimum of 50 marks out of 100 (**University examination + sessional marks** put together) to pass in the corresponding paper.
- 14.2. For each practical course except project work, the sessional marks for a maximum of 40 shall be awarded by the teacher concerned based on the continuous assessment of practical work followed by an internal practical examination. The continuous assessment will be for 20 marks and internal practical examination will be for 20 marks.
- 14.3. A Semester End Examination in each Practical course shall be conducted after the last working day of the semester covering the entire syllabus prescribed for that course.
- 14.3.1. A Semester End Examination of 3 hours duration carrying 60 marks will be conducted by the university.
- 14.3.2. The examination shall be held by two teachers: one external examiner and one internal examiner appointed by the Principal. The principal shall appoint the internal examiner nominated by the Head of the Department (HoD) concerned. The Principal shall appoint the external examiner from among the panel of examiners recommended by the Chairman, BoS concerned. The panel of examiners shall be approved by the university.
- 14.3.3. A student has to obtain a minimum of 40% i.e., 24 marks out of 60 marks to pass that examination. Also, the student has to obtain a minimum of 50 Marks out of 100 to pass in the corresponding paper.
- 14.4. The dissertation work shall be carried out in two phases: Phase – I in 3rd semester and Phase - II in 4th semester. The Dissertation work (Phase-I) shall be of 10 credits and it

shall comprise of literature survey and finalization of objectives of study and the Dissertation work (Phase-II) shall be of 16 credits comparing detailed work. The evaluation of the project work is carried out as shown below.

Evaluation process of the dissertation work

| S.No | Course Title | Semester | Credits | Internal Evaluation | | External Evaluation | | Total |
|------|-------------------------|----------|---------|---------------------|--------------------|-----------------------|------|-------|
| | | | | Guide | Internal Committee | External Dissertation | Viva | |
| 1 | Project Work Phase – I | 3 | 10 | 40 | 60 | - | - | 100 |
| 2 | Project Work Phase – II | 4 | 16 | 20 | 20 | 30 | 30 | 100 |

The dissertation work shall be carried out at School of Engineering and Technology, Sri Padmavati Mahila Visvavidyalayam (SoET, SPMVV). However, it can also be carried out at any of the recognized National level Educational Institutions, National Laboratories, Research Institutions, Industrial Organizations, Service Organizations or Government Organizations with the prior permission from the guide and Head of the Department (HOD) concerned.

A pre-submission seminar shall be given by the student at least four weeks before the completion of the dissertation work. Head of the Department shall constitute a committee comprising the Chairman, BoS (PG), HOD and Guide and convenes its meeting. If the open pre-submission seminar delivered by a student is not satisfactory, another seminar shall be scheduled within two weeks.

Submission of a paper in SCI/web of Science/UGC-CARE or presentation certificate of a National/International conference or filing a patent shall be considered as a mandatory requirement for the submission of dissertation.

As soon as a student submits her thesis work, Principal shall appoint an External Examiner from among the panel of examiners recommended by the Chairman, BoS (PG) and the panel of examiners shall be approved by the university.

The Director shall schedule the Semester-End Examination of the dissertation work soon after the completion of the study of program and a student can appear for the same provided she has earned successfully all the requisite credits pertaining to theory, practical, seminar, comprehensive viva, etc. The student shall submit the dissertation duly certified by the guide and HoD at least three weeks before the End Examination.

- 14.5. For each Term Paper cum Seminar course, the sessional marks for a maximum of 100 shall be awarded based on the quality, depth and organization of contents, documentation, presentation and answering capability of questions from the participants of the Seminar.

The Term Paper cum Seminar consists of two parts – Term Paper followed by a Seminar. The Term Paper carries 50% of marks and Seminar carries 50% of marks. The Term Paper cum Seminar shall be evaluated by internal committee for 40 marks and external committee for 60 marks. Internal committee shall constitute of HoD, guide and a senior faculty. The external committee shall constitute of external examiner, HoD and guide. The external examiner shall be appointed by the Director from among the panel of examiners recommended by the Chairman, BoS (PG) concerned.

- 14.6. The comprehensive viva shall be conducted by a committee consisting of one external examiner and two internal examiners. The external examiner shall be appointed by the Director from among the panel of examiners recommended by the Chairman, BoS concerned, the panel being approved by the university whereas, the internal examiners shall be nominated by the HOD concerned. A student has to obtain a minimum of 50 marks out of 100 marks to pass the examination. The comprehensive viva-voce shall be conducted at the end of third semester.
- 14.7. The students shall be permitted to verify the evaluated answer scripts of Sessional tests only.
- 14.8. The evaluation and verification of answer scripts of Sessional Tests shall be completed within a week after the conduct of Sessional Tests.
- 14.9. The evaluation of Semester-End Examination answer scripts shall be arranged by the Controller of Examinations as per the University procedures in vogue.

