

Savitribai Phule Pune University, Pune



RULES AND REGULATIONS

For

2 Years PG Engineering Programme

Master of Engineering – 2025 Pattern

Under Faculty of Science and Technology



(With Effect from Academic Year 2025-26)

www.unipune.ac.in

Preface by Dean

In an era defined by technological breakthroughs and digital transformation, the demand for highly skilled post graduate engineers who can lead research, develop cutting-edge solutions, and address complex challenges has never been greater. As per the decision by the authorities of Savitribai Phule Pune University, the faculty of Science and Technology has prepared the choice based credit system (CBCS) and structure. Our postgraduate programmes are meticulously designed to equip you with the advanced theoretical understanding, practical expertise, and critical thinking skills necessary to excel in this dynamic landscape.

Our curriculum is regularly updated to reflect the latest industry trends and research breakthroughs, ensuring that your education remains relevant and impactful. You will have access to state-of-the-art laboratories, cutting-edge research facilities, and a collaborative ecosystem that fosters interdisciplinary learning and groundbreaking discoveries.

The revised course is of 88 credits and 1 credit is equivalent to 15 hours. Assessments in revised credit system consist of Comprehensive continuous Evaluation and End-semester assessment. Both have an approximately equal weightage.

CBCS, or Choice Based Credit System, is a framework implemented by Savitribai Phule Pune University (SPPU) for its engineering programs. It allows students flexibility in choosing their courses, promoting a student-centric approach to education. The system is designed to offer a wider range of subjects, including interdisciplinary and skill-based options, and aims to equip students with relevant knowledge and practical skills.

Beyond the classroom, we encourage you to engage with our robust research initiatives, participate in industry collaborations, and leverage the numerous opportunities for professional development. Our aim is not just to impart knowledge, but to cultivate independent thinkers, problem-solvers, and ethical leaders who will drive innovation and make a significant difference in society.



Dr. Pramod Patil

Dean – Science and Technology
Savitribai Phule Pune University, Pune

Guidelines for ME Programmes:-

Accordingly, the new structure and syllabi are being introduced, to be implemented from the academic year 2025-26.

- All PG programmes, under Faculty of Science and Technology shall be offered with credit system.
- All the M.E. programmes run under the Faculty of Science and Technology will be of two years duration.
- The total no. of credits required for the completion of the programme is 88 credits. One credit is equivalent to 15 hours.
- A student is required to earn 88 credits in a minimum period of four semesters.

Credit Framework for ME Programme

Type of Courses	Credits				
	Semester I	Semester II	Semester III	Semester IV	Total
Programme Core Course	16	12	-	-	28
Programme Elective Course	03	06	-	-	09
Laboratory Courses	03	02	-	-	05
Technical Seminar	-	02	04	04	10
Research Methodology	-	-	04	-	04
On Job Training/Internship	-	-	05	-	05
Research Project	-	-	09	18	27
Total	22	22	22	22	88

Addon Audit Courses

Referring to the University Circular No 254/2025 dated 16/09/2025 following addon courses are mandatory.

Sr.	Courses	Credits				
		Semester I	Semester II	Semester III	Semester IV	Total
1	Human Rights	01	01	-	-	02
2	Introduction to Cyber Security	-	-	02	-	02
	Introduction to Information Security	-	-	-	02	02
3	Skill Development	-	-	02	02	04
4	Introduction to Constitution	-	-	02	-	02
Total		01	01	06	04	12

Institutes may use online/distance learning platforms like SWAYAM, NPTEL, Coursera / edX / Swayam / FutureLearn. SPPU has a “Human Rights Education Programme” / e-content module under ECLM (E-Content Learning Modules), which offers study material / lectures for Human Rights. https://eclm.unipune.ac.in/Search.aspx?d_id=3

Structure of ME – 2025 Pattern – Semester I

Sr	Course	Type of Course	Teaching Scheme		Examination Scheme						Credit		
			L	P	CCE	ESE	TW	PR	OR	Total	L	P	Total
1	Course 1	Programme Core Course	4		50	50				100	4		4
2	Course 2	Programme Core Course	4		50	50				100	4		4
3	Course 3	Programme Core Course	4		50	50				100	4		4
4	Course 4	Programme Core Course	4		50	50				100	4		4
5	Laboratory-I	Programme Core Course		4			25		25	50		2	2
6	Course 5	Programme Elective Course	3		50	50				100	3		3
7	Laboratory -II	Programme Elective Course		2			25		25	50		1	1
Total			19	6	250	250	50	0	50	600	19	3	22

