MTECH 2026

Discipline : Computer Science and Engineering

Stream : CS1 (Computer Science and Engineering)

SEMESTER I

SLOT	COURSE CODE	COURSE NAME	MARKS		L-T-P	HOURS	CREDIT
			CIA	ESE			
A	J1PCST101	ADVANCED MACHINE LEARNING	40	60	3-0-0	3	3
B	J1PCST102	ADVANCED DATABASE MANAGEMENT	40	60	3-0-0	3	3
C	J1PCST103	FOUNDATIONS OF COMPUTER SCIENCE	40	60	3-0-0	3	3
D	J1PCST1N4	PROGRAM ELECTIVE 1	40	60	3-0-0	3	3
E	J1PCST1N5	PROGRAM ELECTIVE 2	40	60	3-0-0	3	3
S	J1RGT106	RESEARCH METHODOLOGY AND IPR	40	60	2-0-0	2	2
T	J1PCSL107	COMPUTING LAB I	100	--	0-0-2	2	1
Total			**340**	**360**		**19**	**18**

Teaching Assistance: 6 hours

PROGRAM ELECTIVE 1

PROGRAM ELECTIVE 1						
SLOT	**SL NO**	**COURSE CODE**	**COURSE NAME**	**L-T-P**	**HOURS**	**CREDIT**
D	1	J1PCST114	OBJECT ORIENTED SOFTWARE ENGINEERING	3-0-0	3	3
	2	J1PCST124	ADVANCED DATA MINING	3-0-0	3	3
	3	J1PCST134	CLOUD COMPUTING	3-0-0	3	3
	4	J1PCST144	WEB SERVICES	3-0-0	3	3
	5	J1PCST154	COMPUTATIONAL INTELLIGENCE	3-0-0	3	3
	6	J1PCST164	AUTOMATED VERIFICATION	3-0-0	3	3

PROGRAM ELECTIVE 2

PROGRAM ELECTIVE 2						
SLOT	**SL NO**	**COURSE CODE**	**COURSE NAME**	**L-T-P**	**HOURS**	**CREDIT**
E	1	J1PCST115	ADVANCED COMPUTER NETWORKS	3-0-0	3	3
	2	J1PCST125	PATTERN RECOGNITION	3-0-0	3	3
	3	J1PCST135	ADVANCED COMPUTER ARCHITECTURE	3-0-0	3	3
	4	J1PCST145	NATURAL LANGUAGE PROCESSING AND TEXT MINING	3-0-0	3	3
	5	J1PCST155	ADVANCED COMPILER DESIGN	3-0-0	3	3
	6	J1PCST165	BIOINFORMATICS	3-0-0	3	3

SEMESTER II

SLOT	**COURSE CODE**	**COURSE NAME**	**MARKS**		**L-T-P**	**HOURS**	**CREDIT**
			CIA	**ESE**			
A	J1PCST201	ADVANCED DATA STRUCTURES AND ALGORITHMS	40	60	3-0-0	3	3
B	J1PCST202	ADVANCED OPERATING SYSTEMS	40	60	3-0-0	3	3
C	J1PCST2N3	PROGRAM ELECTIVE 3	40	60	3-0-0	3	3
D	J1PCST2N4	PROGRAM ELECTIVE 4	40	60	3-0-0	3	3
E	J1PCSI2N5 / J1PCSO2N5	INDUSTRY/ INTERDISCIPLINARY	40	60	3-0-0	3	3

		ELECTIVE					
S	J1PCSP206	MINI PROJECT	100	--	0-0-4	4	2
T	J1PCSL207	COMPUTING LAB 2	100	--	0-0-2	2	1
Total			**400**	**300**		**21**	**18**

Teaching Assistance: 6 hours

PROGRAM ELECTIVE 3

PROGRAM ELECTIVE 3						
SLOT	**SL NO**	**COURSE CODE**	**COURSE NAME**	**L-T-P**	**HOURS**	**CREDIT**
C	1	J1PCST213	BIG DATA ANALYTICS	3-0-0	3	3
	2	J1PCST223	WIRELESS SENSOR NETWORKS	3-0-0	3	3
	3	J1PCST233	DEEP LEARNING	3-0-0	3	3
	4	J1PCST243	COMPUTER VISION	3-0-0	3	3
	5	J1PCST253	SEMANTIC WEB ARCHITECTURE	3-0-0	3	3
	6	J1PCST263	PROGRAM ANALYSIS	3-0-0	3	3

