TKM COLLEGE OF ENGINEERING

(Government Aided and Autonomous)

celebrating 60 years of excellence

B. Tech Curriculum 2023

THANGAL KUNJU MUSALIAR COLLEGE OF ENGINEERING
(Government Aided and Autonomous)
KOLLAM-691005, KERALA

TKMCE-Academics- B.Tech Curriculum 2023 -orders issued

No: ACU3/653/2023 Date: 12/06/2023

Order

Read:

1. UGC order Ref: F. 22-1/2022(AC) dated 26th May 2022
2. U.O. No. KTU/ASST11(ADMIN)/3212/2022 dated 2nd September 2022
3. ACU3/1010/2022 dated 16th September 2022

The TKM College of Engineering was conferred with autonomous status by the UGC on May 26, 2022, vide Ref: 1, and the same was notified by the APJ Abdul Kalam Technological University, on September 2, 2022, vide ref. 2.

The first meeting of the Governing Body after the notification of autonomous status was held on September 15, 2022, and authorized the Principal to constitute the Academic Council as per the UGC (Conferment of Autonomous Status upon Colleges and Measures for Maintenance of Standards in Autonomous Colleges) Regulations, 2018. As per the resolution of the Governing Body, the Principal has constituted the Academic Council on September 16, 2022, vide ref. 3.

The third academic council meeting held on June 12, 2023, approved the B.Tech. curriculum to be followed for the academic year 2023-24 onwards. The curriculum for the B.Tech programs, 2023, approved by the Academic Council, is hereby notified as the **TKM College of Engineering (Aided and Autonomous) B.Tech Curriculum 2023**.

PRINCIPAL
THANGAL KUNJU MUSALIAR
COLLEGE OF ENGINEERING
KOLLAM-5

Copy to: Copy to: All HODs, Deans, IQAC, COE, AA, AO, SS, JS(A)

TKM College of Engineering (Government Aided and Autonomous)

B.Tech Curriculum 2023.

This will be known as the **TKM College of Engineering B.Tech, Curriculum 2023**. These are subject to the provisions of the UGC (Conferment of Autonomous Status upon Colleges and Measures for Maintenance of Standards in Autonomous Colleges) Regulations, 2018 and APJ Abdul Kalam Technological University Act, 2015, and the statutes and ordinances, if any issued in the subject from time to time. All the rules specified herein, approved by the Academic Council, will be in force and applicable to the students admitted from the academic year 2023-24 onwards.

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Preface to the Curriculum

The new undergraduate curriculum of TKM College of Engineering is designed to provide students with the skills and knowledge they need to become competent engineers capable of tackling real-world problems in a variety of fields. The curriculum is carefully designed to expose students to both theoretical and practical aspects of engineering and provide them with hands-on experience in the latest technologies and tools used in the industry. The courses given in the curriculum are tailored in a student centric fashion to ensure that they receive well-rounded education with the flexibility to customize their own learning experience according to their interests and career goals.

The allocation of 163 credits, of which 160 are from courses and 3 from activity points, over a period of four years, with each year comprising of two semesters. All courses in the curriculum are designed to highlight the significance of applying knowledge to engineering and technology challenges, fostering creativity and innovation, and developing entrepreneurial abilities.

The curriculum includes project-based courses that emphasize hands-on learning and real-world applications supported by the fundamentals of engineering. These courses are offered with lab components, which allow students to gain practical experience in applying the concepts they have learned. Additionally, there are basic science courses with lab components, core courses without practical components, 4-hour lab courses, as well as 1/2-hour theory courses and 2-hour lab courses to provide breadth wise knowledge in the area of recent technological trends. These variety of courses ensures that students receive a well-rounded education and have the flexibility to customize their own learning experience according to their interests and career goals. In addition to these core subjects, students will have the opportunity to choose from a wide range of elective courses in specialized areas.

The industry internship included in the curriculum will give students the opportunity to apply their theoretical knowledge to practical situations and gain valuable experience. The students can opt for MOOC courses corresponding to Professional Elective and Open Elective Courses during their 8th semester, which will give them flexibility in doing internships.
Moreover, the extracurricular activities that students can participate in to earn activity points will provide them with a well-versed education and help them develop important skills such as leadership, teamwork, and communication. This is a great initiative by TKM College of Engineering to ensure that students not only excel academically but also develop important life skills that will help them in their future careers.

GENERAL COURSE STRUCTURE

1. Credit and Courses:

Classification	Credit assigned
1 Hour Lecture [L] per week	1 Credit
1 Hour Tutorial [T]per week	1 Credit
1 Hour Project [J] per week	1 Credit
2 Hours Practice/Practical [P] per week	1 Credit

Credits are a unit of measurement for course work and are based on the number of hours of instruction required per week. One hour of classroom lecture (L) that is 60 minutes long per week, carried out during all weeks of the semester, is considered one Instructional Unit or one Credit. The same goes for a tutorial (T) or a project (J) that is 60 minutes long per week and carried out during all weeks of the semester.

In addition, a minimum of 120 minutes per week of laboratory session, practical or field work, training (P) or a combination of these, carried out during all weeks of the semester, is also considered one Instructional Unit or one Credit.

Credit pattern

The B.Tech. program curriculum has a total of 160 academic credits and 3 additional pass/fail credits that can be gained through 100 activity points. It is expected that the program will accommodate courses from other disciplines so that students have multi-disciplinary exposure. Additionally, the program should provide sufficient opportunities for students to enhance their communication, soft skills, managerial skills, and technical skills. Depending on the program, the courses should fall under engineering, basic science, humanities science, and management categories. The structure of the UG program should essentially have the following categories of courses with the breakup of credits as given:

Sl No:	Category	Code	Credit Breakup
1	Humanities and Social Sciences including Management courses	HSMC	16
2	Basic Science courses	BSC	22
3	Engineering Science courses including workshop, drawing, basics of electrical/ mechanical/computer etc.	ESC	27
4	Professional Core Courses	PCC	59
5	Professional Elective courses relevant to chosen specialization/ branch	PEC [IEC] [MS]	12
6	Open Electives – Electives from other technical and /or emerging areas	OEC	9
7	Project work, seminar and internship in industry or elsewhere	PROJ	15
8	Mandatory Courses	MC	
9	*Mandatory Student Activities*	SA	* 3
	Total Academic/Learning credits		**160**
	Optional Specialization		
10	Honors	HR	20
11	Minor	MR	20
	Total Academic/Learning credits with optional specialization		**180**

**Not included in the calculation of Total Academic/Learning credits*

10 to 15 % deviation in credits is permitted under each discipline. While developing the curriculum, the department offering the program should ensure that the above distribution shall be attained by the students upon their completion of their program. Either Minor or Honors can be opted from the optional specialization.

The courses are organized into 1/2/3/4/5/6 credit courses based on the content delivery mechanism and desired depth of the course. The delivery methods include Theory-only, Theory with tutorial, Theory with practice, Theory with project etc. The L-T-P-J notation for each course signifies the allocation of hours for content delivery in terms of Lecture (L), Tutorial (T), Practical (P), and Project (J) per week, as well as the credit earned from the course. Apart from lecture, tutorial, practical/practice and the project hours the curriculum offers Self learning hours(S) that indicate the number of hours students are expected to spent for activities that should be completed outside the class defined by the faculty handling courses, and for the activities to support learning, initiated by the students themselves without guidance or direction from course faculty. For each course, Self-learning hour per week is calculated as:

$$S= (L*1+T*0+P*1+[J/2])$$

where J belongs to the project component of a project-based course Thus, the L-T-P-J-S-C for each course indicates the number of credits delivered as Lecture (L), Tutorial (T), Practical (P), Project (J), Self-study hours (S) and the total instructional delivery indicated as Credits (C).

$$C = L+ T + [P/2] + J$$

Sl No.	Lecture-Tutorial-Practical/ Project [L-T-P-J]	Self-learning hours[S]	Credit [C]	Description
1	1-0-0-0	1	1	Theory course without End Semester Examination [ESE]
2	2-0-0-0	2	2	
3	2-0-2-0	4	3	Theory course embedded with practical
4	2-1-0-0	2	3	Theory course embedded with tutorial
	3-1-0-0	3	4	
5	3-0-0-0	3	3	Theory course
6	3-1-2-0	5	5	Theory course embedded with practical and tutorial
7	2-1-2-0	4	4	

8	1-0-2-0	3	2	Theory course embedded with practical without ESE
9	3-0-2-0	5	4	Theory course embedded with practical
10	2-0-2-2	5	5	Project based course
11	0-0-2-0	2	1	Practical course without ESE
12	0-0-4-0	4	2	Practical course
13	0-0-6-0	6	3	Seminar
14	0-0-12-0	12	6	Final year Project
Mandatory Courses (Pass / Fail)				
15	2-0-0-0 3-0-0-0	2 3	0	Theory Courses
16	2-0-2-2	5	0	Theory course embedded with project
17	0-0-0-2	1	0	Socially Relevant Project
Minor/ Honors Course				
18	4-0-0-0	4	4	Theory course
19	0-0-0-4	2	4	Project only course

Course Code:

In general, the curriculum of each program consists of courses that are grouped into different heads such as Program Core (PCC), Professional Elective (PEC), Project-based courses (PBC), and Open Elective courses (OEC). The details of such courses are given below.

Program Core (PCC) or Professional Core

Program or Professional Core (PCC) courses are program-specific and are required for students to complete in order to be eligible for the degree. PCC courses are typically designed to provide students with a strong foundation in the core concepts

and skills of their chosen field of study. By completing the PCC courses, students will have a solid understanding of the fundamental principles and practices of their field, which will prepare them for more advanced coursework and professional work in the future.

Project based course (PBC):

Project-based courses (PBC) are designed to provide students with a deeper knowledge and understanding of real-world challenges and problems in their field of study. By taking PBC courses, students have the opportunity to actively explore and apply theoretical knowledge to real-world problems. This can help them develop problem-solving skills and gain practical experience that will be valuable in their future careers. The ultimate aim of an engineering student is to resolve problems by applying theoretical knowledge, and PBC courses can be a great way to achieve this goal. Doing multiple projects can also help students develop a range of skills, from project management and teamwork to communication and presentation skills.

Professional Elective (PEC):

Professional Elective (PEC) courses are designed to provide students with an opportunity to study more advanced, applied, or specialized courses than the basic courses they study as part of their program or professional core courses. PEC courses can help students gain in-depth knowledge of a specific sub-field that they have chosen as their major specialization. These courses are typically more focused and specialized than program core courses, and can help students develop expertise in a particular area of their field.

PEC courses provide students with the flexibility to tailor their education to their interests and career goals, while also ensuring that they have a strong foundation in the core concepts and skills of their field.

Micro specialization:

Electives can be streamlined to certain sub-disciplines of the B.Tech program, which are sometimes referred to as micro-specializations. This allows students to graduate with different micro-specializations or to choose not to specialize in a particular area by selecting a set of professional elective courses that are aligned with industry requirements or higher studies. A micro-specialization can be acquired by opting any two thematic courses from the list of professional electives which is in line with a Program Core Course.

Open Elective courses (OEC):

Open Electives are courses that students can take alongside their primary area of study. These courses are designed to give students greater flexibility and control over their curriculum, allowing them to pursue their interests and passions. Open Electives also promote cross-disciplinary and multidisciplinary learning, as students have the freedom to choose courses from different streams. This can be a great way to broaden the knowledge and skills and to explore new areas of interest.

Research based Mini Project:

Focuses on strengthening the understanding of student's fundamental concepts through the application of theoretical concepts and to boost their skills and widen the horizon of their thinking in research by implementing/working a recent research paper in the domain of study.

Project:

The research-based project in the seventh semester shall be continued as the project in the eighth semester.

Minor and Honours courses: The Minor in Engineering program allows students to gain interdisciplinary experience and exposure to concepts and perspectives that may not be part of their degree programs.

- The student should earn additional 20 credits to be eligible for the award of B. Tech Degree with Minor.
- Out of the 20 credits, 12 credits should be earned by undergoing a minimum of three courses, of which one course shall be a mini project based on the chosen area.
- The remaining 8 credits could be acquired through 2 MOOCs.

This program gives a great opportunity for students to broaden their understanding of the engineering profession and gain exposure.

Seminar

Seminars are given to provide opportunities for students to present their research or ideas on a specific topic to a peer audience. Seminars can be used to enhance students' communication skills, critical thinking skills, and ability to synthesize information from technical publications. It can be also used to encourage students to read and collect recent and reliable information from technical publications including peer-reviewed journals, conference papers, books, project reports, and other sources. The purpose of seminars is to create a learning environment where students can engage in active discussions and develop their presentation skills. By participating in seminars, students can gain valuable experience and develop the skills they need to succeed in their future careers.

Honors

Honors is intended for a student to gain expertise/specialise in an area inside his/her B.Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. Upon completion of Honors, a student will be better equipped to perform research in her/his branch of engineering.

- The student should earn additional 20 credits to be eligible for the award of B. Tech Degree with Honors.
- Out of the 20 credits, 12 credits should be earned by undergoing a minimum of three courses, of which one course should be a mini project based on the chosen area.
- The remaining 8 credits could be acquired through 2 MOOCs

Activity points:

To qualify for a B. Tech degree, all students are required to earn a minimum of 100 activity points from various activity segments listed by the institution. These activity points are awarded on a pass/fail basis and are mandatory for obtaining the degree. While these activity points carry three credits, no grade is given for these credits, and they are not included in the calculation of the CGPA. The purpose of these activity points is to encourage students to participate in various extracurricular activities, such as sports, cultural events, and community service. For lateral entry students who join from the third semester, the activity point requirement is reduced to 75. The points earned by the student will be indicated in the consolidated academic statement, which is a record of the student's academic performance throughout their program.

The activity points can be earned by undertaking activities from different categories. Some of the categories are:

(i) Internship
(ii) MOOC/GRE/ TOEFL /GATE/ IELTS/MAT/SAT/CAT etc/ Foreign language proficiency
(iii) Participation and organization of Co-curricular activities, Extracurricular activities.

Socially Relevant Projects

The main purpose of Socially Relevant Projects is to link the institution with the society for mutual benefit. The community will benefit from the focused contribution of students towards local development. At the same time, the institution finds an opportunity to develop social sensibility and responsibility among students and emerge as a socially responsible institution.