15. CREDIT TRANSFER POLICY

Adoption of MOOCs is mandatory, to enable Blended model of teaching –learning as envisaged in the NEP 2020. As per University Grants Commission (Credit Framework for Online Learning Courses through SWAYAM/NPTEL) Regulation, the University shall allow up to a maximum of 20% of the total courses being offered in a particular program i.e., maximum of 16 credits through MOOCs platform.

- (i) The University shall offer credit mobility for MOOCs and give the equivalent credit weightage to the students for the credits earned through online learning courses.
- (ii) Student registration for the MOOCs shall be only through the respective department of the institution, it is mandatory for the student to share necessary information with the department.
- (iii) Credit transfer policy will be applicable to the professional & Open Elective Courses only.
- (iv) The department concerned shall identify the courses permitted for the credit transfer.
- (v) The University/Institution shall notify at the beginning of semester the list of the online learning courses eligible for credit transfer.
- (vi) The Institution shall designate a faculty member as a Mentor for each course to guide the students from registration till completion of the credit course.
- (vii) The University shall ensure no overlap of MOOCs exams with that of the University examination schedule. In case of delay in results, the University will re-issue the marks sheet for such students.

(viii) Student pursuing courses under MOOCs shall acquire the required credits only after successful completion of the course and submitting a certificate issued by the competent authority along with the percentage of marks and grades.

(ix) The institution shall submit the following to the examination section of the University

a) List of students who have passed MOOCs course in the semester along with the certificate of completion.

b) Undertaking form filled by the student for credit transfer.

(x) The University shall resolve any issues that may arise in the implementation of this policy from time to time and shall review its credit transfer policy in the light of periodic changes brought by UGC, SWAYAM, NPTEL and State Government.

(xi) Student shall be permitted to register for MOOCs offered through online platform approved by the University from time to time.

16. ACADEMIC BANK CREDITS (ABC)

Academic Bank of Credits (ABC) shall be implemented to promote flexibility in curriculum as per NEP 2020 to

(i) provide option of mobility for learners across the Universities of their choice.

(ii) provide option to gain the credits through MOOCs from approved digital platforms.

(iii) facilitate award of certificate/diploma/degree in line with the accumulated credits in ABC.

(iv) execute Multiple Entry and Exit system with credit count, credit transfer and credit acceptance

from students account.

17. MASSIVE OPEN ONLINE COURSE (MOOCS)

17.1. A Student has to do at least one MOOC, choosing from the list and shall register for the course (minimum of 12 weeks duration) with the approval of the Head of department.

17.2. If any student fails in MOOCs, the same course can be repeated or any another MOOC can be taken.

17.3. Only courses in Swayam or NPTEL are permitted

17.4. MOOC should not be a repetition course from M.Tech curriculum

18. QUESTION PAPER SETTING

- 18.1. The setting of question papers, both for sessional tests and semester-End examination shall be generally based on Bloom's Taxonomy.
- 18.2. Model Question Paper for each theory course shall be prepared by the teacher within 30 days from the commencement of the Semester and the same shall be forwarded to the Controller of Examinations through the Chairman, BoS concerned.
- 18.3. For each theory course, the question paper shall be set by an external paper setter. The Chairman, BOS shall recommend a panel comprising at least six external paper setters for each theory course to the University. The University shall arrange for setting the question paper by appointing external paper setter from that panel.

19. GRADING AND GRADE POINTS

- 19.1. **Grade Point:** It is a numerical weight allotted to each letter grade on a 10-point scale
- 19.2. **Letter Grade:** 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.
- 19.3. **Semester Grade Point Average (SGPA):** It is a measure of performance of work done in a semester. It is the ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.
- 19.4. **Cumulative Grade Point Average (CGPA):** It is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the cumulative sum of the credits of all courses in all the semesters. It is expressed up to two decimal places.
- 19.5. **Letter Grades and Grade Points:** A 10-point grading system with the following letter grades are to be followed. A Student obtaining Grade F shall be considered failed and will be required to reappear in the examination. For non-credit courses 'Satisfactory' or 'Unsatisfactory' shall be indicated instead of the letter grade and this will not be counted for the computation of SGPA/CGPA.
- 19.6. To pass course in M.Tech Programme, a student has to secure a minimum Grade of E in Semester-End Examination. A student obtaining Grade F shall be considered failed and will be required to reappear in the examination. A student cannot reappear for the Semester-End Examination to improve the score in a course in which she has passed. Improvement of grade is not permitted in a course in which she obtained a grade D or better. However, student obtaining pass grade, E is eligible to reappear for the End Semester Examination for grade improvement. Grade, Grade points and equivalent % marks is shown in the table below.

