Jyothi Engineering College (AUTONOMOUS)
Reaccredited with NAAC (Grade A) and
NBA Programmes* (*CE, CS, EC, EE, ME, MR)
Jyothi Hills, P. O. Vettikkattiri, Cheruthuruthy
Thrissur, Kerala, India, 679531
04884 259000 | info@jecc.ac.in | www.jecc.ac.in
A Centre of Excellence in Science and Technology by the Catholic Archdiocese of Trichur

M. TECH CURRICULUM – 2026

Semester I to IV

JYOTHI ENGINEERING COLLEGE
LEAD KINDLY LIGHT
TET
(AUTONOMOUS)
CREATING TECHNOLOGY LEADERS OF TOMORROW
ESTD 2002

Department of Mechanical Engineering

Stream: Industrial Automation and Robotics

Branch Code: IAR

Recommended by BoS on .....

Approved by Academic Council on .....

(Reference: ----------)

VISION & MISSION OF THE INSTITUTE

VISION: To be a global leader in education, nurturing ethical professionals, fostering holistic excellence and sustainable societal impact.

MISSION

1. **Excellence in Education:** Provide outcome-based and industry-relevant education that builds technical competence, innovation, and lifelong learning.
2. **Ethics and Values:** Inspire integrity, empathy, and social responsibility to develop ethical and service-oriented professionals.
3. **Research, Innovation, and Entrepreneurship:** Encourage creativity, research, and entrepreneurship for sustainable technological and economic growth.
4. **Holistic and Global Development:** Promote all-round development, leadership, and global competence through collaboration and community engagement.

VISION & MISSION OF THE DEPARTMENT

VISION: To be a centre of excellence in Mechanical Engineering, research, and innovation, nurturing ethical professionals and leaders committed to sustainable technological advancement and societal well-being.

MISSION

- Provide outcome-based, industry-relevant Mechanical Engineering education that builds strong fundamentals, technical competence, problem- solving ability, and lifelong learning skills.
- Cultivate integrity, empathy, professional ethics, environmental consciousness, and social responsibility to develop responsible engineering professionals.
- Promote research, innovation, interdisciplinary collaboration, and entrepreneurship for sustainable technological and economic development.
- Foster leadership, teamwork, communication skills, and collaboration through industry interaction, professional activities, and community engagement.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1	The graduates will demonstrate the skills to design, analyse, and implement systems to solve real-world problems through robotics and automation.
PEO 2	Demonstrate technical competence in identifying, analysing, and designing innovative, sustainable, and cost-effective solutions for complex problems in industrial automation.
PEO 3	Have successful professional career in industry, government, academia, and military as innovative engineers.
PEO 4	Work successfully in collaborative and multidisciplinary environments upholding professional and ethical values.
PEO 5	Be active members ready to serve society locally and internationally and take up entrepreneurship for the growth of the economy and to generate employment.

PROGRAMME SPECIFIC OUTCOMES

PSO 1	Apply engineering skills to model, simulate, design, and implement automation solutions for improvement of industrial productivity.
PSO 2	Design, develop and maintain robotics and automation systems for a variety of applications.
PSO 3	Design indigenous and cost-effective systems to solve problems in industrial automation using advanced hardware and software tools.
PSO 4	Apply domain knowledge of robotics and automation to provide solutions in interdisciplinary areas to meet current industrial challenges.
PSO 5	Undertake higher education, research, and entrepreneurship in the field of automation and robotics.

PROGRAMME OUTCOMES

PO1	An ability to independently carry out research/investigation and development work in engineering and allied streams.
PO2	An ability to communicate effectively, write and present technical reports on complex engineering activities by interacting with the engineering fraternity and with society at large.
PO3	An ability to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.
PO4	An ability to apply stream knowledge to design or develop solutions for real-world problems by following the standards.
PO5	An ability to identify, select and apply appropriate techniques, resources and state-of-the-art tools to model, analyse and solve practical engineering problems.
PO6	An ability to develop cognitive load management skills related to project management and finance, which focus on entrepreneurship and industry relevance.