The objectives of Socially Relevant Projects are:

- ✓ To provide students with an opportunity to engage in meaningful community service and apply their learning to real-world situations.
- ✓ To promote civic responsibility and leadership skills among students, and to foster a deeper understanding of social issues.
- ✓ To facilitate the development of partnerships between colleges and local communities, and to contribute to local development.
- ✓ To encourage students to think critically and creatively about social issues, and to develop innovative solutions to address them.
- ✓ To promote interdisciplinary learning and collaboration, and to provide opportunities for students to apply their knowledge and skills across different fields.

Activities for Socially Relevant Project

- ❖ Conducting surveys and research on social issues and concerns to gain a better understanding of the problem and identify potential solutions.
- ❖ Developing and implementing educational programs to promote awareness and understanding of social issues and concerns.
- ❖ Collaborating with local NGOs and community groups to organize events and activities that promote social welfare and community development.
- ❖ Developing and implementing social welfare programs that address the needs of marginalized and vulnerable communities, such as homeless individuals, refugees, and low-income families.
- ❖ Conducting community service activities, such as volunteering at local shelters, food banks, and community centers.
- ❖ Developing and implementing environmental conservation programs that promote sustainable practices and reduce the impact of human activities on the environment.
- ❖ Creating and distributing educational materials, such as pamphlets and brochures, to raise awareness about social issues and concerns.
- ❖ Organizing fundraising events to support social welfare programs and community development initiatives.
- ❖ Engaging in advocacy and lobbying efforts to influence public policy and promote social justice.

Procedure for doing Socially Relevant Project

- Assign a group of students or a single student to a particular habitation, village, or municipal ward in the near vicinity of their place of stay.
- Conduct a survey of the habitation to gain a better understanding of the social issues and concerns that need to be addressed. A common survey format could be designed to ensure consistency.
- Develop a project work related to the student's domain or subject area that addresses the identified social issues and concerns. The project should be designed to be socially relevant and have a positive impact on the community.
- Implement the project work with the help of the local community and relevant authorities. This could include organizing awareness programs, developing and implementing educational programs, conducting community service activities, and engaging in advocacy and lobbying efforts.
- Monitor and evaluate the project work to ensure that it is having the desired impact on the community. This could include conducting surveys and research, gathering feedback from the local community, and tracking key performance indicators.
- Document the project work and its impact on the community, and share the findings with relevant stakeholders, including the local community, government authorities, and academic institutions

Internships

Internships provide a great opportunity for students to gain exposure to the industry and prepare for their future work environment. As per the guidelines of the institution, all B.Tech students are required to undergo a minimum of six to eight weeks of internship in a reputed industry or research organization at another institute of higher learning and repute (Academia).This can be done any time after their first year of study and before the seventh semester. Students can avail this training in a single stretch or in piece-meal basis with each stretch shall be of not less than two weeks. The organization for doing internship shall be selected/decided by the students in consultation with the senior faculty advisor.

For students who have completed a 6-to-8-week internship at a reputed organization or a 3-to-5-month duration internship leading to placement can convert their work during internship to project work in the eighth semester, subject to approval from the concerned department.

Structure of Course code:

Each course will be identified by a unique Course Code consisting of eight alpha numeric characters (Two digits, three alphabets which together followed by three digits) and is represented as **YYXXCSNN**, which can be interpreted as: YY – Regulation Year XX - Course Category Code C- Course Delivery Mode, S – Semester Number (it can have a number from 1 to 8) NN- Course Sequence Number

For eg: 23CET303- is a theory course offered by the civil engineering department in the third semester of the 2023 scheme.

23MEL408 - is a laboratory course offered by the mechanical engineering department in the fourth semester of the 2023 scheme.

23CSP607 - - is a laboratory course offered by the mechanical engineering department in the sixth semester of 2023 scheme.

Year of Regulation YY	Course category XX	Course delivery mode C	Semester Number S	Serial No. of course NN
23 for 2023 regulation	BY -BIOLOGY CE - CIVIL ENGINEERING CH - CHEMICAL ENGINEERING CS - COMPUTER SCIENCE &ENGINEERING CY – CHEMISTRY EC- ELECTRONICS & COMMUNICATION ENGINEERING EE – ELECTRICAL & ELECTRONICS ENGINEERING ER – ELECTRICAL& COMPUTER ENGINEERING ES - ENGINEERING SCIENCE COURSE HU - HUMANITY, SOCIAL SCIENCE AND MANAGEMENT MA - MATHEMATICS MC- MANDATORY COURSE ME - MECHANICAL ENGINEERING PY - PHYSICS	T - THEORY ALONE P - THEORY EMBEDDED WITH PRACTICAL COURSE L- LABORATORY COURSE J - THEORY EMBEDDED WITH PROJECT (PROJECT BASED COURSE) E – PROFESSIONAL ELECTIVE COURSE O - OPEN ELECTIVE COURSE H - HONORS COURSE M - MINOR COURSE S - SEMINAR R - RESEARCH BASED MINI PROJECT D - PROJECT N - INTERNSHIP	01 2 03 etc.	01 02 03 etc.

Assessment

In each semester, candidates shall be evaluated both by Continuous Internal Assessment (CIA) and End Semester Examinations (ESE) or by Continuous Internal

Assessment alone based on the credit assigned to the course. The Continuous Internal assessment shall be on the basis of the day-to-day work, periodic tests, assignments, quizzes, presentations and other suitable tools devised by the course faculty. The faculty member(s) concerned should carry out the CIA for the courses allotted to him/her and should perform the learning assessments in the following perspectives with respect to all courses:

- Evaluation with respect to knowledge
- Evaluation with respect to Understanding
- Evaluation with respect to skill
- Evaluation with respect to Applications and/or
- Higher Order Thinking Skills

For the Practice part of a course or a pure Practice (Laboratory/Practical) course; due weightage for carrying out experiments, such as observations, collection of data, analysis, interpretation of results, inferences and also timely submission of record work done would all carry due weightage based on the type of laboratories and the course. The CIA marks for individual courses shall be computed by giving weightage to the following parameters given in the table below.

Mark Distribution of CIA										
Course Structure (L-T-P-J)	**Attendance**	**Theory (L- T)**			**Practical (P)**		**Project (J)**			**Total Marks**
		Assignment	**Test-1**	**Test-2**	**Class work**	**Lab Exam**	**Evaluation 1**	**Evalaution-2**	**Report**	
1-0-0-0	5	25	20	-	-	-	-	-	-	50
2-0-0-0	5	35	30	30	-	-	-	-	-	100
1-0-2-0	5	10	20	-	25	40	-	-	-	100
0-0-2-0	5	-	-	-	35	10	-	-	-	50
0-0-4-0	5	-	-	-	25	30	-	-	-	60
2-1-0-0	5	15	10	10	-	-	-	-	-	40
3-0-0-0	5	15	10	10	-	-	-	-	-	40
3-1-0-0	5	15	10	10	-	-	-	-	-	40
4-0-0-0	5	15	10	10	-	-	-	-	-	40
2-0-2-0	5	15	10	-	20	10	-	-	-	60

3-1-2-0	5	15	10	10	20					60
2-1-2-0	5	10	10	10	15	10	-	-	-	60
3-0-2-0	5	15	10	10	10	10	-	-	-	60
$ 2-0-2-2	5	10	10		15		5	10	5	60
*2-0-2-2	5	15		10	20		10	20	20	100
& 0-0-4-0	5				55	40				100
$ For PBC course only, ***** For Idea lab only **&** For Manufacturing Practices only										

Assessment of Assignment component of CIA

Based on the course category the number of assignments that shall be given for each course may vary. The table given below gives the details about it.

Course Category	L-T-P-J	Credit	Assessment of Assignment component of CIA
Theory Course	1-0-0-0	1	One assessment per two and half module
	2-0-0-0	2	
Theory Embedded with Practical	1-0-2-0	2	
Project Based Course	2-0-2-2	5	
Theory Course	2-1-0-0	3	One assessment per module, best of FOUR shall be considered for the calculation of CIA.
	3-0-0-0	3	
	3-1-0-0	4	
	4-0-0-0	4	
Theory Embedded with Practical	2-0-2-0	3	
	3-1-2-0	5	
	2-1-2-0	4	
	3-0-2-0	4	

Evaluation Type, CIA & ESE Mark Distribution:

The evaluation type, CIA & ESE mark distribution for courses with various course structure is given in the following table:

Evaluation Type	Course Category	L-T-P-J	Credit	CIA Marks	ESE Marks
CIA only	Theory Course	1-0-0-0	1	50	-
		2-0-0-0	2	100	
	Theory Embedded with Practical	1-0-2-0	2		
	Practical	0-0-2-0	1	50	
		0-0-4-0	2	100	
	Seminar	0-0-6-0	3		
	Project [Minor/ Honors]	0-0-0-4	4		
	Project	0-0-12-0	6		
CIA + ESE	Theory Course	2-1-0-0	3	40	60
		3-0-0-0	3		
		3-1-0-0	4		
		4-0-0-0	4		
	Theory Embedded with Practical	2-0-2-0	3	60	40
		3-1-2-0	5		
		2-1-2-0	4		
		3-0-2-0	4		
	Project Based Course	2-0-2-2	5		

Evaluation pattern for End Semester Examination

The end-semester final examination should have learning assessments from the following perspectives with respect to all courses:

- Evaluation with respect to Knowledge
- Evaluation with respect to Understanding
- Evaluation with respect to Applications

Based on the ESE marks [60/40], separate evaluation pattern should be followed and is given in table below.

PATTERN	PART A	PART B	ESE Marks
PATTERN 1	10 Questions, each question carries 2 marks Marks: (2x10 =20 marks)	2 questions will be given from each module, out of which 1 question should be answered. Each question can have a maximum of 2 sub divisions. Each question carries 8 marks. Marks: (5x8 = 40 marks) Time: 3 hours	60
	Total Marks: 20	Total Marks: [5x8 = 40 marks]	

PATTERN 2		2 questions will be given from each module, out of which 1 question should be answered. Each question can have a maximum of 2 sub divisions. Each question carries 8 marks. Marks: (5x 8 = 40 marks) Time: 2.5 hours	40
	Total Marks: 0	Total Marks: [5x8 = 40 marks]	

Pass minimum for a course shall be 40% for the End Semester Examination, 40% of CIA, and 50% for CIA and ESE put together. Letter grade 'F' will be awarded to the student for a course if either his/her mark for the ESE is below 40 % or mark for the CIA is below 40 % or the overall mark [Continuous Internal Evaluation + End Semester Examination] is below 50 %. For courses with only CIA and no ESE, a minimum of 50% of CIA mark is required.

Grade and Grade point

Grading is based on the overall percentage marks obtained by the student in a course. The grade card shows the grades against the courses the student has registered. Semester grade card give the grade for each registered course, Semester Grade Point Average (SGPA) for the semester as well as Cumulative Grade Point Average (CGPA). The details of assigning Grade point and Grade are given in the table below.

Grades	Grade Point [GP]	% of Total Marks obtained
S	10	90% and above
A+	9.0	85% and above but less than 90%
A	8.5	80% and above but less than 85%
B+	8	75% and above but less than 80%
B	7.5	70% and above but less than 75%
C+	7.0	65% and above but less than 70%
C	6.5	60% and above but less than 65%
D	6	55% and above but less than 60%
P [Pass]	5.5	50% and above but less than 55%
F [Fail]	0	Below 50% (CIA + ESE) or

		Below 40 % for ESE Below 40 % for CIA Below 50% for courses with only CIA and no ESE
FE	0	Failed due to lack of eligibility criteria
I	0	Could not appear for the end semester examination but fulfils the eligibility criteria.
First Class with Distinction		CGPA 8.0 and above
First Class		CGPA 6.5 and above
Equivalent percentage mark shall be = 10 * CGPA – 2.5		

Allotted and Cumulative Credits

The allotted and cumulative credits of circuit and non- circuit branches are given in table below

Semester	**Circuit branches [CS, EC, EE &ER]**		**Non-Circuit branches [CE, ME &CH]**	
	Allotted Credits	**Cumulative Credits**	**Allotted Credits**	**Cumulative Credits**
First	19	-	22	-
Second	22	41	20	42
Third	24	65	23	65
Fourth	21	86	21	86
Fifth	20	106	20	106
Sixth	19	125	19	125
Seventh	20	145	20	145
Eighth	15	160	15	160

Circuit branches: Computer Science & Engineering [CS], Electronics & Communication [EC], Electrical &Electronics [EC] and Electrical &Computer Science [ER]

Non-Circuit branches: Civil [CE], Mechanical [ME] and Chemical Engineering [CH]

CURRICULUM 2023

CIVIL ENGINEERING

FIRST SEMESTER												
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks
												CIA / ESE
1	A	23MAP101	BSC	Calculus and Linear Algebra	3	1	2	0	5	6	5	60 / 40
2	B	23CYP103	BSC	Engineering Chemistry	2	1	2	0	4	5	4	60 / 40
3	C	23EST106	ESC	Engineering Mechanics	2	1	0	0	3	3	3	40 / 60
4	D	23ESP108	ESC	Engineering Graphics	3	0	2	0	5	5	4	60 / 40
5	G	23ESL109	ESC	Manufacturing Practices	0	0	4	0	4	4	2	100 /
6	K	23MCT110	MC	Sports and Yoga	2	0	0	0	2	2	0	100 /
7	I	23EST115	ESC	Introduction to Electrical & Electronics Engineering	2	0	0	0	2	2	2	100 /
8	J	23ESL116	ESC	Space Planning Lab	0	0	2	0	2	2	1	50 /
TOTAL									**27**	**29**	**21**	

SECOND SEMESTER												
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks
												CIA / ESE
1	A	23MAP201	BSC	Differential Equations and Transforms	3	1	2	0	5	6	5	60 / 40
2	B	23PYP202	BSC	Engineering Physics	2	1	2	0	4	5	4	60 / 40
3	C	23ESP204	ESC	Problem solving and Programming	3	0	2	0	5	5	4	60 / 40
4	E	23ESP207	ESC	Technical English for Engineers	2	0	2	0	4	4	3	60 / 40
5	N	23MCJ210	MC	IDEA Lab Workshop	2	0	2	2	5	6	0	100 /
6	O	23HUL211	HSMC	Design Thinking	0	0	2	0	2	2	1	50 /
7	F	23HUT212	HSMC	Universal Human Values-II	2	1	0	0	2	3	3	40 / 60
TOTAL									**27**	**31**	**20**	