PROGRAM ELECTIVE 4

PROGRAM ELECTIVE 4						
SLOT	**SL NO**	**COURSE CODE**	**COURSE NAME**	**L-T-P**	**HOURS**	**CREDIT**
D	1	J1PCST214	BLOCKCHAIN TECHNOLOGY AND IOT	3-0-0	3	3
	2	J1PCST224	SOCIAL NETWORK ANALYSIS	3-0-0	3	3
	3	J1PCST234	MODERN DATABASE MANAGEMENT	3-0-0	3	3
	4	J1PCST244	DISTRIBUTED ALGORITHMS	3-0-0	3	3
	5	J1PCST254	CYBER FORENSICS AND INFORMATION SECURITY	3-0-0	3	3
	6	J1PCST264	SOFTWARE TESTING	3-0-0	3	3

INTERDISCIPLINARY ELECTIVE

INTERDISCIPLINARY ELECTIVE						
SLOT	**SL NO**	**COURSE CODE**	**COURSE NAME**	**L-T-P**	**HOURS**	**CREDIT**
E	1	J1PCSO215	INTRODUCTION TO MACHINE LEARNING	3-0-0	3	3
	2	J1PCSO225	DATA STRUCTURES	3-0-0	3	3
	3	J1PCSO235	SOFTWARE PROJECT	3-0-0	3	3

			MANAGEMENT			

SEMESTER III

SLOT	COURSE CODE	COURSE NAME	MARKS		L-T-P	HOURS	CREDIT
			CIA	ESE			
TRACK 1							
A*	J1PCSM3N1	MOOC	To be completed successfully		--	--	2
B	J1AGT3N2	AUDIT COURSE	40	60	3-0-0	3	-
C	J1INT303	INTERNSHIP	50	50	--	--	3
D	J1PCSD304	DISSERTATION PHASE 1	100	--	0-0-17	17	11
TRACK 2							
A*	J1PCSM3N1	MOOC	To be completed successfully		--	--	2
B	J1AGT3N2	AUDIT COURSE	40	60	3-0-0	3	-
C	J1INT303	INTERNSHIP	50	50	---	--	3
D	J1PCSP304	RESEARCH PROJECT PHASE 1	100	--	0-0-17	17	11
Total			**190**	**110**		**20**	**16**

Teaching Assistance: 6 hours

*MOOC Course to be successfully completed before the commencement of fourth semester (starting from semester 1).

AUDIT COURSE

AUDIT COURSE						
SLOT	SL NO	COURSE CODE	COURSE NAME	L-T-P	HOURS	CREDIT
B	1	J1AGT312	ACADEMIC WRITING	3-0-0	3	-
	2	J1AGT322	ADVANCED ENGINEERING MATERIALS	3-0-0	3	-
	3	J1AGT332	DATA SCIENCE FOR ENGINEERS	3-0-0	3	-
	4	J1AGT342	DESIGN THINKING	3-0-0	3	-
	5	J1AGT352	FUNCTIONAL PROGRAMMING IN HASKELL	3-0-0	3	-
	6	J1AGT362	PRINCIPLES OF AUTOMATION	3-0-0	3	-
	7	J1AGT372	REUSE AND RECYCLE TECHNOLOGY	3-0-0	3	-
	8	J1AGT382	SYSTEM MODELING	3-0-0	3	-

	9	J1AGT392	EXPERT SYSTEMS	3-0-0	3	-

SEMESTER IV

SLOT	COURSE CODE	COURSE NAME	MARKS		L-T-P	HOURS	CREDIT
			CIA	ESE			
TRACK 1							
A	J1PCSD401	DISSERTATION PHASE II	100	100	0-0-24	24	16
TRACK 2							
A	J1PCSP401	RESEARCH PROJECT PHASE II	100	100	0-0-24	24	16
Total			**100**	**100**		**24**	**16**

Teaching Assistance: 5 hours

ASSESSMENT PATTERN

- **CORE COURSES**

Evaluation shall only be based on application, analysis or design based questions (for both internal and end semester examinations).

Continuous Internal Evaluation: 40

marks Micro project/Course based

project: 20 marks Course based task/Seminar/Quiz: 10 marks

Test paper, 1 no: 10 marks

The project shall be done individually. Group projects not permitted. Test paper shall include minimum 80% of the syllabus.

End Semester Examination: 60 marks

The end semester examination will be conducted by the University. There will be two parts; Part A and Part B. Part A contain 5 numerical questions (such questions shall be useful in the testing of knowledge, skills, comprehension, application, analysis, synthesis, evaluation and understanding of the students), with 1 question from each module, having 5 marks for each question. Students shall answer all questions. Part B contains 7 questions (such questions shall be useful in the testing of overall achievement and maturity of the students in a course, through long answer questions relating to theoretical/practical knowledge, derivations, problem solving and quantitative evaluation), with minimum one question from each module of which student shall answer any five. Each question can carry 7 marks. Total duration of the examination will be 150 minutes.

