



**Maratha Vidya Prasarak Samaj's
Karmaveer Adv. Baburao Ganpatrao Thakare College of Engineering**

An Autonomous Institute affiliated to Savitribai Phule Pune University, Pune

Udoji Maratha Boarding Campus, Gangapur Road, Nashik - 422 013, Maharashtra, India

**Post-Graduate Program Syllabus
Second Year M.Tech. Computer Engineering
(2024 Pattern)
As per NEP 2020**

**Academic Year 2025-26
(Copy for Student Circulation Only)**

Second Year M.Tech. Computer Engineering
Curriculum Structure (2024 Pattern) Semester - III

Course Code	Course Type	Course Name	Teaching Scheme (Hrs/Week)			Evaluation Scheme and Marks						Credits			
			TH	PR	TU	CCE	ESE	TW	PR	OR	TOT	TH	PR	TU	TOT
202301	SBC-I	Dissertation Phase - I	-	20	-	-	-	100	-	100	200	-	10	-	10
202302	ELC-II	Research Seminar-II	-	8	-	-	-	50	-	50	100	-	4	-	4
202303	SLC	MOOC Courses	-	4	-	-	-	50	-	-	50	-	2	-	2
202304	OJT	Internship / On-Job Training	-	8	-	-	-	100	-	50	150	-	4	-	4
Total			-	40	-	-	-	300	-	200	500	-	20	-	20

Abbreviations: TH: Theory

PR: Practical

TU: Tutorial

CCE: Continuous Concrete Evaluation

ESE: End-Semester Examination

TW: Term Work

OR: Oral

TOT: Total

Second Year M.Tech. Computer Engineering
Curriculum Structure (2024 Pattern) Semester - IV

Course Code	Course Type	Course Name	Teaching Scheme (Hrs/Week)			Evaluation Scheme and Marks						Credits			
			TH	PR	TU	CCE	ESE	TW	PR	OR	TOT	TH	PR	TU	TOT
202401	SBC-II	Dissertation Phase - II	-	40	-	-	-	200	-	100	300	-	20	-	20
Total			-	40	-	-	-	200	-	100	300	-	20	-	20

Abbreviations: TH: Theory

PR: Practical

TU: Tutorial

CCE: Continuous Concrete Evaluation

ESE: End-Semester Examination

TW: Term Work

OR: Oral

TOT: Total



- **Summary of Credits and Total Marks:**

Semester	Credits	Marks
III	20	500
IV	20	300
Total	40	800

- **Definition of Credit :**

The Post Graduate (P.G.) programmes will have credit system. The details of credit will be as follow.

1 Credit = 1 hour/week for lecture
 = 2 hours/week for practical
 = 1 hour/week for tutorial

Semester - III

Course Code: 202301	Course Name: Dissertation Phase - I	
Teaching Scheme	Credit	Evaluation Scheme
Practical : 20 Hours/Week	10	TW : 100 Marks OR : 100 Marks

Prerequisite Courses:

- Seminar, Research Proposal Writing.

Course Objectives:

- Identify gaps in existing literature or technologies and propose innovative solutions.
- Apply theoretical knowledge to practical scenarios to design, implement, and test solutions.
- Develop project planning, time management, and organizational skills.

Course Outcomes:

After successful completion of the course, learner will be able to:

CO1: Review relevant literature, including books and national/international peer-reviewed journals, and consult experts on the chosen research topic.

CO2: Use various software, computational, and analytical tools effectively.

CO3: Design and develop an experimental set up/ equipment/test rig.

Course Contents:

Project Work Stage - I is an essential part of the overall project. In this stage, the student is expected to complete a portion of the project, which includes defining the problem statement, reviewing related literature, providing a project overview, outlining the implementation plan (using tools like UML diagrams, ER diagrams, block diagrams, PERT charts, etc.), and designing the layout or setup.

Guidelines for Conduction:

Coordinator needs to assign a domain specific guide / mentor to every student. The finalization of project topic will be considered with the concern of the mentor only. The dissertation stage - I work will be assessed by a panel of examiners of which one is necessarily an external examiner. The assessment will be broadly based on literature study, work undergone, Algorithm / method understanding, content delivery, presentation skills, documentation and report. The continuous assessment of the progress needs to be documented unambiguously. For standardization and

documentation, it is recommended to follow the formats and guidelines in the dissertation workbook approved by the department. All the mentors must encourage their students to initiate the process of copyright registration for their dissertation work as part of academic compliance and intellectual property protection.

Instructions for Students:

The students are expected to validate their study undertaken by publishing it at standard platforms. The investigations and findings need to be validated appropriately at standard platforms-conference and/or peer reviewed journals. The student has to exhibit the continuous progress through regular reporting and presentations and proper documentation of the frequency of the activities in the sole discretion of the PG coordination.