THIRD SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAT301	BSC	Mathematics III	3	1	0	0	3	4	4	40	60
2	K	23EST302	ESC	Material Science and Engineering	2	0	0	0	2	2	2	100	
3	B	23CEP303	PCC	Mechanics of Solids	2	1	2	0	4	5	4	60	40
4	C	23CEP304	PCC	Surveying and Geomatics	3	0	2	0	5	5	4	60	40
5	D	23EST305	ESC	Engineering Geology	2	0	2	0	4	4	3	60	40
6	E	23HUT306	HSMC	Life Skills and Professional Ethics	3	0	0	0	3	3	3	40	60
7	S	23CEL307	PCC	Civil Engineering Drawing	0	0	4	0	4	4	2	60	40
8	M/R	23CEM309	MR/RL	MINOR/REMEDIAL	4	0	0	0			4/0	40	60
TOTAL									25	27	22		

FOURTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23CET401	PCC	Structural Analysis	3	1	0	0	3	4	4	40	60
2	B	23CET402	PCC	Soil Mechanics	2	1	0	0	2	3	3	40	60
3	C	23CEP403	PCC	Fluid Mechanics	2	1	2	0	4	5	4	60	40
4	D	23CEJ404	PBC	Transportation Engineering	2	0	2	2	5	6	5	60	40
5	E	23HUT405	HSMC	Disaster Management and Resilient Infrastructure	3	0	0	0	3	3	3	40	60
6	F	23MCT406	MC	Environmental Sciences	3	0	0	0	3	3	0	40	60
7	G	23CET407	PCC	Construction Technology	2	0	0	0	2	2	2	100	
8	M/H/R	23CEM409 / 23CEH409	MR/HR/RL	MINOR/HONORS/REMEDIAL	4	0	0	0			4/4/0	40	60
TOTAL									22	26	21		

FIFTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23CET501	PCC	Hydrology and Water Resources Engineering	4	0	0	0	4	4	4	40	60
2	B	23CEJ502	PBC	Foundation Engineering	2	0	2	2	5	6	5	60	40
3	C	23CET503	PCC	Environmental Engineering	3	0	0	0	3	3	3	40	60
4	D	23CEP504	PCC	Design of Structures I	2	1	2	0	4	5	4	60	40
5	E	23HUT505	HSMC	Management for Engineers	3	0	0	0	3	3	3	40	60
6	F	23MCT506	MC	Constitution of India	3	0	0	0	3	3	0	40	60
7	G	23CET507	PCC	Artificial Intelligence for Civil Engineers	2	0	0	0	2	2	2	100	
8	M/H/R	23CEM509 / 23CEH509	MR/HR/RL	MINOR/ HONORS/ REMEDIAL	4	0	0	0			4/4/0	40	60
				TOTAL					**24**	**26**	**21**		

SIXTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23CET601	PCC	Quantity Surveying and Valuation	3	0	0	0	3	3	3	40	60
2	B	23CEJ602	PBC	Design of Structures II	2	0	2	2	5	6	5	60	40
3	C	23EST603	ESC	Computer Based Numerical Techniques	3	0	0	0	3	3	3	40	60
4	D	23CEE6**X**4	PEC	Professional Elective-1	3	0	0	0	3	3	3	40	60
5	E	23CEE6X5/ 23CEI6X5	PEC/ IEC	Professional Elective- 2 / Industry Elective	3	0	0	0	3	3	3	40	60
6	F	23CES606	SR	Seminar	0	0	4	0	4	4	2	100	
7	U	23SPJ607	MC	Socially Relevant Project	0	0	0	2	1	2	0	100	
8	L	23CEL608	PCC	Environmental Engineering Lab	0	0	2	0	2	2	1	50	
9	M/ H/ R	23CEM609 / 23CEH609	MR/ HR/ RL	MINOR/HONORS/ REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
				TOTAL					**24**	**26**	**20**		

X - Serial No. of Elective course in the respective basket.

SEVENTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23CEP701	PCC	Construction Project Management	3	0	2	0	5	5	4	60	40
2	B	23HUT702	HSMC	Finance and Accounting for Engineers	2	1	0	0	2	3	3	40	60
3	C	23CEE7X3	PEC	Professional Elective-3	3	0	0	0	3	3	3	40	60
4	D	23CEO7X4/ 23CEI7X4	OEC /IEC	Open Elective 1/ Industry Elective	3	0	0	0	3	3	3	40	60
5	U	23CER705	RMP	Research Based Mini Project	0	0	12	0	12	12	6	100	
6	L	23CEL706	PCC	Design Studio	0	0	2	0	2	2	1	50	
7	M/ H/ R	23CEM609 / 23CEH609	PRM/ HR/RL	PROJECT IN MINOR/ HONORS/ REMEDIAL	4	0	0	0			4/4/ 0	40	60
TOTAL									27	28	20		

EIGHTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23CEE8X1	PEC	Professional Elective-4 / MOOC	3	0	0	0	3	3	3	40	60
2	B	23CEO8X2	OEC	Open Elective-2 / MOOC	3	0	0	0	3	3	3	40	60
3	C	23CEO8X3	OEC	Open Elective- 3/ MOOC	3	0	0	0	3	3	3	40	60
4	U	23CED804 / 23CEN804	PR/IP	PROJECT/ INTERNSHIP	0	0	12	0	12	12	6	100	
5	H / R	23CEH809	PRH/ RL	Project in Honors/ Remedial	0	0	0	4			4/ 0	100	
TOTAL									21	21	15		

Professional Electives and Micro Specialisation

Micro Specialization Group ID	Specialization	Prerequisite Core course (s)
Gr-I	Structural Engineering	Structural Analysis (S4), Design of Structures I (S5)
Gr-II	Construction Technology and Management	Construction Technology (S4), Material Science and Engineering (S3)
Gr-III	Geotechnical Engineering	Soil Mechanics (S4), Foundation Engineering (S5)
Gr-IV	Water Resources Engineering	Fluid Mechanics (S4), Hydrology and Water Resources Engineering (S5)
Gr-V	Environmental Engineering	Environmental Engineering (S5)
Gr-VI	Transportation Engineering	Transportation Engineering (S4)

Semester VI	PROFESSIONAL ELECTIVE I	Micro specialization
CEE614	PRESTRESSED CONCRETE	Gr-I
CEE624	ADVANCED CONCRETE TECHNOLOGY	Gr-II
CEE634	GEOTECHNICAL SITE INVESTIGATION	Gr-III
CEE644	MECHANICS OF FLUID FLOW	Gr-IV
CEE654	OPEN CHANNEL HYDRAULICS	Gr-IV
CEE664	ENVIRONMENTAL IMPACT ASSESSMENT	Gr-V
CEE674	TRAFFIC ENGINEERING AND MANAGEMENT	Gr-VI

Semester VI ELECTIVE	PROFESSIONAL ELECTIVE II/ INDUSTRIAL	Micro specialization
CEI615	PRE-ENGINEERED STRUCTURES	Gr-I
CEE625	HOUSING PLANNING AND MANAGEMENT	Gr-II
CEI635	CONSTRUCTION PLANNING AND MANAGEMENT	Gr-II
CEI645	VALUATION OF IMMOVABLE PROPERTIES	Gr II
CEI655	REINFORCED SOIL STRUCTURES AND GEOSYNTHETICS	Gr-III
CEI675	REMOTE SENSING AND GIS	Gr-IV
CEI685	INDUSTRIAL WASTEWATER MANAGEMENT	Gr-V
CEI695	RAILWAY AND TUNNEL ENGINEERING	Gr-VI

Semester VII	PROFESSIONAL ELECTIVE III	Micro Specialisation
CEE713	STRUCTURAL DYNAMICS AND EARTHQUAKE RESISTANT DESIGN	Gr-I
CEE723	ADVANCED STRUCTURAL ANALYSIS	Gr-I
CEE733	BUILDING SERVICES	Gr-II
CEE743	REPAIR AND REHABILITATION OF BUILDINGS	Gr-II
CEE753	ADVANCED FOUNDATION ENGINEERING	Gr-III
CEE763	INTEGRATED WASTE MANAGEMENT	Gr-III
CEE773	APPLIED HYDROLOGY	Gr-IV
CEE783	DESIGN OF HYDRAULIC STRUCTURES	Gr-IV
CEE793	ADVANCED ENVIRONMENTAL ENGINEERING	Gr-V
CEE7103	TRANSPORTATION PLANNING	Gr-VI
CEE7113	OPTIMISATION TECHNIQUES IN CIVIL ENGINEERING	-

Semester VIII	PROFESSIONAL ELECTIVE IV	Micro Specialisation
CEE 811	ADVANCED STRUCTURAL DESIGN	Gr-I
CEE 821	BRIDGE ENGINEERING	Gr-I
CEE 841	CONSTRUCTION METHODS AND EQUIPMENT	Gr-II
CEE 851	GROUND IMPROVEMENT TECHNIQUES	Gr-III
CEE 861	GEOENVIRONMENTAL ENGINEERING	Gr-III
CEE 871	HYDROCLIMATOLOGY	Gr-IV
CEE 881	IRRIGATION AND DRAINAGE ENGINEERING	Gr-IV
CEE 891	SOLID WASTE MANAGEMENT	Gr-V
CEE 8101	AIR QUALITY MANAGEMENT	Gr-V
CEE 8111	HIGHWAY MATERIALS AND DESIGN	Gr-VI
CEE 8121	MULTI MODAL URBAN TRANSPORTATION SYSTEMS	Gr-VI

Open Electives

Semester VII	OPEN ELECTIVE I
23CEI714	ENVIRONMENTAL IMPACT ASSESSMENT
23CEI724	ROAD SAFETY AND MANAGEMENT
23CEI734	PROJECT MANAGEMENT

Semester VIII	OPEN ELECTIVE II
23CEO812	REMOTE SENSING AND GIS
23CEO822	SOIL AND WATER CONSERVATION ENGINEERING
23CEO832	MODERN CONSTRUCTION MATERIALS

Semester VIII	OPEN ELECTIVE III
23CEO813	DISASTER PREPAREDNESS AND MANAGEMENT
23CEO823	VIBRATION ENGINEERING
23CEO833	INTELLIGENT TRANSPORTATION SYSTEM
23CEO843	SOLID WASTE MANAGEMENT

Honors and Minor Courses

HONORS					
BASKET 1		**BASKET 2**		**BASKET 3**	
STRUCTURAL ENGINEERING AND CONSTRUCTION MANAGEMENT		**TRANSPORTATION AND GEOTECHNICAL ENGINEERING**		**WATER RESOURCES AND ENVIRONMENTAL ENGINEERING**	
23CEH419	MODERN CONSTRUCTION MATERIALS	23CEH429	TRANSPORTATION DATA ANALYSIS	23CEH439	ENVIRONMENTAL CHEMISTRY AND MICROBIOLOGY
23CEH519	ADVANCED MECHANICS OF SOLIDS	23CEH529	PAVEMENT CONSTRUCTION AND MANAGEMENT	23CEH539	WATER CONVEYANCE SYSTEMS
23CEH619	FUNCTIONAL DESIGN OF BUILDINGS	23CEH629	EARTH DAM AND EARTH RETAINING STRUCTURES	23CEH639	ENVIRONMENTAL POLLUTION AND CONTROL TECHNIQUES
23CEH719	STRUCTURAL DYNAMICS	23CEH729	ADVANCED SOIL MECHANICS	23CEH739	HYDROINFORMATICS
23CEH819	MINI PROJECT	23CEH829	MINI PROJECT	23CEH839	MINI PROJECT

Minor in Civil Engineering

23CEM309	BUILDING CONSTRUCTION AND STRUCTURAL SYSTEMS
23CEM409	CLIMATE CHANGE AND SUSTAINABILITY
23CEM509	ECOFRIENDLY TRANSPORTATION SYSTEMS
23CEM609	GEOTECHNICAL INVESTIGATION AND GROUND IMPROVEMENT TECHNIQUES
23CEM709	MINI PROJECT

CURRICULUM 2023

MECHANICAL ENGINEERING

Semester wise Structure and Curriculum for UG Course in Mechanical Engineering

FIRST SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAP101	BSC	Calculus and Linear Algebra	3	1	2	0	5	6	5	60	40
2	B	23CYP103	BSC	Engineering Chemistry	2	1	2	0	4	5	4	60	40
3	C	23EST105	ESC	Fundamentals of Electronics Engineering	3	0	0	0	3	3	3	40	60
4	D	23ESP108	ESC	Engineering Graphics	3	0	2	0	5	5	4	60	40
5	G	23ESL109	ESC	Manufacturing Practices	0	0	4	0	4	4	2	100	
6	K	23MCT110	MC	Sports and Yoga	2	0	0	0	2	2	0	100	
7	J	23EST117	ESC	Basics of Electrical Engineering	2	0	0	0	2	2	2	100	
8	I	23ESP118	ESC	Computer Aided Drafting and Modelling	1	0	2	0	3	3	2	100	
TOTAL									28	30	22		

SECOND SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAP201	BSC	Differential Equations and Transforms	3	1	2	0	5	6	5	60	40
2	B	23PYP202	BSC	Engineering Physics	2	1	2	0	4	5	4	60	40
3	C	23ESP204	ESC	Problem solving and Programming	3	0	2	0	5	5	4	60	40
4	E	23ESP207	ESC	Technical English for Engineers	2	0	2	0	4	4	3	60	40
5	N	23MCJ210	MC	IDEA Lab Workshop	2	0	2	2	5	6	0	100	
6	O	23HUL211	HSMC	Design Thinking	0	0	2	0	2	2	1	50	
7	F	23HUT212	HSMC	Universal Human Values-II	2	1	0	0	2	3	3	40	60
TOTAL									27	31	20		

THIRD SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAT301	BSC	MATHEMATICS III	3	1	0	0	3	4	4	40	60
2	K	23EST302	ESC	Sustainable Engineering	2	0	0	0	2	2	2	100	
3	B	23MEJ303	PBC	Engineering Materials & Applications	2	0	2	2	5	6	5	60	40
4	C	23MEP304	PCC	Fluid Mechanics & Hydraulic Machines	2	1	2	0	4	5	4	60	40
5	D	23MEP305	PCC	Applied Thermodynamics	2	1	0	0	2	3	3	40	60
6	E	23HUT306	HSMC	Humanities – I Engineering Economics	3	0	0	0	3	3	3	40	60
7	I	23EST309	ESC	Basic Engineering Mechanics	2	0	0	0	2	2	2	100	
8	M/R	23MEM309 /23MEH309	MR/RL	MINOR/ REMEDIAL	4	0	0	0			4/0	40	60
TOTAL									21	25	23		

FOURTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MET401	PCC	Mechanics of Deformable Solids	3	1	0	0	3	4	4	40	60
2	B	23MET402	PCC	Measurements & Metrology	2	1	0	0	2	3	3	40	60
3	C	23MEP403	PCC	Manufacturing Processes	2	1	2	0	4	5	4	60	40
4	D	23MEJ404	PBC	Heat Transfer & Thermal Machines	2	0	2	2	5	6	5	60	40
5	E	23HUT405	HSMC	Management – I Finance and Accounting	3	0	0	0	3	3	3	40	60
6	F	23MCT406	MC	Environmental Sciences	3	0	0	0	3	3	0	40	60
7	I	23BYT408	BSC	Biology for Engineers	2	0	0	0	2	2	2	100	
8	M/ H/ R	23MEM309 /23MEH309	MR/ HR/ RL	MINOR/HONORS/ REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									22	26	21		

FIFTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MET501	PCC	Production & Operations Management	2	1	0	0	2	3	3	40	60
2	B	23MEJ502	PBC	Machine Element & System Design	2	0	2	2	5	6	5	60	40
3	C	23MET503	PCC	Kinematics & Dynamics of Machines	2	1	0	0	2	3	3	40	60
4	D	23MEP504	PCC	Mechatronics, Robotics & Control	2	1	2	0	4	5	4	60	40
5	E	23HUT505	HSMC	Humanities – II Operations Research	3	0	0	0	3	3	3	40	60
6	F	23MCT506	MC	Constitution of India	3	0	0	0	3	3	0	40	60
7	I	23ESP507	ESC	Introduction to MEP	1	0	2	0	3	3	2	100	
8	M/ H/ R	23MEM509/23MEH509	MR/ HR/ RL	MINOR/HONORS/ REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									22	26	20		

SIXTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MET601	PCC	Industrial Safety	2	1	0	0	2	3	3	40	60
2	B	23MEP602	PBC	Computer Aided Design & Analysis	2	0	2	0	4	4	3	60	40
3	C	23MEP603	PCC	Manufacturing Automation	2	0	2	0	4	4	3	60	40
4	D	23MEE6**X**4	PEC	Professional Elective-1	3	0	0	0	3	3	3	40	60
5	E	23MEE6X5/ 23MEI6X5	PEC/ IEC	Professional Elective-2/Industry Elective	3	0	0	0	3	3	3	40	60
6	F	23MES606	SR	Seminar	0	0	4	0	4	4	2	100	
7	U	23SPJ607	MC	Socially Relevant Project	0	0	0	2	1	2	0	100	
8	I	23HUP608	HSMC	Project Management	1	0	2	0	3	3	2	100	
9	M/ H/ R	23MEM609/ 23MEH609	MR/H R/RL	MINOR/HONORS/REMEDIAL	4	0	0	0			4/4 /0	40	60
TOTAL									24	26	19		

SEVENTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MEP701	PCC	Refrigeration and Air Conditioning	2	1	2	0	4	5	4	60	40
2	B	23MEP702	PCC	Product Innovation & Entrepreneurship	2	1	2	0	4	5	4	60	40
3	C	23MEE7**X**3	PEC	Professional Elective-3	3	0	0	0	3	3	3	40	60
4	D	23MEO7X4/ 23MEI7X4	OEC /IEC	Open Elective 1/ Industry Elective	3	0	0	0	3	3	3	40	60
5	U	23MER705	RMP	Research Based Mini Project	0	0	12	0	12	12	6	100	
6	M /H /R	23MEM709 / 23MEH709	PRM/ HR/ RL	PROJECT IN MINOR/HONORS/REMEDIAL	0	0	0	4			4/4 /0	100	
TOTAL									**26**	**28**	**20**		

EIGHTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MEE8X1	PEC	Professional Elective-4 /MOOC	3	0	0	0	3	3	3	40	60
2	B	23MEO8X2	OEC	Open Elective-2 /MOOC	3	0	0	0	3	3	3	40	60
3	C	23MEO8X3	OEC	Open Elective-3/MOOC	3	0	0	0	3	3	3	40	60
4	U	23MED804 / 23MEN804	PR/ IP	PROJECT/INTERNSHIP	0	0	12	0	12	12	6	100	
5	H / R	23MEH805	PRH/ RL	PROJECT IN HONORS/ REMEDIAL	0	0	4				4/0	100	
TOTAL									**21**	**21**	**15**		

1.Professional Electives

The Programme has been classified into four specializations as follows:

1. Thermal Stream
2. Manufacturing Stream
3. Design Stream
4. Industrial Stream

Stream	Professional Electives I (S6)	Professional Electives II (S6)
Thermal	01. Computational Fluid Dynamics 02. IC Engine Combustion and Pollution 03. Nuclear Engineering 04. Heat Transfer Equipment Design	17. Compressible Fluid Flow 18. Alternative Fuels 19. Renewable Engineering and its Utilization 20. HVAC Systems & Applications (*Industrial Elective Course*)
Manufacturing	05. Precision Engineering 06. Introduction to data analytics 07. Metals and Ceramics 08. Advanced Metal Joining	21. Micro and nano manufacturing 22. Introduction to machine learning (*Industrial Elective Course*) 23. NDT of Materials 24. Advanced Metal Forming
Design	09. Mechanical Behaviour of Materials 10. Fundamentals of Biomechanics 11. Computer Graphics and Virtual Realism 12. Automotive Systems 13. Introduction to Robotics 14. Auto Electronics	25. Engineering Failure Analysis 26. Finite Element Analysis (*Industrial Elective Course*) 27. Industrial Tribology 28. Instrumentation and Control (*Industrial Elective Course*) 29. Experimental Stress Analysis 30. Automotive System Analysis
Industrial	15. Supply Chain Management 16. Quality Management	31. Project Planning & Management (P&O) 32. Personnel Management (*Industrial Elective Course*)

Stream	Professional Electives III (S7)	Professional Electives IV (S8)
Thermal	01. Gas Turbines and Jet Propulsion 02. Automobile Engineering 03. Power Plant Engineering 04. Industrial Refrigeration 05. Microfluidics & Applications	01. Aerospace Engineering 02. Hybrid and Electric Vehicle Technology 03. Energy Engineering and Management 04. Cryogenic Engineering 05. Solar Thermal Processes & Systems
Manufacturing	06. Biomedical Engineering 07. Design & Analysis of experiments 08. Polymers and Composites 09. Advanced Metal Casting	06. Additive manufacturing 07. Business analytics and intelligence 08. Fracture and Failure of Materials 09. Advanced Machining
Design	10. Mechanics of Composite Materials 11. Mechanical Vibrations 12. Automotive Electronics 13. Biomaterials and Engineering 14. Path Planning and Motion Control of Robots 15. Computer Aided Design and Engineering 16. Pressure Vessel and Piping Design	10. Material Characterization 11. Implant Design 12. Product Design 13. Electric Vehicles 14. Industrial Automation 15. Design for Manufacturing and Assembly
Industrial	17. Facilities Planning 18. Marketing Management	16. Quality Control and Inspection 17. Business Economics

MICRO SPECIALIZATION DOMAIN & ELECTIVES

Micro specialization	Foundation Course	Electives
Automation & Robotics	Mechatronics, Robotics & Control(S5)	• Introduction to Robotics • Instrumentation and
Production and Operations Management	Production & Operations Management (S5)	• Project Planning & Management • Marketing Management
Engineering Materials and Applications	Engineering Materials & Applications (S3)	• NDT of Materials • Polymers and Composites

INDUSTRIAL ELECTIVES

01. Industrial Quality Control
02. Maintenance Engineering
03. Introduction to Machine Learning
04. HVAC Systems & Applications
05. Safety Management

OPEN ELECTIVES OFFERED BY THE DEPARTMENT

01. Industrial Psychology & Organizational Behavior
02. Operations Research
03. Energy Conservation & Management
04. Product Development & Design
05. Finite Element Analysis
06. Computational Fluid Dynamics

MINOR

- Minor is an additional credential a student may earn if s/he does 20 credits worth of additional learning in a discipline other than her/his major discipline of B.Tech. degree.
- Upon completion of an Engineering Minor, a student will be better equipped to perform interdisciplinary research and will be better employable.

Semester	BASKET 1		BASKET 2		BASKET 3	
	CODE	COURSE TITLE	CODE	COURSE TITLE	CODE	COURSE TITLE
S3	23MEM309	MECHANICS OF MATERIALS	23MEM310	FLUID MECHANICS & MACHINERY	23MEM311	MATERIAL SCIENCE & TECHNOLOGY
S4	23MEM409	THEORY OF MACHINES	23MEM410	THERMODYNAMICS	23MEM411	MANUFACTURING TECHNOLOGY
S5	23MEM509	DYNAMICS OF MACHINES	23MEM510	THERMAL SCIENCE AND ENGINEERING	23MEM511	MACHINE TOOLS ENGINEERING
S6	23MEM609	MACHINE DESIGN	23MEM610	HEAT TRANSFER	23MEM611	INDUSTRIAL ENGINEERING
S7	23MEM709	PROJECT IN MINOR	23MEM710	PROJECT IN MINOR	23MEM711	PROJECT IN MINOR

HONORS

- Honors is an additional credential a student may earn if s/he opts for the extra 20 credits needed for this in her/his own discipline. Honors is intended for a student to gain expertise/specialize in an area inside his/her major B. Tech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned.

Semester	BASKET 1		BASKET 2		BASKET 3	
	CODE	COURSE TITLE	CODE	COURSE TITLE	CODE	COURSE TITLE
S4	23MEH409	CONTINUUM MECHANICS	23MEH410	ADVANCED MECHANICS OF FLUIDS	23MEH411	MATERIALS IN MANUFACTURING
S5	23MEH509	EXPERIMENTAL STRESS ANALYSIS	23MEH510	ADVANCED THERMODYNAMICS	23MEH511	FLUID POWER AUTOMATION
S6	23MEH609	ADVANCED DESIGN SYNTHESIS	23MEH610	COMPRESSIBLE FLUID FLOW	23MEH611	ADVANCED NUMERICAL CONTROLLED MACHINING
S7	23MEH709	ADVANCED THEORY OF VIBRATIONS	23MEH710	COMPUTATIONAL METHODS IN FLUID FLOW & HEAT TRANSFER	23MEH711	PRECISION MACHINING
S8	23MEH805	PROJECT IN HONORS	23MEH806	PROJECT IN HONORS	23MEH807	PROJECT IN HONORS

CURRICULUM 2023

CHEMICAL ENGINEERING

FIRST SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks	
												CIA	ESE
1	A	23MAP101	BSC	Calculus and Linear Algebra	3	1	2	0	5	6	5	60	40
2	B	23CYP103	BSC	Engineering Chemistry	2	1	2	0	4	5	4	60	40
3	C	23EST104	ESC	Fundamentals of Electrical Engineering	3	0	0	0	3	3	3	40	60
4	D	23ESP108	ESC	Engineering Graphics	3	0	2	0	5	5	4	60	40
5	G	23ESL109	ESC	Manufacturing Practices	0	0	4	0	4	4	2	100	
6	K	23MCT110	MC	Sports and Yoga	2	0	0	0	2	2	0	100	
7	I	23CHT113	PCC	Introduction to Chemical Engineering	2	0	0	0	2	2	2	100	
8	J	23EST114	ESC	Basics of Electronics Engineering	2	0	0	0	2	2	2	100	
TOTAL									28	29	22		

SECOND SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**No. of Hours**	**No. of Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23MAP201	BSC	Differential Equations and Transforms	3	1	2	0	5	6	5	60	40
2	B	23PYP202	BSC	Engineering Physics	2	1	2	0	4	5	4	60	40
3	C	23ESP204	ESC	Problem-solving and Programming	3	0	2	0	5	5	4	60	40
4	E	23ESP207	ESC	Technical English for Engineers	2	0	2	0	4	4	3	60	40
5	N	23MCJ210	MC	IDEA Lab Workshop	2	0	2	2	5	6	0	100	
6	O	23HUL211	HSMC	Design Thinking	0	0	2	0	2	2	1	50	
7	F	23HUT212	HSMC	Universal Human Values-II	2	1	0	0	2	3	3	40	60
TOTAL									**27**	**31**	**20**		

THIRD SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23MAT301	BSC	Mathematics - III	3	1	0	0	3	4	4	40	60
2	K	23EST302	ESC	Overview of Indian Chemical Industries	2	0	0	0	2	2	2	100	
3	B	23CHJ303	PBC	Sustainable Development and Pollution Control	2	0	2	2	5	6	5	60	40
4	C	23CHP304	BSC	Chemistry for Process Engineers	2	1	2	0	4	5	4	60	40
5	D	23CHP305	PCC	Material & Energy Balance Computations	2	1	0	0	2	3	3	40	60
6	E	23HUT306	HSMC	Entrepreneurship and Startups	3	0	0	0	3	3	3	40	60
7	I	23CHT307	PCC	Process Safety	2	0	0	0	2	2	2	100	
8	M/R	23CHM309	MR/RL	MINOR/ REMEDIAL	4	0	0	0			4/0	40	60
TOTAL									**21**	**25**	**23**		

FOURTH SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23CHT401	PCC	Chemical Engineering Thermodynamics	3	1	0	0	3	4	4	40	60
2	B	23CHT402	PCC	Numerical Methods for Chemical Engineers	2	1	0	0	2	3	3	40	60
3	C	23CHP403	PCC	Fluid & Particle Mechanics	2	1	2	0	4	5	4	60	40
4	D	23CHJ404	PBC	Heat Transfer Operations	2	0	2	2	5	6	5	60	40
5	E	23HUT405	HSMC	Life Skills & Professional Ethics	3	0	0	0	3	3	3	40	60
6	F	23MCT406	MC	Environmental Sciences	3	0	0	0	3	3	0	40	60
7	I	23CHT407	PCC	Piping and Instrumentation Fundamentals	2	0	0	0	2	2	2	100	
8	M/ H/ R	23CHM409 / 23CHH409	MR/ HR/ RL	MINOR/HONOURS/ REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									**21**	**26**	**21**		

FIFTH SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23CHT501	PCC	Mass Transfer Operations - I	2	1	0	0	2	3	3	40	60
2	B	23CHJ502	PCC	Kinetics & Reactor Design	2	0	2	2	5	6	5	60	40
3	C	23CHT503	PCC	Transport Phenomena	2	1	0	0	2	3	3	40	60
4	D	23CHP504	PCC	Particle Technology	2	1	2	0	4	5	4	60	40
5	E	23HUT505	HSMC	Economics & Management for Chemical Industries	3	0	0	0	3	3	3	40	60
6	F	23MCT506	MC	Constitution of India	3	0	0	0	3	3	0	40	60
7	I	23EST507	ESC	Energy & Environmental Audit	2	0	0	0	2	2	2	100	
8	M/ H/ R	23CHM509 / 23CHH509	MR/ HR/ RL	MINOR/HONOURS/ REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									**21**	**25**	**20**		

SIXTH SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23CHT601	PCC	Heterogeneous Catalysis & Reactor Design	2	1	0	0	2	3	3	40	60
2	B	23CHP602	PCC	Instrumentation & Process Control	2	0	2	0	4	4	3	60	40
3	C	23CHP603	PCC	Mass Transfer Operations -II	2	0	2	0	4	4	3	60	40
4	D	23CHE6X4	PEC	Professional Elective-1	3	0	0	0	3	3	3	40	60
5	E	23CHE6X5 / 23CHI6X5	PEC/ IEC	Professional Elective-2 / Industry Elective	3	0	0	0	3	3	3	40	60
6	F	23CHS606	SR	Seminar	0	0	4	0	4	4	2	100	
7	U	23SPJ607	MC	Socially Relevant Project	0	0	0	2	1	2	0	100	
8	I	23ESP608	ESC	Artificial Intelligence in Chemical Engineering	1	0	2	0	3	3	2	100	
9	M/ H/ R	23CHM609 / 23CHH609	MR/ HR/ RL	MINOR/HONOURS/ REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									**24**	**26**	**19**		

X : Serial No. of Elective course in the respective basket.