Structure of ME – 2025 Pattern – Semester – II

Sr	Course	Type of Course	Teaching Scheme		Examination Scheme						Credit		
			L	P	CCE	ESE	TW	PR	OR	Total	L	P	P
1	Course 6	Programme Core Course	4		50	50				100	4		4
2	Course 7	Programme Core Course	4		50	50				100	4		4
3	Course 8	Programme Core Course	4		50	50				100	4		4
4	Laboratory-III	Programme Core Course		4			25		25	50		2	2
5	Course 9	Programme Elective Course	3		50	50				100	3		3
6	Course 10	Programme Elective Course	3		50	50				100	3		3
7	Seminar I	Technical Seminar		4			25		25	50		2	2
Total			18	8	250	250	50	0	50	600	18	4	22

Structure of ME – 2025 Pattern – Semester III

Sr	Course	Type of Course	Teaching Scheme		Examination Scheme						Credit		
			L	P	CCE	ESE	TW	PR	OR	Total	L	P	P
1	Research Methodology	Research Methodology	4		50	50				100	4		4
2	On Job Training/ Internship	On Job Training/Internship		10			100			100		5	5
3	Seminar II	Seminar		8			25		25	50		4	4
4	Research Project Stage – I	Research Project		18			25		25	50		9	9
Total			4	36	50	50	150	0	50	300	4	18	22

Structure of ME – 2025 Pattern – Semester IV

Sr	Course Title	Type of Course	Teaching Scheme		Examination Scheme						Credit		
			L	P	CCE	ESE	TW	PR	OR	Total	L	P	P
1	Seminar III	Seminar		8			50		50	100		4	4
2	Research Project - Stage II	Research Project		36			150		50	200		18	18
Total			0	44	0	0	200	0	100	300	0	22	22

Computational Laboratory - I, II and III : The laboratory work will be based on completion of assignments confined to the Programme Core courses of that semester.

Skill Based Laboratory -I : The laboratory work will be based on completion of assignments confined to the Programme Core Electives of that semester.

Technical Seminar I, II and III : The student shall deliver the seminar on a topic approved by authorities.

Seminar I : Shall be on state of the art topic of student's own choice approved by an authority. The student shall submit the duly certified seminar report in standard format, for satisfactory completion of the work by the concerned Guide and head of the department/institute.

Seminar II : shall be on the topic relevant to latest trends in the field of concerned branch, preferably on the topic of specialization based on the electives selected/research project stage I by him/her approved by authority. The student shall submit the seminar report in standard format, duly certified for satisfactory completion of the work by the concerned guide and head of the Department/Institute.

Seminar III: shall preferably an extension of seminar II or similar topic. The student shall submit the duly certified seminar report in standard format, for satisfactory completion of the work by the concerned guide and head of the Department/Institute.

Internship/OJT: Every student has to undergo either a Internship / On Job Training of 8 to 10 weeks duration. The internship may be undergone in an Industry/Research organization. The internship shall be registered under the guidance of PG faculty member in the institute. The student is required to submit a report and present the work before an evaluation committee, nominated by the Head of the Department. Students are encouraged to find internships through their college's placement cell, faculty contacts, or their own research. The internship should be at a reputable organization, whether in industry, a research lab, or a startup.

All internships must be approved by the **Departmental Internship Coordinator** or the Head of the Department (**HOD**) before the student begins the work. This will be joined evaluated by the experts from the industry at college level.

Research Project I and II :

The project work shall be based on the knowledge acquired by the student during the coursework and preferably it should meet and contribute towards the needs of the society. The project aims to provide an opportunity of designing and building complete system or subsystems based on area where the student likes to acquire specialized skills.

Research Project Stage – I :

Project work Stage – I is an integral part of the project work. In this, the student shall complete the partial work of the project which will consist of problem statement, literature review, project overview, scheme of implementation (Mathematical Model/SRS/UML/ERD/block diagram/ PERT chart, etc.) and Layout & Design of the Set-up.

As a part of the progress report of Project work Stage-I, the candidate shall deliver a presentation on the advancement in Technology pertaining to the selected dissertation topic.