KNOWLEDGE AND ATTITUDE PROFILE (WK)

WK1	A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.
WK2	Conceptually based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.
WK3	A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.
WK4	Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.
WK5	Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area.
WK6	Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.
WK7	Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.
WK8	Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.
WK9	Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

CUMULATIVE CREDITS

Cumulative credits for the entire M. Tech program is 68 credits

CREDIT DISTRIBUTION: YEAR/SEMESTER WISE

Year	ODD Semester	Even Semester	Total credit
First	18	18	36
Second	16	16	32
Total Academic Credits (M Tech)			**68**

COURSE CATEGORY AND CREDIT DISTRIBUTION

Sl.	Course Category	Nomenclature	Credits	Number of Courses
1	Programme Core Courses	PC	17	8
2	Programme Elective Courses	PE	12	4
3	Research Methodology & IPR	RG	2	1
4	Industry / Interdisciplinary Elective Courses.	IE/IDE	3	1
5	Project Work/MOOC/ Internship	PI	34	5
Total			**68**	**19**

COURSE TYPES AND ASSESSMENT PATTERN

Course Type	Nomenclature	Credits	Assessment Pattern		
			CIE	ESE	Total
Theory Course	TC	0/2/3	40	60	100
Lab Course	PL	2	100	NA	100
Mini Project	PI	2	100	NA	100
MOOC	PI	3	NA	NA	--
Internship	PI	3	50	50	100
Project	PI	3, 4	50	50	100

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

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 syllabus.

End Semester Examination: 60 marks

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

Course based task:	15 marks
Seminar/Quiz:	15 marks
Test Paper, 1 no.:	10 marks

End Semester Examination: 60 marks

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

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.

Continuous Internal Evaluation: 100 marks

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 Evaluations : 40 Marks

(20 marks for each review)

Final Evaluation by a Committee : 35 Marks

(The committee will be evaluating the level of completion and demonstration of functionality/specifications, clarity of presentation, oral examination, work knowledge and involvement)

Report : 15 Marks

(The committee will be evaluating for the technical content, adequacy of references, templates followed and permitted plagiarism level is not more than 25%)

Supervisor/Guide : 10 Marks

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:

(i) 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.

(ii) 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.

(iii) Keep track of the progress of each student in your group, give 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.

(iv) 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 you are not partial to some student/students while grading. Follow basic ethics.

Handling a Laboratory Session:

(i) 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.

(ii) 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.

(iii) 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.

SEMESTER I

Sl.	Slot	Course Code	Course Category	Course Type	Course Title	Hours/Week					Credits	Total Marks		Total
						L	T	P	H	S		CIE	ESE	
1	A	J1PIAT101	PC	TC	Computational Methods for Engineers	3	0	0	-	-	3	40	60	100
2	B	J1PIAT102	PC	TC	Robotics and Automation	3	0	0	-	-	3	40	60	100
3	C	J1PIAT103	PC	TC	CAD /CAM	3	0	0	-	-	3	40	60	100
4	D	J1PIAT1N4	PE	TC	Program Elective 1	3	0	0	-	-	3	40	60	100
5	E	J1PIAT1N5	PE	TC	Program Elective 2	3	0	0	-	-	3	40	60	100
6	S	J1PRGT106	RG	TC	Research Methodology & IPR	2	0	0	-	-	2	40	60	100
7	T	J1PIAL107	PC	PL	Advanced Manufacturing Lab-I	0	0	2	-	-	1	100	--	100
8	-				Teaching Assistance	0	0	6	-	-	0	--	--	--
Total						**17**	**0**	**8**	**-**	**-**	**18**	**340**	**360**	**700**