19.7. A student who has failed in a course can reappear for the End Semester Examination as and when it is held in the normal course. The Sessional Marks obtained by the student will be carried over for declaring the result. The class attained based on the CGPA is shown in Table 4. Equivalent pass percentage is calculated as $(CGPA - 0.5) \times 10$

Table 3: Grades and Grade Points

| Equivalent % marks | Letter Grade | Grade Point |
|--------------------|---------------|-------------|
| 90-100 | S (Superior) | 10 |
| 80-89 | A (Excellent) | 9 |
| 70-79 | B (Very Good) | 8 |
| 60-69 | C (Good) | 7 |
| 50-59 | D(Average) | 6 |
| 40-49 | E (Pass) | 5 |
| Below 40 | F(Fail) | 0 |
| 0 | AB (Absent) | 0 |

Table 4: Class attained with respect to CGPA

| CLASS | CGPA |
|------------------------------|------------------------|
| First Class with Distinction | ≥ 7.5 |
| First Class | ≥ 6.5 and < 7.5 |
| Second Class | ≥ 5.5 and < 6.5 |

19.8. A student has to obtain a minimum cumulative grade point of 5.5 to get an M.Tech Degree. There is no pass class for M.Tech

20. COMPUTATION OF SGPA AND CGPA

Average (SGPA) and Cumulative Grade Point Average (CGPA): The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and sum of the number of credits of all courses undergone by a student in that semester, i.e.

$$SGPA (S) = \frac{\sum (C_i \times G_i)}{\sum C_i}$$

where C_i is the number of credits of the i^{th} course and G_i is the grade point scored by the student in the i^{th} course.

The CGPA is also calculated in the same manner considering all the courses undergone by a student over all the semesters of a programme, i.e.

$$CGPA (C) = \frac{\sum (C_i \times S_i)}{\sum C_i}$$

Where S_i is the SGPA of the i^{th} semester and C_i is the total number of credits in that semester. The SGPA and CGPA shall be rounded off to two decimal points and reported in the transcripts.

21. RANKING AND AWARD OF PRIZES/MEDALS

Ranks shall be awarded in each specialization of study on the basis of **Cumulative Grade Point Average (CGPA)** for top ten percent of the students or top three students whichever is higher.

The students who have become eligible for the award of M.Tech degree by passing regularly all the four semesters shall only be considered for the award of ranks.

Award of prizes, scholarships and other honours shall be according to the rank secured by the student as said above and in conformity with the desire of the Donor.

22. CONDITIONS OF PROMOTION

A student shall be eligible for promotion to the next semester of M.Tech Programme provided she satisfies the attendance requirements in the immediately preceding semester as Specified in clause 13.

23. MULTIPLE ENTRY/EXIT OPTION

a). Exit Policy

The Students can choose to exit the two year program at the end of first year.

PG diploma in specialization of study. The student shall be awarded PG Diploma after completing all the courses of the first year. Such students shall be permitted to take admission and continue the program within a period of three years from the date of exit.

b). Entry policy

Modalities on multiple entry by the student into the M.Tech program will be provided in due course of time.

The University shall resolve any issues that may arise in the implementation of Multiple Entry and Exit policies from time to time and shall review the policies in the light of periodic changes by UGC, AICTE and State Government.

24. GAP YEAR

The concept of Student Entrepreneur in Residence i.e. Gap Year shall be introduced and outstanding students who wish to pursue entrepreneurship are allowed to take a break of one year at any time after completing I year of study and at any time of an academic year to pursue full time entrepreneurship. A committee shall be constituted to evaluate the proposal submitted by the student and the committee shall decide on permitting the student for having the Gap Year. Students will be permitted to rejoin into the succeeding year/ from the date of commencement of class work and will be under the academic regulations in force at that time. Gap year may be extended by another year (i.e. a total of two years) and will not be counted for the maximum period of four academic years.

25. TRANSITORY REGULATIONS

25.1 A student who has been detained in any semester of previous regulations for not satisfying the attendance requirements shall be permitted to join in the corresponding semester of this regulation provided the clauses 13.1 and 13.6 hold good.

25.2 End-semester Examinations in each course under the regulations that precede immediately these regulations shall be conducted three times after the conduct of last regular examination under those regulations. Thereafter, the failed students, if any, shall take examination in the equivalent papers of these regulations as suggested by the Chairman, BoS concerned.

26. AMENDMENT TO REGULATIONS

Sri Padmavati Mahila Visvavidyalayam reserves the right to amend these regulations at any time in future without any notice. Further, the interpretation of any of the clause of these regulations entirely rests with university.