The student shall submit the duly certified progress report of Project work Stage-I in standard format for satisfactory completion of the work by the concerned guide and head of the Department/Institute.

Research Project Stage – II :

In Project Work Stage – II, the student shall complete the remaining part of the project which will consist of the fabrication of set up required for the project, work station, conducting experiments and taking results, analysis & validation of results and conclusions. Comparative analysis with state of art systems/algorithms/existing procedures is expected. The student shall prepare the duly certified final report of project work in standard format for satisfactory completion of the work by the concerned guide and head of the Department/Institute.

Institute must submit the list of candidates, guide and project details (title, area, problem definition, abstract - clearly indicating objectives and scope, sponsorship details, if any) to the university within month of commencement of third semester. The guide must be approved/qualified full time teacher of the Institute. A guide can accept/enroll at the most 8 students per year.

Definition of Credit

- 1 hour Lecture (TH) per week per semester = 1 Credit
- 1 hours Tutorial (TU)per week per semester = 1 Credit
- 2 hours Practical (PR)/Laboratory per week = 1 Credit

Guidelines for Examination Scheme

Theory Examination: The theory examination shall be conducted in two different parts Comprehensive Continuous Evaluation (CCE) and End-Semester Examination (ESE).

Comprehensive Continuous Evaluation (CCE)

Comprehensive Continuous Evaluation (CCE) of 50 marks based on all the Units of course syllabus to be scheduled and conducted at institute level. To design a Comprehensive Continuous Evaluation (CCE) scheme for a theory course of 50 marks with the specified parameters, the allocation of marks and the structure can be detailed as follows:

Sr.	Parameters	Marks	Coverage of Units
1.	Written Unit Test	10 Marks	Units 1 and Unit 2
2.	Open Book Test	10 Marks	Units 3 and Unit 4
3.	Assignments / Case Study	10 Marks	Unit 5
4.	Seminar Presentation/Field Visit	10 Marks	Any Units
5.	Mini Project	10 Marks	Any Units
6.	Term Paper	10 Marks	Any Units
7.	Project-Based Learning	10 Marks	Any Units

Departments shall choose components totaling 50 marks; at least one unit test is mandatory. Any parameter from serial no 2 to 7 can be selected by the institute. At the end of the semester, the final marks for CCE shall be assigned based on the performance of the student and is to be submitted to the University.

Format and Implementation of Comprehensive Continuous Evaluation (CCE)

Unit Test: Questions designed as per Bloom's Taxonomy guidelines to assess various cognitive levels (Remember, Understand, Apply, Analyze, Evaluate, Create).

Assignments / Case Study: Students should submit one assignment or one Case Study Report. Problem-solving tasks, theoretical questions, practical exercises, or case studies that require in-depth analysis and application of concepts.

Seminar Presentation: Oral presentation on a topic, followed by a Q&A session. Schedule the seminar presentations towards the end of the course. Provide students with ample time to prepare and offer guidance on presentation skills. Objective is to assess the student's ability to research, synthesize technical information, structure a coherent argument, and deliver a professional presentation, including effective handling of technical questions.

Open Book Test: Analytical and application-based questions to assess depth of understanding.

By following this scheme, you can ensure a structured and comprehensive evaluation of students' understanding and application of the course material, adhering to Bloom's Taxonomy guidelines for cognitive skills evaluation.

Field Visit: To assess the student's ability to link theoretical knowledge with industrial or real-world applications, observe technical processes, and document findings systematically and analytically.

Mini Project: To evaluate the student's ability to apply core engineering concepts to design, implement, and test a functional system or solution within a limited scope and time frame.

Term Paper: To assess the student's research skills, ability to conduct a thorough literature review, synthesize academic information, develop a thesis, and present a well-supported argument in scholarly writing.

End-Semester Examination (ESE)

End-Semester Examination (ESE) of 50 marks written theory examination of 2 Hours duration based on all the unit of course syllabus scheduled by university. Question papers will be sent by the University through QPD (Question Paper Delivery). University will schedule and conduct ESE at the end of the semester.

The paper setting, conduct of examination and paper assessment for the End-Semester examination of the subjects Elective I, Elective II and Elective III shall be done by the respective college, as per the schedule of Savitribai Phule Pune University. Director/Principal approves the panel of paper setters in consultation with the head of the department. Out of

Three Question papers sets, Director/Principal shall choose any one question paper for distribution during the examination on the day of the examination.