SEMESTER II

Sl.	Slot	Course Code	Course Category	Course Type	Course Title	Hours/Week					Credits	Total Marks		Total
						L	T	P	H	S		CIE	ESE	
1	A	J1PIAT201	PC	TC	Design of Experiments	3	0	0	-	-	3	40	60	100
2	B	J1PIAT202	PC	TC	Modern Manufacturing Systems	3	0	0	-	-	3	40	60	100
3	C	J1PIAT2N3	PE	TC	Program Elective 3	3	0	0	-	-	3	40	60	100
4	D	J1PIAT2N4	PE	TC	Program Elective 4	3	0	0	-	-	3	40	60	100
5	E	J1PIAO2N5/ J1PIAI2N5	IDE	TC	Interdisciplinary Elective / Industry Elective	3	0	0	-	-	3	40	60	100
6	S	J1PIAP106	PC	PI	Mini Project	0	0	4	-	-	2	100	--	100
7	T	J1PIAL107	PC	PL	Advanced Manufacturing Lab-II	0	0	2	-	-	1	100	--	100
8	-				Teaching Assistance	0	0	6	-	-	0	--	--	--
Total						**15**	**0**	**12**	**-**	**-**	**18**	**400**	**300**	**700**

SEMESTER III

TRACK 1														
Sl.	Slot	Course Code	Course Category	Course Type	Course Title	Hours/Week					Credits	Total Marks		Total
						L	T	P	H	S		CIE	ESE	
1	A	J1PIAM301	PC	PI	MOOC	0	0	0	-	-	2	--	--	--
2	B	J1PIAG3N2	PC	TC	Audit Course	3	0	0	-	-	0	40	60	100
3	C	J1PINT303	PC	PI	Internship	0	0	0	-	-	3	50	50	100
4	D	J1PIAD304	PC	PI	Dissertation Phase-I	0	0	17	-	-	11	100	--	100
5	-				Teaching Assistance	0	0	6	-	-	0	--	--	--
Total						**3**	**0**	**23**	**-**	**-**	**16**	**190**	**110**	**300**

TRACK 2														
Sl.	Slot	Course Code	Course Category	Course Type	Course Title	Hours/Week					Credits	Total Marks		Total
						L	T	P	H	S		CIE	ESE	
1	A	J1PIAM301	PC	PI	MOOC	0	0	0	-	-	2	--	--	--
2	B	J1PIAG3N2	PC	TC	Audit Course	3	0	0	-	-	0	40	60	100
3	C	J1PINT303	PC	PI	Internship	0	0	0	-	-	3	50	50	100
4	D	J1PIAP304	PC	PI	Research Project Phase-I	0	0	17	-	-	11	100	--	100
5	-				Teaching Assistance	0	0	6	-	-	0	--	--	--
Total						**3**	**0**	**23**	**-**	**-**	**16**	**190**	**110**	**300**

SEMESTER IV

TRACK 1														
Sl.	Slot	Course Code	Course Category	Course Type	Course Title	Hours/Week					Credits	Total Marks		Total
						L	T	P	H	S		CIE	ESE	
1	A	J1PIAP401	PC	PI	Dissertation Phase-II	0	0	24	-	-	16	100	100	--
2	-				Teaching Assistance	0	0	5	-	-	0	--	--	--
Total						**0**	**0**	**29**	**-**	**-**	**16**	**100**	**100**	**200**

TRACK 2														
Sl.	Slot	Course Code	Course Category	Course Type	Course Title	Hours/Week					Credits	Total Marks		Total
						L	T	P	H	S		CIE	ESE	
1	A	J1PIAP401	PC	TC	Research Project Phase-II	0	0	24	-	-	16	100	100	--
2	-				Teaching Assistance	0	0	5	-	-	0	--	--	--
Total						**0**	**0**	**29**	**-**	**-**	**16**	**100**	**100**	**200**

APPENDIX-I- COURSE CATEGORY

*(**TC** -Theory Course, **PL**, Practical Course, **PI**-Project, MOOC, Internship)*