SEVENTH SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23CHP701	PCC	Computer Aided Process Design	2	1	2	0	4	5	4	60	40
2	B	23CHP702	ESC	Biology & Biochemical Engineering	2	1	2	0	4	4	4	60	40
3	C	23CHE7X3	PEC	Professional Elective-3	3	0	0	0	3	3	3	40	60
4	D	23CHO7X4 / 23CHI7X4	OEC /IEC	Open Elective 1/ Industry Elective	3	0	0	0	3	3	3	40	60
5	U	23CHR705	RMP	Research Based Mini Project	0	0	12	0	12	12	6	100	
6	M/ H/ R	23CHM709 / 23CHH709	PRM/ HR/ RL	PROJECT IN MINOR/ HONOURS/ REMEDIAL	0	0	0	4			4/4/0	100	
TOTAL									**26**	**27**	**20**		

EIGHTH SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23CHE8X1	PEC	Professional Elective-4/MOOC	3	0	0	0	3	3	3	40	60
2	B	23CHO8X2	OEC	Open Elective-2 /MOOC	3	0	0	0	3	3	3	40	60
3	C	23CHO8X3	OEC	Open Elective- 3 /MOOC	3	0	0	0	3	3	3	40	60
4	U	23CHD804 / 23CHN804	PR/ IP	PROJECT/ INTERNSHIP	0	0	12	0	12	12	6	100	
5	H/R	23CHH809	PRH/RL	PROJECT IN HONOURS/ REMEDIAL	0	0	0	4			4/0	100	
TOTAL									**21**	**21**	**15**		

Professional Elective Details

Professional Elective – 1

Slot	Code	Category	Title
D	23CHE614	PEC	Air Pollution Monitoring and Control
	23CHE624		Fire Safety Engineering
	23CHE634		Process Modelling and Simulation
	23CHE644		Oil & Natural Gas Engineering
	23CHE654		Corrosion Engineering
	23CHE664		Fuels and Combustion
	23CHE674		Nuclear Engineering
	23CHE684		Polymer Technology
	23CHE694		Bioreactor Analysis and Design

Professional Elective – 2

Slot	Code	Category	Title
E	23CHE615	PEC/ IEC	Water and Wastewater Engineering
	23CHI625		Occupational Health & Hygiene
	23CHE635		Optimization of Chemical Processes
	23CHI645		Petroleum Refining and Petrochemical Technology
	23CHI655		Process Plant Utilities
	23CHE665		Fuel Cell Technology
	23CHE675		Hydrogen Energy Technology
	23CHE685		Nanomaterials & Nanotechnology
	23CHI695		Fermentation Technology

Professional Elective – 3

Slot	Code	Category	Title
C	23CHE713	PEC	Municipal Solid and Biomedical Waste management
	23CHE723		Hazard Analysis and Risk Management
	23CHE733		Computational Fluid Dynamics
	23CHE743		Pipeline Transportation of Oil & Gas
	23CHE753		Electrochemical Engineering
	23CHE763		Renewable Energy and Environment
	23CHE773		Minerals & Metal Processing Industries
	23CHE783		Food Technology
	23CHE793		Drugs & Pharmaceuticals Technology

Professional Elective – 4

Slot	Code	Category	Title
A	23CHE811	PEC	Process Design for Pollution Control
	23CHE821		Rescue and Disaster Management
	23CHE831		Statistical Design and Analysis of Experiments
	23CHE841		Enhanced Oil Recovery
	23CHE851		Electrochemical Energy Conversion and Storage
	23CHE861		Process Plant Simulation
	23CHE871		Waste to Energy Conversion
	23CHE881		Colloids and Interface Engineering
	23CHE891		Engineering of Climate Change

Open Elective Details

Open Elective – 1

Slot	Code	Category	Title
A	23CHI714	OEC/ IEC	Process Safety and Hazard Assessment
	23CHO724		Process Utility & Pipeline Design

Open Elective – 2

Slot	Code	Category	Title
B	23CHO812	OEC	Waste to Energy Conversion
	23CHO822		Industrial Waste Management
	23CHO832		Energy Technology and Energy Management

Open Elective – 3

Slot	Code	Category	Title
C	23CHO813	OEC	Petroleum Resources and Petrochemicals
	23CHO823		Pollution Control in Process Industries
	23CHO833		Hydrogen Energy Technology

Details of Micro specializations Offered

Micro specialization – 1 (Environmental Engineering)

Base Course: Sustainable Development and Pollution Control

Slot	Code	Category	Title
D	23CHE614	PEC	Air Pollution Monitoring and Control
E	23CHE615	PEC	Water and Wastewater Engineering
C	23CHE713	PEC	Municipal Solid and Biomedical Waste management
A	23CHE811	PEC	Process Design for Pollution Control

Microspecialization – 2 (Safety Engineering)

Base Course: Process Safety

Slot	Code	Category	Title
D	23CHE624	PEC	Fire Safety Engineering
E	23CHI625	IEC	Occupational Health & Hygiene
C	23CHE723	PEC	Hazard Analysis and Risk Management
A	23CHE821	PEC	Rescue and Disaster Management

Microspecialization – 3 (Mathematical and Computational Methods)

Base Course: Numerical Methods for Chemical Engineers

Slot	Code	Category	Title
D	23CHE634	PEC	Process Modelling and Simulation
E	23CHI635	IEC	Optimization of Chemical Processes
C	23CHE733	PEC	Computational Fluid Dynamics
A	23CHE831	PEC	Statistical Design and Analysis of Experiments

Microspecialization – 4 (Petroleum Engineering)

Base Course: Mass Transfer Operations – I

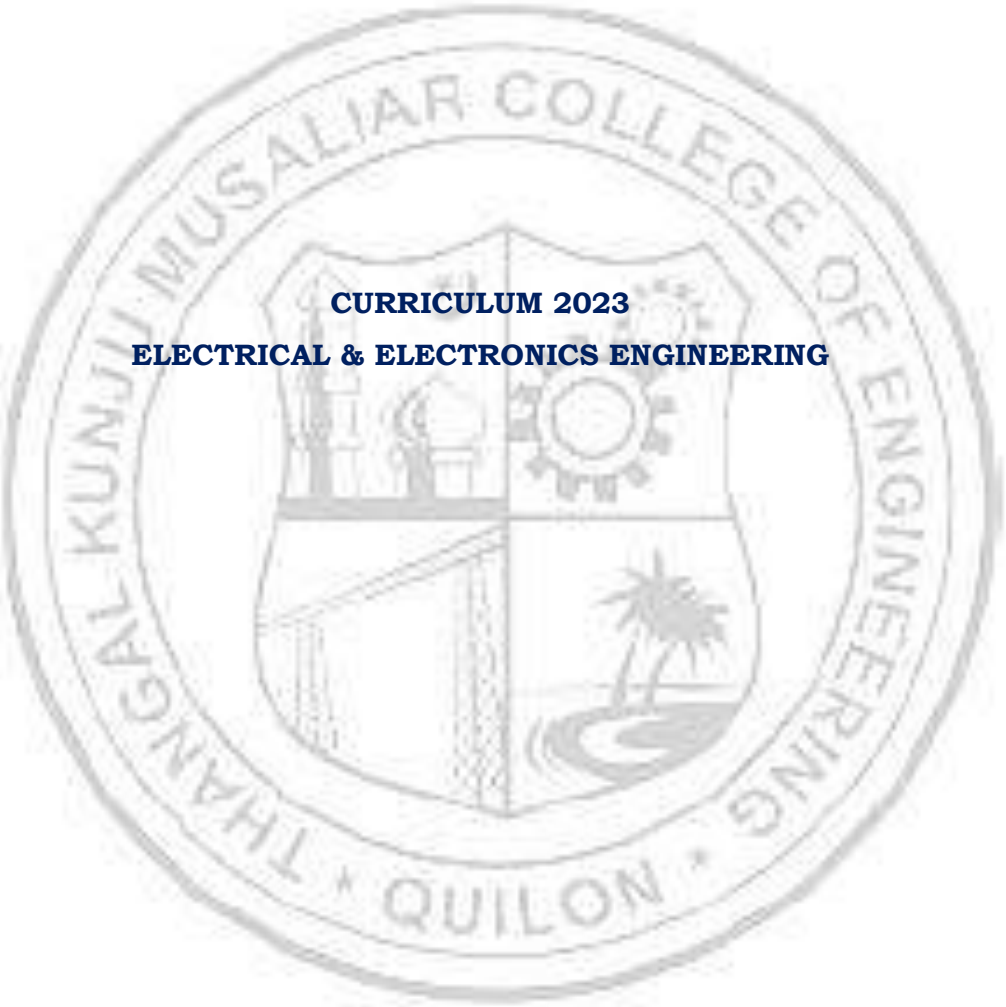
Slot	Code	Category	Title
D	23CHE644	PEC	Oil & Natural Gas Engineering
E	23CHI645	IEC	Petroleum Refining and Petrochemical Technology
C	23CHE743	PEC	Pipeline Transportation of Oil & Gas
A	23CHE841	PEC	Enhanced Oil Recovery

HONOURS

Semester	BASKET I (Advanced Chemical Engineering)		BASKET II (Energy Engineering)		BASKET III (Process Control)	
	Course No.	Course Name	Course No.	Course Name	Course No.	Course Name
S4	23CHH409	Computational Methods in Chemical Engineering	23CHH409	Biomass Conversion and Biorefinery	23CHH409	Modern Methods of Instrumentation
S5	23CHH509	Advanced Heat Transfer	23CHH509	Technologies for Clean and renewable energy production	23CHH509	Soft Computing Techniques
S6	23CHH609	Advanced Fluid Mechanics	23CHH609	Energy conservation and waste heat recovery	23CHH609	Modern Control Theory
S7	23CHH709	Process Integration & Intensification	23CHH709	Energy Economics and Policy	23CHH709	Advanced Process Control
S8	23CHH809	Project	23CHH809	Project	23CHH809	Project

MINOR

Semester	Course No.	Course Name
S3	23CHM309	Introduction To Chemical Engineering
S4	23CHM409	Mechanical Unit Operations
S5	23CHM509	Heat And Mass Transfer
S6	23CHM609	Chemical Reaction Engineering
S7	23CHM709	Project



CURRICULUM 2023

ELECTRICAL & ELECTRONICS ENGINEERING

FIRST SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAT101	BSC	Calculus and Linear Algebra	3	1	0	0	3	4	4	40	60
2	B	23PYP102	BSC	Engineering Physics	2	1	2	0	4	5	4	60	40
3	C	23EST105	ESC	Fundamentals of Electronics Engineering	3	0	0	0	3	3	3	40	60
4	E	23ESP107	ESC	Technical English for Engineers	2	0	2	0	4	4	3	60	40
5	N	23MCJ110	MC	IDEA Lab Workshop	2	0	2	2	5	6	0	100	
6	O	23HUL111	HSMC	Design Thinking	0	0	2	0	2	2	1	50	
7	J	23EST117	ESC	Basics of Electrical Engineering	2		0	0	2	2	2	100	
8	I	23EST119	ESC	Basic Mechanical Engineering	2	0	0	0	2	2	2	100	
TOTAL									25	28	19		

SECOND SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAP200	BSC	Ordinary Differential Equations and Transforms	3	1	2	0	5	6	5	60	40
2	B	23CYP203	BSC	Engineering Chemistry	2	1	2	0	4	5	4	60	40
3	C	23ESP204	ESC	Problem solving and Programming	3	0	2	0	5	5	4	60	40
4	D	23ESP208	ESC	Engineering Graphics	3	0	2	0	5	5	4	60	40
5	G	23ESL209	ESC	Manufacturing Practices	0	0	4	0	4	4	2	100	
6	K	23MCT210	MC	Sports and Yoga	2	0	0	0	2	2	0	100	
7	F	23HUT212	HSMC	Universal Human Values-II	2	1	0	0	2	3	3	40	60
TOTAL									27	30	22		

THIRD SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAP301	BSC	MATHEMATICS III	3	1	2	0	5	6	5	60	40
2	K	23EST302	ESC	Basic Engineering Mechanics	2	0	0	0	2	2	2	100	
3	B	23EEJ303	PBC	Digital Electronics and Logic Design	2	0	2	2	5	6	5	60	40
4	C	23EEP304	PCC	Measurements & Instrumentation	2	1	2	0	4	5	4	60	40
5	D	23EET305	PCC	Circuit Theory	2	1	0	0	2	3	3	40	60
6	E	23HUT306	HSMC	Professional Ethics and Life Skills for Engineers	3	0	0	0	3	3	3	40	60
7	I	23EEP311	PCC	Fundamentals of Electrical Power Systems	1	0	2	0	3	3	2	100	
8	M / R	23EEM309	MR/ RL	MINOR / REMEDIAL	4	0	0	0			4/0	40	60
TOTAL									**24**	**28**	**24**		

FOURTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23EET401	PCC	Signals and Systems	3	1	0	0	2	4	4	40	60
2	B	23EET402	PCC	Electromagnetic Theory	2	1	0	0	2	3	3	40	60
3	C	23EEP403	PCC	DC Machines and Transformers	2	1	2	0	4	5	4	60	40
4	D	23EEJ404	PBC	Solid State Electronic Devices and Circuits	2	0	2	2	5	6	5	60	40
5	E	23HUT405	HSMC	Finance and Accounting	3	0	0	0	3	3	3	40	60
6	F	23MCT406	MC	Environmental Sciences	3	0	0	0	3	3	0	40	60
7	I	23ESP410	ESC	Probability distributions and numerical techniques	1	0	2	0	3	3	2	100	
8	M/ H/ R	23EEM309 /23EEH309	MR/ HR/ RL	MINOR/HONORS REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									**22**	**27**	**21**		

FIFTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23EET501	PCC	Control System Engg	2	1	0	0	2	3	3	40	60
2	B	23EEJ502	PBC	Embedded System Design and IoT	2	0	2	2	5	6	5	60	40
3	C	23EET503	PCC	Power Electronics	2	1	0	0	2	3	3	40	60
4	D	23EEP504	PCC	AC machines	2	1	2	0	4	5	4	60	40
5	E	23HUT505	HSMC	Industrial Engineering and Management	3	0	0	0	3	3	3	40	60
6	F	23MCT506	MC	Constitution of India	3	0	0	0	3	3	0	40	60
7	I	23ESP510	ESC	Introduction to Machine Learning	1	0	2	0	3	3	2	100	
8	M/H/R	23EEM508/ 23EEH508	MR/HR/RL	MINOR/HONORS/ REMEDIAL	4	0	0	0			4/4/0	40	60
TOTAL									22	26	20		

SIXTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23EET601	PCC	Electric vehicle Technology	2	1	0	0	2	3	3	40	60
2	B	23EEP602	PBC	Power Semiconductor Drives	2	0	2	0	4	4	3	60	40
3	C	23EEP603	PCC	Digital Signal Processing	2	0	2	0	4	4	3	40	60
4	D	23EEE6**X**4	PEC	Professional Elective-1	3	0	0	0	3	3	3	40	60
5	E	23EEE6X5/ 23EEI6X5	PEC/ IEC	Professional Elective-2/Industry Elective	3	0	0	0	3	3	3	40	60
6	F	23EES606	SR	Seminar	0	0	4	0	4	4	2	100	
7	U	23SPJ607	MC	Socially Relevant Project	0	0	0	2	1	2	0	100	
8	I	23EEL611	PCC	AI and Control Lab	0	0	4	0	4	4	2	60	40
9	M/H/R	23EEM609/ 23EEH609	MR/HR/RL	MINOR/HONORS/REMEDIAL	4	0	0	0			4/4/0	40	60
TOTAL									25	27	19		

SEVENTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23EEP701	PCC	Power System Analysis	2	1	2	0	4	5	4	60	40
2	B	23EEP702	PCC	Electrical System Design	2	1	2	0	4	5	4	60	40
3	C	23EEE7**X**3	PEC	Professional Elective-3	3	0	0	0	3	3	3	40	60
4	D	23EEO7X4/ 23EEI7X4	OEC /IEC	Open Elective 1/ Industry Elective	3	0	0	0	3	3	3	40	60
5	U	23EER705	RMP	Research Based Mini Project	0	0	12	0	12	12	6	100	
6	M / H /R	23EEM709/ 23EEH709	PRM /HR /RL	PROJECT IN MINOR/HONORS/ REMEDIAL	0	0	0	4			4/ 4/ 0	100	
TOTAL									**26**	**28**	**20**		

EIGHTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23EEE8X1	PEC	Professional Elective-4 /MOOC	3	0	0	0	3	3	3	40	60
2	B	23EEO8X2	OEC	Open Elective-2 /MOOC	3	0	0	0	3	3	3	40	60
3	C	23EEO8X3	OEC	Open Elective-3/MOOC	3	0	0	0	3	3	3	40	60
4	U	23EED804 / 23EEN804	PR/ IP	PROJECT/INTERNSHIP/	0	0	12	0	12	12	6	100	
5	H/ R	23EEH809	PRH /RL	PROJECT IN HONORS/ REMEDIAL	0	0	0	4			4/ 0		
TOTAL									**21**	**21**	**15**		

List of Professional Electives

Semester	Course Code	Course Name	Microspecialisation
S6 –PEC I	23EEE604	Electric Power Utilization and Illumination	Power and Energy Systems
	23EEE614	Insulation and High Voltage Engineering	
	23EEE624	Renewable and Distributed Energy Sources	
	23EEE634	Computer Organization and Architecture	Computing and AI
	23EEE644	Probability and Random Process	
	23EEE654	Data Structure and Algorithm	
	23EEE664	Advanced Electro-mechanics	Electric Vehicle Technology
	23EEE674	E-Mobility	
	23EEE684	Electric Drives and Control	
	23EEE694	Medical Instrumentation	Instrumentation & Control
	23EEE6A4	Digital Control Systems	
	23EEE6B4	Biology for Engineers	
S6 – IE	23EEE6P5	Industry Elective :Power system Communication and SCADA (KSEB)	Power and Energy Systems
	23EEE6V5	Electric Vehicle System Design (BoSCH)	Electric Vehicle Technology
S6 – PEC II	23EEE605	Electrical Power Quality and Reliability	Power and Energy Systems
	23EEE615	Smart Grid Technology	
	23EEE625	High Voltage Transmission	
	23EEE635	Object Oriented Programming	Computing and AI
	23EEE645	Embedded Systems	
	23EEE655	Multimedia Design and Development	
	23EEE665	Generalized Theory of Electrical Machines	Electric Vehicle Technology
	23EEE675	Modelling and Simulation of EHV	
	23EEE685	Autonomous Vehicles	
	23EEE695	Modern Control Systems	Instrumentation & Control
	23EEE6A5	VLSI Circuits and Systems	
S7- PEC III	23EEE703	Switchgear and Protective Relays	Power and Energy Systems
	23EEE713	Power Electronics for Renewable Energy Systems	
	23EEE723	HVDC and Flexible AC Transmission Systems	
	23EEE733	Operating Systems	Computing and AI
	23EEE743	Introduction to Artificial Intelligence with Python	
	23EEE753	Fuzzy Logic and Neural Networks	
	23EEE763	Advanced Electrical Drives	Electric Vehicle Technology
	23EEE773	Dynamics and Control of EVs	
	23EEE783	Automotive Diagnostics	
	23EEE793	Multivariable Control Theory	

	23EEE7A3	Advanced control systems	Instrumentation & Control
S8- PEC IV	23EEE801	Operation and Planning of Power Distribution Systems	Power and Energy Systems
	23EEE811	Grid Integration of Renewable Energy Systems	
	23EEE821	Energy Storage Systems	
	23EEE831	Networks and Systems Security	Computing and AI
	23EEE841	Pattern Recognition and Machine Learning	
	23EEE851	Automotive Embedded Systems	Electric Vehicle Technology
	23EEE861	In Vehicle Networking	
	23EEE871	Testing and Certification of Electric and Hybrid Vehicles	
	23EEE881	Industrial Instrumentation	Instrumentation & Control
	23EEE891	Autonomous Systems	

List of Open Electives

23EEI704 - Renewable Energy Systems (Industry Elective - ANERT)

23EEO802 - Engineering Applications of Block Chain Technology

23EEO812 - Energy Conservation and Management

23EEO803 - Artificial Intelligence with Python

23EEO813 - Introduction to Electric and hybrid vehicles

Minors

SEMESTER	BASKET-1		BASKET-2	
	Specialization – **Energy Management**		Specialization - **Electrical Vehicle Technology**	
	COURSE CODE	**COURSE NAME**	**COURSE CODE**	**COURSE NAME**
S3	23EEM309	ELECTRICAL ENERGY SYSTEM	23EEM310	ELECTRICAL MACHINES
S4	23EEM409	DISTRIBUTED GENERATION	23EEM410	POWER ELECTRONIC CONVERTERS
S5	23EEM509	SMART GRID	23EEM510	BATTERY TECHNOLOGY
S6	23EEM610	ENERGY MANAGEMENT & AUDITING	23EEM611	THERMAL MANAGEMENT OF ELECTRIC VEHICLES
S7	23EEM706	PROJECT IN MINORS	23EEM707	PROJECT IN MINORS

SEMESTER	HONOURS	
	Specialization – **Smart Grids**	
	Course No.	**Course Name**
S4	23EEH409	NETWORK ANALYSIS AND SYNTHESIS
S5	23EEH509	LINEAR INTEGRATED CIRCUITS
S6	23EEH609	ADVANCED CONTROL THEORY
S7	23EEH706	MICRO GRID AND NANO GRID
S8	23EEH805	PROJECT IN HONOUR

CURRICULUM 2023

ELECTRONICS & COMMUNICATION ENGINEERING

FIRST SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks	
												CIA	ESE
1	A	23MAT101	BSC	Calculus and Linear Algebra	3	1	0	0	3	4	4	40	60
2	B	23PYP102	BSC	Engineering Physics	2	1	2	0	4	5	4	60	40
3	C	23EST104	ESC	Fundamentals of Electrical Engineering	3	0	0	0	3	3	3	40	60
4	E	23ESP107	ESC	Technical English for Engineers	2	0	2	0	4	4	3	60	40
5	N	23MCJ110	MC	IDEA Lab Workshop	2	0	2	2	5	6	0	100	
6	O	23HUL111	HSMC	Design Thinking	0	0	2	0	2	2	1	50	
7	J	23BST120	BSC	Biology for Engineers	2	0	0	0	2	2	2	100	
8	I	23ESP121	ESC	Electronic Design and Simulation	1	0	2	0	3	3	2	100	
TOTAL									26	29	19		

SECOND SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks	
												CIA	ESE
1	A	23MAP200	BSC	Ordinary Differential Equations and Transforms	3	1	2	0	5	6	5	60	40
2	B	23CYP203	BSC	Engineering Chemistry	2	1	2	0	4	5	4	60	40
3	C	23ESP204	ESC	Problem solving &Programming	3	0	2	0	5	5	4	60	40
4	D	23ESP208	ESC	Engineering Graphics	3	0	2	0	5	5	4	60	40
5	G	23ESL209	ESC	Manufacturing Practices	0	0	4	0	4	4	2	100	
6	K	23MCT210	MC	Sports and Yoga	2	0	0	0	2	2	0	100	
7	F	23HUT212	HSMC	Universal Human Values-II	2	1	0	0	2	3	3	40	60
TOTAL									27	30	22		

THIRD SEMESTER														
SI No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAT301	BSC	MATHEMATICS III	3	1	2	0	5	6	5	60	40
2	K	23EST302	ESC	Scientific Computing using Python	1	0	2	0	3	3	2	100	
3	B	23ECJ303	PBC	Logic Circuit Design	2	0	2	2	5	6	5	60	40
4	C	23ECP304	PCC	Semiconductor Devices	2	1	0	0	2	3	3	40	60
5	D	23ECP305	PCC	Network Theory	2	1	0	0	2	3	3	40	60
6	E	23HUT306	HSMC	Professional Ethics	3	0	0	0	3	3	3	40	60
7	I	23ECT307	PCC	Computer Architecture	2	0	0	0	2	2	2	100	
8	M/R	23ECM309/23ECH309	MR/RL	MINOR/ REMEDIAL	4	0	0	0			4/0	40	60
TOTAL									23	27	23		

FOURTH SEMESTER													
SI No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23ECT401	PCC	Probability and Random Processes	2	1	0	0	2	3	3	40	60
2	B	23ECT402	PCC	Signals and Systems	2	1	0	0	2	3	3	40	60
3	C	23ECP403	PCC	Analog Circuits	2	1	2	0	4	5	4	60	40
4	D	23ECJ404	PBC	Microprocessors and Microcontrollers	2	0	2	2	5	6	5	60	40
5	E	23HUT405	HSMC	Industrial Economics and Management	3	0	0	0	3	3	3	40	60
6	F	23MCT406	MC	Environmental Sciences	3	0	0	0	3	3	0	40	60
7	I	23ECP407	BSC	Data Science and Analytics	1	0	2	0	3	3	2	100	
8	M/H/R	23ECM309/23ECH309	MR/HR/RL	MINOR/HONORS REMEDIAL	4	0	0	0			4/4/0	40	60
TOTAL									22	26	20		

FIFTH SEMESTER														
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23ECT501	PCC	Control Systems	2	1	0	0	2	3	3	40	60
2	B	23ECJ502	PBC	Digital Signal Processing	2	0	2	2	5	6	5	60	40
3	C	23ECT503	PCC	Embedded Systems and IoT	2	1	0	0	2	3	3	40	60
4	D	23ECP504	PCC	Digital Communication	2	1	2	0	4	5	4	60	40
5	E	23HUT505	HSMC	Entrepreneurship and Startups	3	0	0	0	3	3	3	40	60
6	F	23MCT506	MC	Constitution of India	3	0	0	0	3	3	0	40	60
7	I	23ECT507	PCC	Linear Integrated Circuits	2	0	0	0	2	2	2	100	
8	M/H/R	23ECM509/ 23ECH509	MR/HR/RL	MINOR/HONORS/ REMEDIAL	4	0	0	0			4/4/0	40	60
TOTAL									**21**	**25**	**20**		