Format and Implementation of End-Semester Examination (ESE)

Question Paper Design

Below structure is to be followed to design an End-Semester Examination (ESE) for a theory subject of 50 marks on all 5 units of the syllabus with questions set as per Bloom's Taxonomy guidelines and 10 marks allocated per unit.

Balanced Coverage: Ensure balanced coverage of all units with questions that assess different cognitive levels of Bloom's Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, and Create. The questions should be structured to cover:

- Remembering: Basic recall of facts and concepts.
- Understanding: Explanation of ideas or concepts.
- Applying: Use of information in new situations.
- Analyzing: Drawing connections among ideas.
- Evaluating: Justifying a decision or course of action.
- Creating: Producing new or original work (if applicable).

Detailed Scheme: Each unit will have a combination of questions designed to assess different cognitive levels. By following this scheme, you can ensure a comprehensive and fair assessment of students' understanding and application of the course material, adhering to Bloom's Taxonomy guidelines for cognitive skills evaluation.

End Semester Examination Guidelines

Question Paper :

1. One section with five questions (10 marks each). Each has an alternate from the same unit.
2. Framing of questions should be according to Anderson/Revised Bloom's Taxonomy and disseminated through the question papers with a mention of course outcomes as well.
3. Duration of the examination: 2 Hours

Assessment

1. Assessment will be done at the centralized assessment programme (CAP) Centre of the College by the Expert who is appointed as an examiner for the courses as per 48(3) panel of Maharashtra public university act 2016.
2. Moderation will be done at the CAP Centre designated by the University by the Expert who is appointed as an examiner for the subject as per 48(3) panel.

Monitoring of CCE

1. Periodic monitoring of CCE will be done by respecting board of studies members, whenever required.
2. Colleges should maintain all the records related to CCE with CEO for verification.

Staff members should keep all the records of Unit Tests, Assignments / Case Study, Seminar Presentation / Open Book Test/ Quiz duly signed by head of the institute with College Examination officer.

Assessment and Grade Point Average

- Marks/Grade/Grade Point :** A grade is assigned to each head based on marks obtained by a student in examination of the course. The marks obtained in In-semester and end-semester examination are considered together to calculate the grade of the course. These grades, their equivalent grade points are given in Table 1.

Table 1 : Grade and Grade Point

Sr. No.	% of Max. Marks	Grade Point	Grade Letter
1	$90 \leq \text{Marks} \leq 100$	10	O (Outstanding)
2	$75 \leq \text{Marks} \leq 89$	9	A+ (Excellent)
3	$60 \leq \text{Marks} \leq 74$	8	A (Very Good)
4	$55 \leq \text{Marks} \leq 59$	7	B+ (Good)
5	$50 \leq \text{Marks} \leq 54$	6	B (Above Average)
6	$45 \leq \text{Marks} \leq 49$	5	C (Average)
7	$40 \leq \text{Marks} \leq 44$	4	D (Pass)
8	Marks <40	0	F (Fail)
9	Nil	0	Ab (Absent)
10	--	0	FX (Detained, Repeat the Course)
11	--	0	IC (Incomplete Course- Absent for Exam but continue for the course)
12	--	0	AC (Audit Course Completed)
13	--	--	ACN (Audit Course Not Completed)

2. Passing Grade:

- The grades O, A+,A, B+, B, C, D are passing grades.
- A candidate acquiring any one of these grades in a course shall be declared as PASS. And student shall earn the credits for a course only if the student gets passing grade in that course.
- F Grade -The Grade F shall be treated as a failure grade.
- The student with F grade will have to pass the concerned course by re-appearing for the examination.
- The student with F grade for any stage of the Project Work, will have to carry out additional work/ improvement as suggested by the examiners and re-appear for the examination.
- FX Grade-The grade FX in a course is awarded by the college, if a student does not maintain the minimum attendance in the Lecture / Tutorial class as prescribed by the SPPU

and/or his performance during the semester is not satisfactory and/or he/she fails in the Term Work head of that course.