1.PROGRAMME CORE COURSES

Sl.	Semester	Course Code	Course Name	Course Type	Credits
1	S1	J1PIAT101	Computational Methods for Engineers	TC	3
2	S1	J1PIAT102	Robotics and Automation	TC	3
3	S1	J1PIAT103	CAD /CAM	TC	3
4	S2	J1PIAT201	Design of Experiments	TC	3
5	S2	J1PIAT202	Modern Manufacturing Systems	TC	3
6	S1	J1PIAL107	Advanced Manufacturing Lab-I	PL	1
7	S2	J1PIAP106	Mini Project	PI	2
8	S2	J1PIAL107	Advanced Manufacturing Lab-II	PL	1
9	S3	J1PIAM301	MOOC	PI	2
10	S3	J1PINT303	Internship	PI	3
11	S3	J1PIAD304/ J1PIAP304	Dissertation Phase-I/ Research Project Phase-I	PI	11
12	S4	J1PIAD401/ J1PIAP401	Dissertation Phase-II /Research Project Phase-II	PI	16
Total Credits					**51**

2. RESEARCH METHODOLOGY & IPR

Sl.	Semester	Course Code	Course	Course Type	Credits
1	S1	J1PRGT106	Research Methodology & IPR	TC	2
Total Credits					**2**

3. PROGRAMME ELECTIVE

3.1 PROGRAMME ELECTIVE-1 (SEMESTER-I)

Sl.	Slot	Subject Code	Subject	Category
1	D	J1PIAT114	Composite Materials	General Elective
2	D	J1PIAT124	Finite Element Analysis	General Elective
3	D	J1PIAT134	Design for Manufacturing	General Elective

3.2 PROGRAMME ELECTIVE-2 (SEMESTER-I)

Sl.	Slot	Subject Code	Subject	Category
1	E	J1PIAT115	Production and Operations Management	General Elective
2	E	J1PIAT125	Soft Computing Techniques	General Elective
3	E	J1PIAT135	Micro and Nano Manufacturing	General Elective

3.3 PROGRAMME ELECTIVE-3 (SEMESTER-II)

Sl.	Slot	Subject Code	Subject	Category
1	C	J1PIAT213	Cellular Manufacturing & Group Technology	General Elective
2	C	J1PIAT223	Enterprise Resource Planning	General Elective
3	C	J1PIAT233	Flexible Manufacturing Systems	General Elective

3.4 PROGRAMME ELECTIVE-4 (SEMESTER-II)

Sl.	Slot	Subject Code	Subject	Category
1	D	J1PIAT214	Computer Aided Measurements	General Elective
2	D	J1PIAT224	Modeling & Simulation of Engineering Systems	General Elective
3	D	J1PIAT234	Optimization Techniques	General Elective

4. INDUSTRY/ INTERDISCIPLINARY ELECTIVES (SEMESTER-II)

Sl.	Slot	Subject Code	Subject	Category
1	E	J1PIAO215	Internet of Things	Interdisciplinary Elective
2	E	J1PIAO225	Digital Product Design and Manufacturing	Interdisciplinary Elective
3	E	J1PIAO235	Reliability Engineering	Interdisciplinary Elective
4	E	J1PIAO245	Industrial Safety in Engineering	Interdisciplinary Elective
5	E	-	-	Industry Elective

5. AUDIT COURSE

Sl.	Slot	Subject Code	Subject	Category
1	B	J1PIAG312	Academic Writing	Audit Course
2	B	J1PIAG322	Advanced Engineering Materials	Audit Course
3	B	J1PIAG332	Data Science for Engineers	Audit Course
4	B	J1PIAG342	Design Thinking	Audit Course
5	B	J1PIAG352	Functional Programming in Haskell	Audit Course
6	B	J1PIAG362	Principles of Automation	Audit Course
7	B	J1PIAG372	Reuse and Recycle Technology	Audit Course
8	B	J1PIAG382	System Modeling	Audit Course
9	B	J1PIAG392	Expert Systems	Audit Course

APPENDIX-II
ABBREVIATIONS

L	Lecture hours per week
T	Tutorial hours per week
P	Practical hours per week
H	Hands-on projects per week
PO	Programme Outcome
PSO	Programme Specific Outcome
PEO	Programme Educational Objective
WK	Knowledge and Attitude Profile
PC	Programme Core Courses
PE	Programme Elective Courses
RG	Research Methodology & IPR
IE	Industry Elective
IDE	Interdisciplinary Elective
PI	Project Work/ MOOC / Internship
TC	Theory Course
PL	Practical Course