- Identify the Problem statement of recent trends in Computer Engineering.
- Study of Literature and previous work related to the problem identified.
- Analysis and study of design, flowchart and other diagrams which are related to the solution.
- Representation and study of Methods / Algorithms to solve the problem.
- 30% or Partial implementation of the solution to the identified problem.
- Every student is required to present and publish a Review paper at International Journal (International Peer Review)
- All M.Tech students are required to initiate the process of copyright registration for their dissertation work as part of academic compliance and intellectual property protection.
- Students can present their work through PPTs and any supporting documents.
- At the end of semester, every student must submit THREE copies of the manuscript of their work by following the instructions and specified format given by the coordinator

Learning Resources:

Text Books:

1. Research Methodology: A Step-by-Step Guide for Beginners, Ranjit Kumar
2. Design Thinking: Understanding How Designers Think and Work : Nigel Cross

Reference Books:

1. The Craft of Research, Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams
2. Project Management for Engineering and Technology, John M. Nicholas, Herman Steyn.

Web link for MOOC / NPTEL Links:

1. NPTEL – Research Methodology
<https://nptel.ac.in/courses/121/107/121107007/>
2. Coursera – Academic Research and Writing (University of California)
<https://www.coursera.org/learn/academic-research-writing>
3. edX – Research Methods (University of London)
<https://www.edx.org/course/research-methods>
4. Future Learn – Project Management for Research
<https://www.futurelearn.com/courses/project-management-for-research>

Course Code: 202302	Course Name: Research Seminar-II	
Teaching Scheme	Credit	Evaluation Scheme
Practical : 8 Hours/Week	4	TW : 50 Marks OR : 50 Marks

Prerequisite Courses:

- Research Methodology Concepts.

Course Objectives:

- To identify the latest topic in the field of computer engineering.
- To carry out literature surveys and problem identification.
- To enhance presentation and report writing skills

Course Outcomes:

After successful completion of the course, learner will be able to:

CO1: Identify the research seminar topic in the field of computer engineering by literature survey.

CO2: Understand how research papers are written and understand modeling, theory, concept, and simulation related to the topic of interest.

CO3: Effectively communicate the research seminar topic through oral presentation.

CO4: Prepare a detailed seminar report.

Course Contents:

Research seminar topic will be based on dissertation phase-I, considering recent trends in the field of computer engineering. This seminar will be mainly focuses on domain introduction, Study of literature related to the topic and study of methodology or techniques which are going to get implemented in the project. The student shall submit the duly certified seminar report in standard format, also students will have to present their work in any International Conference for satisfactory completion of the work by the concerned guide and head of the department.

Guidelines for Topic Selection:

1. Individual students need to study recent topics in the field of computer engineering under the guidance of an allocated guide.
2. Students can choose a topic related to computer engineering, considering recent trends and their societal importance.
3. The extensive literature survey, mathematical modeling of particular methods,

experimentation and valuable conclusion is expected from seminar study.

4. Seminar report should be submitted as a compliance of term work.
5. Technical paper presentation in any International Conference is MANDATORY as the outcome of the seminar.
6. Total Duration: 48 Contact hours and additional 48 hours should be spent by students on completion of related activities and requirements.

Suggested Rubrics for TW / PR:

Assessment Parameter	Criterion	Review Assessment Weightage
AP 1	Preparation of PPTs - Organization of contents - Visual Aids	20 M
AP 2	Presentation Skills - Subject Knowledge - Communication skills - Gesture & Postures	30 M
AP 3	Viva Voce	10 M
AP 4	Report/s - Organization of contents - Visual Aids and Conclusion	20 M
AP 5	Technical Presentation at international Conference	20 M
	Total Weightage (TW and OR)	100 M

Note: All the above parameters are mandatory for granting the TW / OR.

Course Code: 202303	Course Name: MOOCs Course	
Teaching Scheme	Credit	Evaluation Scheme
Practical : 4 Hours/Week	2	TW : 50 Marks

Brief about this Course:

MOOCs, or Massive Open Online Courses, are online learning platforms that provide access to educational content to a large number of learners worldwide. They are often provided by top universities, companies, and educators through platforms, such as SWAYAM, NPTEL, Coursera, edX, Udemy etc. They aim to democratize education by making high-quality learning resources available to anyone with an internet connection. This course provides lifelong learning and skill development among students, focusing on a complete understanding of recent trends.

Course Objectives:

- Expose learners to high-quality educational content from top educators.
- Learning advanced topics which will enhance knowledge of core courses.
- Bridge the skill gaps.
- Inculcate habit of self-learning and life-long learning.

Course Outcomes:

The Course Outcomes of MOOC depends upon the course chosen by the student.

Course Contents:

Course Content of MOOC depends upon the Course chosen by the student.

Guidelines for Topic Selection:

1. Students should choose the at least 8 weeks course from aforementioned MOOCs platforms and get it approved by the course coordinator at the start of semester.
2. Complete the course and appear for the proctored exam conducted by respective platforms at the end of the course.
3. Marks / Grades obtained in the exam will be considered for evaluation of the MOOC.

Learning Resources:

Students should register for the course as per their domain. Selected MOOC course needs the approval of the faculty / PG coordinator.