- The student with FX grade in a given course is not permitted to take the end of semester examination in that course. Such a student will have to re-register for the course.
- The student with F / FX in a course shall not be awarded any credits for that course.
- AC and ACN Grade -The student registered for audit course shall be awarded the grade AC after satisfactory completion of audit course and shall be included in the Semester grade report for that course, provided student has the minimum attendance as prescribed by the SPPU and satisfactory In-semester performance and secured a passing grade in that course. Student who is unable to complete audit course will be awarded as ACN grade.

Rules for Passing CCE and ESE :

R1 (Term Work/Practical/Oral Seminar/Presentation): To pass any practical-related component (like term work, practical exams, or presentations), the student must score at least 40% in each individual component.

R2 (Theory - CCE): For theory subjects, the student must score at least 40% (20 Marks) in the Comprehensive Continuous Evaluation (CCE) part.

R3 (Theory - ESE): Similarly, the student must score at least 40% (20 Marks) in the End-Semester Examination (ESE) for theory subjects.

R4 (Theory - Overall): A student must score at least 40% (40 Marks) in the combined total of both the CCE and ESE to pass the theory subject.

R5 (Repeating CCE): If a student fails in CCE, they have the option to repeat it in either an odd or even semester, at the college level.

R6 (Repeating ESE): A failing student can repeat the End-Semester Examination (ESE) in either the odd or even semester, conducted by Savitribai Phule Pune University.

R7 (Carry Forward Marks): If a student has scored at least 40% in either CCE or ESE, the marks for that component will be carried forward to the next semester.

R8 (Course Credits): In order to earn credits for any course (whether it's a theory, term work, practical, or other components), the student must pass the course with the minimum required marks or grade.

R9 (Revaluation/Photocopying): Students are allowed to apply for revaluation or photocopying of their End-Semester Theory Examination papers.

Performance Indices

The semester end grade sheet will contain grades for the courses along with titles and SGPA. Final grade sheet and transcript shall contain CGPA.

SGPA -The performance of a student in a semester is indicated by a number called the Semester Grade Point Average (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses, seminars and projects registered by the student during the semester.

SGPA -The performance of a student in a semester is indicated by a number called the Semester Grade Point Average (SGPA). The SGPA is the weighted average of the grade points obtained in all the courses, seminars and projects registered by the student during the semester.

$$CGPA = \frac{\sum_{i=1}^p C_i G_i}{\sum_{i=1}^p C_i}$$

$$SGPA = \frac{\sum GradePointsEarned \times CreditsForEachCourse}{TotalCredits}$$

For Example: suppose in a given semester a student has registered for five courses having credits C1, C2, C3, C4, C5 and his / her grade points in those courses are G1, G2, G3, G4, G5 respectively. Then students

$$SGPA = \frac{C1G1 + C2G2 + C3G3 + C4G4 + C5G5}{C1 + C2 + C3 + C4 + C5}$$

SGPA and CGPA is calculated up to two decimal places by rounding off.

CGPA- The CGPA is the weighted average of the grade points obtained in all the courses (Theory/term work/practical/oral/presentation) of first semester to fourth semester.

In case of a student passing a failed course or in case of improvement, the earlier grade would be replaced by the new grade in calculation of the SGPA and CGPA.

Percentage calculation of a corresponding CGPA

The calculation of Percentage from CGPA the following equation can be used:-

% of Marks {

- If O grade then $20 \times \text{CGPA} - 100$
- If A+ grade then $10 \times \text{CGPA} - 5$
- If A grade then $10 \times \text{CGPA} - 5$
- If B+ grade then $12 \times \text{CGPA} - 20$
- If B grade then $5 \times \text{CGPA} + 23.75$
- If C grade then $10 \times \text{CGPA} - 2.50$
- If D grade then $6.6 \times \text{CGPA} + 13.6$

Examples of CGPA to percentage calculations: -

CGPA Range	Grade	Formula
≥ 9.50	O	$20 \times \text{CGPA} - 100$
8.25 to < 9.50	A+	$12 \times \text{CGPA} - 25$
6.75 to < 8.25	A	$10 \times \text{CGPA} - 7.5$
5.75 to < 6.75	B+	$5 \times \text{CGPA} + 26.25$
5.25 to < 5.75	B	$10 \times \text{CGPA} - 2.5$
4.75 to < 5.25	C	$10 \times \text{CGPA} - 2.5$
4.00 to < 4.75	D	$6.6 \times \text{CGPA} + 13.6$