- **ELECTIVE COURSES**

Evaluation shall only be based on application, analysis or design based questions (for both internal and end semester examinations).

Continuous Internal Evaluation: 40 marks

Preparing a review article based on peer

reviewed Original publications (minimum 10

publications shall be referred) : 15 marks

Course based task/Seminar/Data

collection and interpretation : 15 marks

Test paper, 1 no. : 10 marks Test paper shall include minimum 80% of

The end semester examination will be conducted by the respective College. There will

be two parts; Part A and Part B. Part A will contain 5 numerical/short answer questions with 1 question from each module, having 5 marks for each question (such questions shall be useful in the testing of knowledge, skills, comprehension, application, analysis, synthesis, evaluation and understanding of the students). Students should answer all questions. Part B will contain 7 questions (such questions shall be useful in the testing of overall achievement and maturity of the students in a course, through long answer questions relating to theoretical/practical knowledge, derivations, problem solving and quantitative evaluation), with minimum one question from each module of which student should answer any five. Each question can carry 7 marks.

Note: The marks obtained for the ESE for an elective course shall not exceed 20% over the average ESE mark % for the core courses. ESE marks awarded to a student for each elective course shall be normalized accordingly. For example if the average end semester mark % for a core course is 40, then the maximum eligible mark % for an elective course is 40+20 = 60 %.

- **RESEARCH METHODOLOGY & IPR/AUDIT COURSE**

Continuous Internal Evaluation: 40 marks

Course based task : 15 marks
Seminar/Quiz

: 15 marks Test paper, 1 no. : 10 marks

Test paper shall include minimum 80% of the syllabus.

End Semester Examination: 60 marks

The examination will be conducted by the respective College. The examination will be for 150 minutes and will contain 7 questions, with minimum one question from each module of which student should answer any five. Each question can carry 12 marks.

- **LABORATORY COURSES**

The laboratory courses will be having only Continuous Internal Evaluation and carries 100 marks. Final assessment shall be done by two examiners; one examiner will be a senior faculty from the same department.

- **INTERDISCIPLINARY ELECTIVE**

Engineering students frequently aspire to work in areas and domains that are key topics in the industry. There are concerns by recruiters that skill sets of engineering students did not match with the Industry requirements, especially in the field of latest topics. In response to their desires, the University has incorporated Industry/Interdisciplinary electives in the curriculum. Interdisciplinary knowledge is critical for connecting students with current industry trends, where multitasking is the norm. Interdisciplinary knowledge aids in the bridge- building process between academic institutions and industry. It aids pupils in expanding their knowledge and

innovating by allowing them to create something new. While core engineering courses provide students with a strong foundation, evolving technology necessitates new methods and approaches to progress, prosperity, and the inculcation of problem- solving techniques. Other courses' knowledge, on the other hand, can

assist them to deal with any scenario more effectively. Interdisciplinary courses may be one approach to address such needs, as they can aid in the enhancement of engineering education and the integration of desirable specialized subjects into the current engineering education system. This will enable students to fulfill the current industry demands. Students with multidisciplinary knowledge and projects are more likely to be placed in top industries, according to the placement trend. The future of developing engineers will be influenced by their understanding of emerging technology and interdisciplinary approaches such as bigdata, machine learning, and 3-D printing.

Continuous Internal Evaluation: 40 marks

Preparing a review article based on peer reviewed
Original publications (minimum 10 publications shall be referred) : 15

marks Course based task/Seminar/Data collection and interpretation : 15

marks Test paper, 1 no. : 10 marks

Test paper shall include minimum 80% of the syllabus.

End Semester Examination: 60 marks

The end semester examination will be conducted by the respective College. There will be two parts; Part A and Part B. Part A will contain 5 numerical/short answer questions with 1 question from each module, having 5 marks for each question (such questions shall be useful in the testing of knowledge, skills, comprehension, application, analysis, synthesis, evaluation and understanding of the students). Students should answer all questions. Part B will contain 7 questions (such questions shall be useful in the testing of overall achievement and maturity of the students in a course, through long answer questions relating to theoretical/practical knowledge,

derivations, problem solving and quantitative evaluation), with minimum one question from each module of which student should answer any five. Each question can carry 7 marks.

- **MOOC COURSES**

The MOOC course shall be considered only if it is conducted by the agencies namely AICTE/NPTEL/SWAYAM or NITTTR. The MOOC course should have a minimum duration of 8 weeks and the content of the syllabus shall be enough for at least 40 hours of teaching. The course should have a proctored/offline end semester examination. The students can do the MOOC according to their convenience, but shall complete it by third semester. The list of MOOC courses will be provided by the concerned BoS if at least 70% of the course content match with the area/stream of study. The course shall not be considered if its content has more than 50% of overlap with a core/elective course in the concerned discipline or with an open elective.