1. <https://nptel.ac.in>

Instructions for Evaluations:**Suggested Rubrics for MOOC:**

Sr. No.	Particulars	Marks Distribution
1.	Registration to NPTEL Course	05 M
2.	Completion of Course & Assignment Submission	15 M
3.	NPTEL Exam at Designated Center	10 M
4.	NPTEL Certification	20 M

Notes:

1. If not registered to NPTEL / Swayam course, then only handwritten assignments will be considered for evaluation.
2. If a student is not having certification, but has registered for course then he/she will be eligible for marks given from above table.

Course Code: 202304	Course Name: Internship / On-Job Training	
Teaching Scheme	Credit	Evaluation Scheme
Practical : 8 Hours/Week	4	TW : 100 Marks OR : 50 Marks

Course Objectives:

- To develop industry-relevant skills, professional ethics, and workplace etiquette through experiential learning.
- To promote exposure to current industry practices, tools, and trends, facilitating a bridge between academic learning and industrial applications.
- To develop interpersonal, communication, and collaborative skills by working in diverse professional environments.
- To prepare students for future employment through firsthand experience, understanding of industry expectations, and professional networking.

Course Outcomes:

After successful completion of the course, learner will be able to:

- CO1:** Apply theoretical knowledge and engineering principles to real-world industry problems and professional practices.
- CO2:** Demonstrate proficiency in tools, techniques, and methodologies relevant to the internship domain.
- CO3:** Exhibit professional behavior, including teamwork, time management, ethics, and communication skills in a workplace environment.
- CO4:** Effectively communicate findings and insights through well-structured reports and professional presentations.

Guidelines for Topic Selection:

1. Individual student needs to attempt for OJT/ Internship in an industry in the field of computer engineering.
2. If not received any OJT/ Internship, student can choose in-house mini project related to computer engineering.
3. Students need to submit a detailed report and present their work to an evaluation committee

appointed by the Head of the Department.

Evaluation Criteria:

The student will be evaluated by the panel based on the below criteria. Weightage for each criterion will be determined by the evaluation committee and will be informed to the students. The following is the suggested marks allocation.

Criteria	Description	Weightage (Term Work Out of 100)	Weightage (Term Work Out of 50)	Marks Allotted
1.	Relevance of the area of work.	20	--	20 M
2.	Performance of the task/s.	20	--	20 M
3.	Crucial learning's from the work and maintaining daily workbook.	30	--	30 M
4.	Report Preparation.	30	--	30 M
5.	Clarity and structure of presentation.	--	15	15 M
6.	Articulation of key learnings.	--	15	15 M
7.	Response to questions.	--	20	20 M
	Grand Total	100	50	150

Semester - IV

Course Code: 202401	Course Name: Dissertation Phase - II	
Teaching Scheme	Credit	Evaluation Scheme
Practical : 40 Hours/Week	20	TW : 200 Marks OR : 100 Marks

Prerequisite Courses:

- Research Methodology Concepts.

Course Objectives:

- Identify gaps in existing literature or technologies and propose innovative solutions.
- Apply theoretical knowledge to practical scenarios to design, implement and test solutions.
- Develop project planning, time management and organizational skills.

Course Outcomes:

After successful completion of the course, learner will be able to:

CO1: Review relevant literature, including books and national/international peer-reviewed journals, and consult experts on the chosen research topic.

CO2: Use various software, computational, and analytical tools effectively.

CO3: Design and develop an experimental set up/ equipment/test rig.

Course Contents:

In Dissertation Stage–II, the student shall consolidate and complete the remaining part of the dissertation which will consist of selection of technology, installations, implementations, testing, results, measuring performance, discussions using data tables as per parameter considered for the improvement with existing/known algorithms/systems, comparative analysis, validation of results and conclusions.

Guidelines for Conduction:

The student has to exhibit the continuous progress through regular reporting, presentations, and proper documentation of the frequency of the activities in the sole discretion of the PG coordination. The continuous assessment of the progress needs to be documented unambiguously. It is recommended to continue with guidelines and formats as mentioned in the Dissertation Workbook approved by the department. The dissertation stage - II work will be assessed by a panel of examiners of which one is necessarily an external examiner. The assessment will be broadly

based on results, comparisons and implementation of Algorithm / method. The continuous assessment of the progress needs to be documented unambiguously. For standardization and documentation, it is recommended to follow the formats and guidelines in the dissertation workbook approved by the department.

Instructions for Students:

The students are expected to validate their study undertaken by publishing it at standard platforms. The investigations and findings need to be validated appropriately at standard platforms – peer reviewed journals.

- Implementation and Representation of Methods / Algorithms to solve the problem.
- 100% implementation of the solution to the identified problem.
- Every student is required to publish a final paper at the International Journal (International Peer Review) by maintaining the standards of IPR.
- Students can present their work through PPTs and any supporting documents.
- At the end of semester, every student must submit THREE copies of the manuscript of their work by following the instructions and specified format given by the coordinator.

Learning Resources:

Text Books:

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2. Coursera – Academic Research and Writing (University of California)
<https://www.coursera.org/learn/academic-research-writing>
3. edX – Research Methods (University of London)
<https://www.edx.org/course/research-methods>
4. Future Learn – Project Management for Research
<https://www.futurelearn.com/courses/project-management-for-research>