MOOC Course to be successfully completed before the commencement of fourth semester (starting from semester 1). A credit of 2 will be awarded to all students whoever successfully completes the MOOC course as per the evaluation pattern of the respective agency conducting the MOOC.

- **MINIPROJECT**

Total marks: 100, only CIA

Mini project can help to strengthen the understanding of student's fundamentals through application of theoretical concepts and to boost their skills and widen the horizon of their thinking. The ultimate aim of an engineering student is to resolve a problem by applying theoretical knowledge. Doing more projects increases problem-solving skills. The introduction of mini projects ensures preparedness of students to undertake dissertation. Students should identify a topic of interest in consultation with PG Programme Coordinator that should lead to their dissertation/research project. Demonstrate the novelty of the project through the results and outputs. The progress of

the mini project is evaluated based on three reviews, two interim reviews and a final review. A report is required at the end of the semester.

Interim evaluation: 40 (20 marks for each review), final evaluation by a Committee (will be evaluating the level of completion and demonstration of functionality/specifications, clarity of presentation, oral examination, work knowledge and involvement): 35, Report (the committee will be evaluating for the

technical content, adequacy of references, templates followed and permitted plagiarism level is not more than 25%): 15, Supervisor/Guide: 10

TEACHING ASSISTANCESHIP (TA)

All M Tech students irrespective of their category of admission shall undertake TA duties for a minimum duration as per the curriculum. Being a TA, the student will get an excellent opportunity to improve their expertise in the technical content of the course, enhance communication skills, obtain a hands-on experience in handling the experiments in the laboratory and improve peer interactions.

The possible TA responsibilities include the following: facilitate a discussion section or tutorial for a theory/ course, facilitate to assist the students for a laboratory course, serve as a mentor for students, and act as the course web-master. TAs may be required to attend the instructor's lecture regularly. A TA shall not be employed as a substitute instructor, where the effect is to relieve the instructor of his or her teaching responsibilities (specifically prohibited by University Policy).

For the tutorial session:

- Meet the teacher and understand your responsibilities well in advance, attend the lectures of the course for which you are a tutor, work out the solutions for all the tutorial problems yourself, approach the teacher if you find any discrepancy or if you need help in solving the tutorial problems, use reference text books, be innovative and express everything in English only.
- Try to lead the students to the correct solutions by providing appropriate hints rather than solving the entire problem yourself, encourage questions from the students, lead the group to a discussion based on their questions, plan to ask them some questions be friendly and open with the students, simultaneously being firm with them.
- Keep track of the progress of each student in your group, give a periodic feedback to the student about his/her progress, issue warnings if the student is consistently under-performing, report to the faculty if you find that a particular student is consistently underperforming, pay special attention to slow-learners and be open to the feedback and comments from the students and faculty.

- After the tutorial session you may be required to grade the tutorials/assignments/tests. Make sure that you work out the solutions to the questions yourself, and compare it with the answer key, think and work out possible alternate solutions to the same question, understand the marking scheme from the teacher. Consult the teacher if are and make sure that you are not partial to some student/students while grading. Follow basic ethics.

Handling a laboratory Session:

- Meet the faculty – in- charge a few days in advance of the actual lab class and get the details of the experiment, get clarifications from him/her regarding all aspects of the experiment and the expectations, prepare by reading about the theoretical background of the experiment, know the physical concepts involved in the experiment, go to the laboratory and check out the condition of the equipment/instrumentation, perform the laboratory experiment at least once one or two days before the actual laboratory class, familiarize with safety/ security aspects of the experiment / equipment/laboratory, prepare an instruction sheet for the experiment in consultation with the faculty, and keep sufficient copies ready for distribution to students for their reference.
- Verify condition of the equipment/set up about 30 minutes before the students arrive in the class and be ready with the hand outs, make brief introductory remarks about the experiment, its importance, its relevance to the theory they have studied in the class, ask the students suitable questions to know there level of preparation for the experiment, discuss how to interpret results, ask them comment on the results.
- Correct/evaluate/grade the submitted reports after receiving suitable instructions

  from the faculty in charge, continue to interact with students if they have any clarifications regarding any aspect of the laboratory session, including of course grading, Carefully observe instrument and human safety in laboratory class, Preparing simple questions for short oral quizzing during explanation of experiments enables active participation of students, facilitate attention, provides feedback and formative assessment.