SIXTH SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23ECT601	PCC	Applied Electromagnetic Theory	2	1	0	0	2	3	3	40	60
2	B	23ECP602	PCC	VLSI Design	2	1	2	0	4	5	4	60	40
3	C	23ECP603	PCC	Instrumentation and Industrial Automation	2	1	2	0	4	5	4	60	40
4	D	23ECE6**X**4	PEC	Professional Elective-1	3	0	0	0	3	3	3	40	60
5	E	23ECE6X5/ 23ECI6X5	PEC/IEC	Professional Elective-2/Industry Elective	3	0	0	0	3	3	3	40	60
6	F	23ECS606	SR	Seminar	0	0	4	0	4	4	2	100	
7	U	23SPJ607	MC	Socially Relevant Project	0	0	0	2	1	2	0	100	
8	I	23ECP608	BSC	Machine Intelligence: Methods and Applications	1	0	2	0	3	3	2	100	
9	M/H/R	23ECM609/ 23ECH609	MR/HR/RL	MINOR/HONORS/REMEDIAL	4	0	0	0			4/4/0	40	60
TOTAL									**24**	**28**	**21**		

SEVENTH SEMESTER													
SI No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23ECP701	PCC	Microwave and Antennas	2	1	2	0	4	5	4	60	40
2	B	23ECP702	PCC	Computer Networks and Security	2	1	2	0	4	5	4	60	40
3	C	23ECE7**X**3	PEC	Professional Elective-3	3	0	0	0	3	3	3	40	60
4	D	23ECO7X4/ 23ECI7X4	OEC /IEC	Open Elective 1/ Industry Elective	3	0	0	0	3	3	3	40	60
5	U	23ECR705	RMP	Research Based Mini Project	0	0	12	0	12	12	6	100	
6	M/H/R	23ECM709/ 23ECH709	PRM /HR /RL	PROJECT IN MINOR/HONORS/REMEDIAL	0	0	0	4	2	4	4/4/0	100	
TOTAL									**26**	**28**	**20**		

EIGHTH SEMESTER													
SI No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23ECE8X1	PEC	Professional Elective-4 /MOOC	3	0	0	0	3	3	3	40	60
2	B	23ECO8X2	OEC	Open Elective-2 /MOOC	3	0	0	0	3	3	3	40	60
3	C	23ECO8X3	OEC	Open Elective-3/MOOC	3	0	0	0	3	3	3	40	60
4	U	23ECD804 / 23ECN804	PR /IP	PROJECT/INTERNSHIP	0	0	12	0	12	12	6	100	
5	H/R	23ECH809	PRH /RL	PROJECT IN HONORS /REMEDIAL	0	0	0	4			4/0	100	
TOTAL									**21**	**21**	**15**		

Professional Electives and Micro Specialisation

Micro Specialization Group ID	Specialization	Prerequisite Core course (s)
Ms-I	VLSI AND EMBEDDED SYSTEMS	Analog Circuits (S4), Embedded System & IoT(S5)
Ms-II	WIRELESS COMMUNICATION	Digital Communication (S5)
Ms-III	SIGNAL PROCESSING	Digital Signal Processing (S5)

LIST OF PROFESSIONAL ELECTIVES

SEMESTER VI PROFESSIONAL ELECTIVE I				
Sl No	**Slot**	**Code**	**Category**	**Title**
1	D	23ECE614	PEC	Mixed Signal VLSI Design (Ms-I)
2	D	23ECE624	PEC	Information Theory and Coding (Ms-II)
3	D	23ECE634	PEC	Digital Image Processing and Computer Vision(Ms-III)
4	D	23ECE644	PEC	MEMS
5	D	23ECE654	PEC	Real Time Embedded Systems

SEMESTER VI PROFESSIONAL ELECTIVE II				
Sl No	**Slot**	**Code**	**Category**	**Title**
1	E	23ECE615	PEC	Neural Networks and Deep Learning
2	E	23ECE625	PEC	Optical Communication and Networks
3	E	23ECE635	PEC	ASIC and SoC (System on Chip)
4	E	23ECE645	PEC	Virtual Instrumentation and LabVIEW
5	E	23ECE655	PEC	VLSI Testing and Verification

SEMESTER VII PROFESSIONAL ELECTIVE III				
Sl No	**Slot**	**Code**	**Category**	**Title**
1	C	23ECE713	PEC	Advanced Microcontrollers (Ms-I)
2	C	23ECE723	PEC	Wireless Communication and 5G networks (Ms-II)
3	C	23ECE733	PEC	Speech and Audio Signal Processing (Ms-III)
4	C	23ECE743	PEC	Robotics
5	C	23ECE753	PEC	Low Power VLSI Design

SEMESTER VIII PROFESSIONAL ELECTIVE IV				
Sl No	**Slot**	**Code**	**Category**	**Title**
1	A	23ECE811	PEC	Biomedical Engineering
2	A	23ECE821	PEC	Theory of Error Control Coding
3	A	23ECE831	PEC	Embedded System Design for Automotive applications
4	A	23ECE841	PEC	Modern Communication Systems
5	A	23ECE851	PEC	Nanoelectronics

LIST OF OPEN ELECTIVES

SEMESTER VII OPEN ELECTIVE I			
Sl No	**Slot**	**Code**	**Title**
1	D	23ECO714	Wireless Adhoc and Sensor Networks
2	D	23ECO724	Mechatronics
3	D	23ECO734	Biomedical Instrumentation
4	D	23ECO744	Computer Architecture and Embedded Systems

SEMESTER VIII OPEN ELECTIVE II			
Sl No	**Slot**	**Code**	**Title**
1	B	23ECO812	Introduction to MEMS
2	B	23ECO822	Electronic Hardware for Engineers
3	B	23ECO832	Industrial Instrumentation
4	B	23ECO842	Computer Communication

SEMESTER VIII OPEN ELECTIVE III			
Sl No	**Slot**	**Code**	**Title**
1	C	23ECO813	Computer Vison
2	C	23ECO823	Applied Communication Systems
3	C	23ECO833	Robotics and Automation
4	C	23ECO843	Cyber Security

LIST OF MINOR COURSES

MINOR BASKET I - CIRCUITS				
Sl No	**Slot**	**Code**		**Title**
1	M	23ECM309		Electronic Circuits
2	M	23ECM409		Digital Circuit Design
3	M	23ECM509		Embedded Systems
4	M	23ECM609		VLSI Circuits
5	M	23ECM709		PROJECT IN MINOR

MINOR BASKET II – SIGNAL PROCESSING				
Sl No	**Slot**	**Code**		**Title**
1	M	23ECM310		Basics of Signals and Systems
2	M	23ECM410		Introduction to Digital Signal Processing
3	M	23ECM510		Digital Image Processing
4	M	23ECM610		Audio and Speech Processing
5	M	23ECM710		PROJECT IN MINOR

MINOR BASKET III – COMMUNICATION				
Sl No	**Slot**	**Code**		**Title**
1	M	23ECM311		Analog Communication
2	M	23ECM411		Fundamentals of Digital Communication
3	M	23ECM511		Computer Networks
4	M	23ECM611		Radar and Navigation
5	M	23ECM711		PROJECT IN MINOR

LIST OF HONORS COURSES

HONOUR BASKET I - Medical Devices and Health Care Electronics				
Sl No	**Slot**	**Code**		**Title**
1	H	23ECH409		Biosensors and Bioelectronics
2	H	23ECH509		Medical Imaging Systems
3	H	23ECH609		Biomedical signal processing
4	H	23ECH709		Medical Device Design
5	M	23ECH809		PROJECT IN HONORS

HONOUR BASKET II – ARTIFICIAL INTELLIGENCE				
Sl No	**Slot**	**Code**		**Title**
1	H	23ECH410		Artificial Intelligence with Python
2	H	23ECH510		Deep Learning
3	H	23ECH610		Natural Language Processing
4	H	23ECH710		Artificial Intelligence for Robotics
5	M	23ECH810		PROJECT IN HONORS

CURRICULUM 2023

COMPUTER SCIENCE & ENGINEERING

FIRST SEMESTER														
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**No. of Hours**	**No. of Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23MAT101	BSC	Calculus and Linear Algebra	3	1	0	0	3	4	4	40	60
2	B	23PYP102	BSC	Engineering Physics	2	1	2	0	4	5	4	60	40
3	C	23EST104	ESC	Fundamentals of Electrical Engineering	3	0	0	0	3	3	3	40	60
4	E	23ESP107	ESC	Technical English for Engineers	2	0	2	0	4	4	3	60	40
5	N	23MCJ110	MC	IDEA Lab Workshop	2	0	2	2	5	6	0	100	
6	O	23HUL111	HSMC	Design Thinking	0	0	2	0	2	2	1	50	
7	I	23CST105	PCC	Logic System Design	2	0	0	0	2	2	2	100	
8	J1	23ESL106	ESC	Introduction to Programming Frameworks	0	0	2	0	2	2	1	50	
9	J2	23ESL107	ESC	Application development Lab	0	0	2	0	2	2	1	50	
TOTAL									**27**	**30**	**19**		

SECOND SEMESTER													
Sl No	**Slot**	**Code**	**Category**	**Title**	**L**	**T**	**P**	**J**	**S**	**Hours**	**Credits**	**Total Marks**	
												CIA	**ESE**
1	A	23MAP200	BSC	Ordinary Differential Equations and Transforms	3	1	2	0	5	6	5	60	40
2	B	23CYP203	BSC	Engineering Chemistry	2	1	2	0	4	5	4	60	40
3	C	23ESP204	ESC	Problem solving and Programming	3	0	2	0	5	5	4	60	40
4	D	23ESP208	ESC	Engineering Graphics	3	0	2	0	5	5	4	60	40
5	G	23ESL209	ESC	Manufacturing Practices	0	0	4	0	4	4	2	100	
6	K	23MCT210	MC	Sports and Yoga	2	0	0	0	2	2	0	100	
7	F	23HUT212	HSMC	Universal Human Values-II	2	1	0	0	2	3	3	40	60
TOTAL									**27**	**30**	**22**		

THIRD SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAP301	BSC	Mathematics III	3	1	2	0	5	6	5	60	40
2	K	23EST302	ESC	Probability, Statistics and Optimization	2	0	0	0	2	2	2	100	
3	B	23CSJ303	PBC	Advanced Programming	2	0	2	2	5	6	5	60	40
4	C	23CSP304	PCC	Data Structures and Algorithms	2	1	2	0	4	5	4	60	40
5	D	23CSP305	PCC	Computer Organization and Architecture	2	1	2	0	4	5	4	60	40
6	E	23HUT306	HSMC	Professional Ethics	3	0	0	0	3	3	3	40	60
7	I	23EST307	ESC	Engineering Mechanics	2	0	0	0	2	2	2	100	
8	M / R	23CSM309	MR/RL	MINOR/REMEDIAL	4	0	0	0			4/0	40	60
TOTAL									25	29	25		

FOURTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23CST401	PCC	Discrete Mathematics	2	1	0	0	2	3	3	40	60
2	B	23CSP402	PCC	Computer Networks	2	1	2	0	4	5	4	60	40
3	C	23CSP403	PCC	Operating Systems	2	1	2	0	4	5	4	60	40
4	D	23CSJ404	PBC	Introduction to Database Systems	2	0	2	2	5	6	5	60	40
5	E	23HUT405	HSMC	Management-I	3	0	0	0	3	3	3	40	60
6	F	23MCT406	MC	Environmental Sciences	3	0	0	0	3	3	0	40	60
7	I	23BYT407	BSC	Biology for Engineers	2	0	0	0	2	2	2	100	
8	M/H/R	23CSM409/ 23CSH409	MR/HR/RL	MINOR/HONORS/ REMEDIAL	4	0	0	0			4/4/0	40	60
TOTAL									23	27	21		

FIFTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	f Hours	Credits	Total Marks	
												CIA	ESE
1	A	23CST501	PCC	Design & Analysis of Algorithms	2	1	0	0	2	3	3	40	60
2	B	23CST502	PCC	Software Engineering	2	1	0	0	2	3	3	40	60
3	C	23CSP503	PCC	Artificial Intelligence & Machine Learning	2	1	2	0	4	5	4	60	40
4	D	23CSJ504	PBC	Advanced Web Technologies	2	0	2	2	5	6	5	60	40
5	E	23HUT505	HSMC	Finance and Accounting	3	0	0	0	3	3	3	40	60
6	F	23MCT506	MC	Constitution of India	3	0	0	0	3	3	0	40	60
7	I	23HUL507	HSMC	Technical writing	0	0	2	0	2	2	1	50	
8	J	23HUL508	HSMC	Soft Skills	0	0	2	0	2	2	1	50	
9	M / H / R	23CSM509 / 23CSH509	MR / HR / RL	MINOR / HONORS / REMEDIAL	4	0	0	0			4 / 4 / 0	40	60
TOTAL									23	27	20		

SIXTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks	
												CIA	ESE
1	A	23CST601	PCC	Theory of Computation	2	1	0	0	2	3	3	40	60
2	B	23CSP602	PCC	Introductory Cyber Security	2	0	2	0	4	4	3	60	40
3	C	23CSE6X4	PEC	Professional Elective I	3	0	0	0	3	3	3	40	60
4	D	23CSE6X5/ 23CSI6X5	PEC/ IEC	Professional Elective-2/ Industry Elective	3	0	0	0	3	3	3	40	60
5	F	23CSS606	SR	Seminar	0	0	4	0	4	4	2	100	
6	U	23SPJ607	AU	Socially Relevant Project	0	0	0	2	1	2	0	100	
7	I	23EST608	ESC	Digital Image Processing	2	0	0	0	2	2	2	100	
8	J	23HUT609	HSMC	Entrepreneurships and startups	2	0	0	0	2	2	2	100	
9	M/ H/R	23CSM609/ 23CSH609	MR/ HR/RL	MINOR/HONOURS/ REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									**21**	**23**	**18**		

SEVENTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks	
												CIA	ESE
1	A	23CSP701	PCC	Compiler Design	2	1	2	0	4	5	4	60	40
2	B	23CSP702	PCC	Cloud Computing	2	1	2	0	4	5	4	60	40
3	C	23CSE7X3	PEC	Professional Elective-3	3	0	0	0	3	3	3	40	60
4	D	23CSO7X4 /23CSI7X4	OEC /IEC	Open Elective 1/ Industry Elective	3	0	0	0	3	3	3	40	60
5	U	23CSR705	RMP	Research Based Mini Project	0	0	12	0	12	12	6	100	
6	M/ H/ R	23CSM709 / 23CSH709	PRM /HR / RL	PROJECT IN MINOR/HONORS/ REMEDIAL	0	0	0	4			4/ 4/ 0	100	
TOTAL									**26**	**28**	**20**		

EIGHTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks	
												CIA	ESE
1	A	23CSE8X1	PEC	Professional Elective-4 /MOOC	3	0	0	0	3	3	3	40	60
2	B	23CSO8X2	OEC	Open Elective-2/ MOOC	3	0	0	0	3	3	3	40	60
3	C	23CSO8X3	OEC	Open Elective- 3/ MOOC	3	0	0	0	3	3	3	40	60
4	U	23CSD804 / 23CSN804	PR/IP	PROJECT/ INTERNSHIP/	0	0	12	0	12	12	6	100	
5	H/ R	23CSH809	PRH/ RL	PROJECT IN HONORS/ REMEDIAL	0	0	0	4			4/0	100	
TOTAL									**21**	**21**	**15**		

Professional Electives (PE)

Professional Elective 1

Slot	Course Code	Course Name
C	23CSE614	Advanced Machine Learning
	23CSE624	Wireless Sensor Networks
	23CSE634	Agile Methodologies*
	23CSE644	Advanced Algorithms
	23CSE654	Data Mining
	23CSE664	Distributed Computing
	23CSE674	Advanced Data Base System*
	23CSE684	Object Oriented System Design*
	23CSE694	Information Security
	23CSE6104	Mobile And Wireless Security
	23CSE6114	Advanced Computer Architecture
	23CSE6124	Data Storage Technologies And Networks
	23CSE6134	Medical Imaging
	23CSE6144	Information Retrieval
	23CSE6154	Fuzzy Logic And Its Application
	23CSE6164	Computer Graphics

Professional Elective 2 / Industry Elective

Slot	Course Code	Course Name
D	23CSE615	Natural Language Processing
	23CSE625	Mobile Computing
	23CSE635	Parallel Algorithms
	23CSE645	Bioinformatics
	23CSE655	Principles of Programming Languages
	23CSE665	Secure Coding
	23CSE675	Social Networking And Security
	23CSE685	High Performance Computing
	23CSE695	IoT and Embedded Systems
	23CSE6105	Neural Networks And Deep Learning
	23CSE6115	Neural Networks And Fuzzy Logic
	23CSE6125	Internet of Things
	23CSE6135	Remote Sensing And Applications
	23CSE6145	Medical Imaging
	23CSI615	Software Testing*
	23CSI625	Blockchain Technology*

Professional Elective 3

Slot	Course Code	Course Name
C	23CSE713	Speech Processing
	23CSE723	Wireless and Mobile Communications
	23CSE733	Software Reliability*
	23CSE743	Evolutionary algorithms
	23CSE753	Parallel and Distributed Algorithms
	23CSE763	Big Data Analytics*
	23CSE773	Web Mining
	23CSE783	Advanced Social, Text and Media Analytics
	23CSE793	Digital Currency Programming*
	23CSE7103	Android programming*
	23CSE7113	Networks and Systems Security
	23CSE7123	Ethical Hacking*
	23CSE7133	GPU Architecture and Programming
	23CSE7143	Software Defined network
	23CSE7153	AWS Cloud Computing*
	23CSE7163	Soft Computing

Professional Elective 4

Slot	Course Code	Course Name
A	23CSE811	Reinforcement Learning
	23CSE821	Explainable AI
	23CSE831	Mobile Adhoc Networks
	23CSE841	Total Quality Management*
	23CSE851	Software Project Management*
	23CSE861	Swarm Intelligence
	23CSE871	Social Network Analytics
	23CSE881	Time Series Analysis and Forecasting
	23CSE891	Quantum Computing
	23CSE8101	Data Compression
	23CSE8111	Cloud security
	23CSE8121	Cyber Forensics*
	23CSE8131	IoT Security

	23CSE8141	Introduction to Devops*
	23CSE8151	Augmented and Virtual Reality
	23CSE8161	Human Computer Interaction

***Industry offered/collaborated courses**

Open Electives

Open Elective 1/ Industry Elective

Slot	Course Code	Course Name
D	23CSO714	Data Structures
	23CSO724	Introduction to Soft Computing
	23CSO734	Development of Mobile Apps
	23CSO744	E-Commerce
	23CSI714	Cyber Law & Ethics

Open Elective 2/MOOC

Slot	Course Code	Course Name
B	23CSO812	Computer Graphics
	23CSO822	Artificial Intelligence
	23CSO832	Python Programming
	23CSO842	Data Management and Analysis
	23CSO852	Mobile Computing

Open Elective 3/MOOC

Slot	Course Code	Course Name
C	23CSO813	Machine Learning
	23CSO823	Scripting Languages
	23CSO833	Database Management Systems
	23CSO843	Computer Architecture
	23CSO853	Big Data Analytics

MICRO SPECIALIZATION BASKETS					
BASKET	**Course 1**		**Course 2**		
	Course Code	**Course Name**	**Course Code**	**Course Name**	**Prerequisite Course**
Artificial Intelligence	23CSE615	Natural Language Processing	23CSE713	Speech Processing	Artificial Intelligence & Machine Learning
Machine Learning	23CSE614	Advanced Machine Learning	23CSE811	Reinforcement learning	
Interpretable AI	23CSE614	Advanced Machine Learning	23CSE821	Explainable AI	
Adhoc and Sensor Networks	23CSE624	Wireless Sensor Networks	23CSE831	Mobile Adhoc Networks	Computer Networks
Wireless Communication	23CSE625	Mobile Computing	23CSE723	Wireless and Mobile Communications	
Internet of Things	23CSE6125	Internet of Things	23CSE8131	IoT Security	
Agile Software Engineering	23CSE634	Agile Methodologies	23CSE851	Software Project Management	Software Engineering
Advanced Software Engineering	23CSE733	Software Reliability	23CSE841	Total quality Management	
Software Reliability	23CSI615	Software Testing	23CSE733	Software Reliability	
Object Oriented Software Engineering	23CSE684	Object Oriented System Design	23CSE851	Software Project Management	
Software Development and Deployment	23CSE634	Agile Methodologies	23CSE8141	Introduction to Devops	
Advanced Algorithmic Approaches	23CSE644	Advanced Algorithms	23CSE753	Parallel and Distributed Algorithms	Design and Analysis of Algorithms
Optimization Algorithms	23CSE743	Evolutionary algorithms	23CSE861	Swarm Intelligence	
Big Data Analytics	23CSE654	Data Mining	23CSE763	Big Data Analytics	Introduction to Database Systems
Advanced Data Mining	23CSE773	Web Mining	23CSE871	Social Network Analytics	

Data Mining and Forecasting	23CSE763	Big Data Analytics	23CSE881	Time Series Analysis and Forecasting	
Blockchain and Digital Currency Technology	23CSI625	Blockchain technology	23CSE793	Digital Currency Programming	
Database and Digital Currency Technology	23CSE674	Advanced Database system	23CSE793	Digital Currency Programming	
Information Security	23CSE7113	Networks and Systems Security	23CSE8111	Cloud Security	Introductory Cyber Security
Cyber Security	23CSE7123	Ethical Hacking	23CSE8121	Cyber Forensics	
Secure Programming	23CSE665	Secure Coding	23CSE7123	Ethical Hacking	Advanced Programming
Advanced Computer Architecture	23CSE6114	Advanced Computer Architecture	23CSE7133	GPU Architecture and Programming	Computer Organization
Software Automation	23CSE7153	AWS Cloud Computing	23CSE8141	Introduction to Devops	Advanced Programming and Cloud Computing

***Industry offered/collaborated courses**

MINOR BASKETS				
SEMESTER	BASKET 1		BASKET 2	
	Specialization - Machine Learning		Specialization - Software Engineering*	
	Course Code	Course Name	Course Code	Course Name
S3	23CSM309	Python for Machine Learning	23CSM310	Object Oriented Programming*
S4	23CSM409	Mathematics for Machine Learning	23CSM410	Software Engineering *
S5	23CSM509	Concepts in Machine Learning	23CSM510	Software Testing *
S6	23CSM609	Concepts in Deep Learning	23CSM610	Software Project Management*
S7	23CSM709	PROJECT IN MINOR	23CSM709	PROJECT IN MINOR

***Industry offered/collaborated Courses**

HONORS BASKETS						
SEMESTER	BASKET 1		BASKET 2		BASKET 3	
	Specialization - Data Structures and Algorithms		Specialization - Systems Engineering		Specialization - Data Science	
	Course Code	Course Name	Course Code	Course Name	Course Code	Course Name
S4	23CSH409	Computational Geometry	23CSH410	System Software	23CSH411	Data and Web Mining
S5	23CSH509	Advanced Data structures and Algorithms	23CSH510	Advanced Operating Systems	23CSH511	Business Analytics
S6	23CSH609	Parallel Algorithms	23CSH610	Advanced Database Management Systems	23CSH611	Social Network Analytics
S7	23CSH709	Evolutionary Algorithms	23CSM710	Advanced Computer Architecture	23CSM711	Time Series Analysis and Forecasting
S8	23CSH809	Project in Honors	23CSH809	Project in Honors	23CSH809	Project in Honors

CURRICULUM 2023

ELECTRICAL & COMPUTER ENGINEERING

FIRST SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks	
												CIA	ESE
1	A	23MAT101	BSC	Calculus and Linear Algebra	3	1	0	0	3	4	4	40	60
2	B	23PYP102	BSC	Engineering Physics	2	1	2	0	4	5	4	60	40
3	C	23EST105	ESC	Fundamentals of Electronics Engineering	3	0	0	0	3	3	3	40	60
4	E	23ESP107	ESC	Technical English for Engineers	2	0	2	0	4	4	3	60	40
5	N	23MCJ110	MC	IDEA Lab Workshop	2	0	2	2	5	6	0	100	
6	O	23HUL111	HSMC	Design Thinking	0	0	2	0	2	2	1	50	
7	I	23EST117	ESC	Basics of Electrical Engineering	2	0	0	0	2	2	2	100	
8	J	23EST119	ESC	Basic Mechanical Engineering	2	0	0	0	2	2	2	100	
TOTAL									**25**	**28**	**19**		

SECOND SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	No. of Hours	No. of Credits	Total Marks	
												CIA	ESE
1	A	23MAP200	BSC	Ordinary Differential Equations and Transforms		3	1	2	0	5	6	5	60
2	B	23CYP203	BSC	Engineering Chemistry	2	1	2	0	4	5	4	60	40
3	C	23ESP204	ESC	Problem solving and Programming	3	0	2	0	5	5	4	60	40
4	D	23ESP208	ESC	Engineering Graphics	3	0	2	0	5	5	4	60	40
5	G	23ESL209	ESC	Manufacturing Practices	0	0	4	0	4	4	2	100	
6	K	23MCT210	MC	Sports and Yoga	2	0	0	0	2	2	0	100	
7	F	23HUT212	HSMC	Universal Human Values-II	2	1	0	0	2	3	3	40	60
TOTAL									**27**	**30**	**22**		

THIRD SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23MAP301	BSC	Mathematics III	3	1	2	0	5	6	5	60	40
2	K	23EST302	ESC	Network theory	2	0	0	0	2	2	2	100	
3	B	23ERJ303	PBC	Digital Electronics and Logic Design	2	0	2	2	5	6	5	60	40
4	C	23ERP304	PCC	Data Structures and Algorithms	2	1	2	0	4	5	4	60	40
5	D	23ERT305	PCC	Sensor & Sensor Circuits	2	1	0	0	2	3	3	40	60
6	E	23HUT306	HSMC	Professional Ethics and Life Skills for Engineers	3	0	0	0	3	3	3	40	60
7	I	23ESP310	ESC	System Simulation & Virtual Instrumentation Lab	1	0	2	0	2	3	2	100	
8	M/R	23ERM308 /23ERH308	MR/RL	MINOR/ REMEDIAL	4	0	0	0			4/0	40	60
TOTAL									**23**	**28**	**24**		

FOURTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23ERT401	PCC	Computer Organization and Architecture	3	1	0	0	3	4	4	40	60
2	B	23ERT402	PCC	Signals &Systems	2	1	0	0	2	3	3	40	60
3	C	23ERP403	PCC	Electrical Technology	2	1	2	0	4	5	4	60	40
4	D	23ERJ404	PBC	Solid State Electronic Devices and Circuits	2	0	2	2	5	6	5	60	40
5	E	23HUT405	HSMC	Engineering Economics	3	0	0	0	3	3	3	40	60
6	F	23MCT406	MC	Environmental Sciences	3	0	0	0	3	3	0	40	60
7	I	23ERP407	PCC	OOPS with JAVA	1	0	2	0	3	3	2	100	
8	M/ H/ R	23ERM408/ 23ERH408	MR/HR/RL	MINOR/HONOURS /REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									**21**	**27**	**21**		

FIFTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23ERT501	PCC	Control Systems	2	1	0	0	2	3	3	40	60
2	B	23ERJ502	PBC	Embeded System Design and IoT	2	0	2	2	5	6	5	60	40
3	C	23ERT503	PCC	Artificial Intelligence: Theory and Applications	2	1	0	0	2	3	3	40	60
4	D	23ERP504	PCC	Operating Systems	2	1	2	0	4	5	4	60	40
5	E	23HUT505	HSMC	Project Management and Finance	3	0	0	0	3	3	3	40	60
6	F	23MCT506	MC	Constitution of India	3	0	0	0	3	3	0	40	60
7	I	23ERT507	PCC	Software	2	0	0	0	2	2	2	100	
8	M/H/R	23ERM508/ 23ERH508	MR/HR/RL	MINOR/HONOURS /REMEDIAL	4	0	0	0			4/4/0	40	60
TOTAL									**21**	**25**	**20**		

SIXTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23ERP601	PCC	Computer Networks	2	0	2	0	4	4	3	40	60
2	B	23ERP602	PCC	Database Management Systems	2	0	2	0	4	4	3	60	40
3	C	23ERT603	PCC	Power Electronics & Drives	2	1	0	0	2	3	3	40	60
4	D	23ERE6**X**4	PEC	Professional Elective-1	3	0	0	0	3	3	3	40	60
5	E	23ERE6X5/ 23ERI6X5	PEC /IEC	Professional Elective-2/Industry Elective	3	0	0	0	3	3	3	40	60
6	F	23ERS606	SR	Seminar	0	0	4	0	4	4	2	100	
7	U	23SPJ607	MC	Socially Relevant Project	0	0	0	2	1	2	0	100	
8	I	23ESP612	ESC	Cyber Physical systems	1	0	2	0	3	3	2	60	
9	M/H /R	23ERM610/ 23ERH610	MR/ HR /RL	MINOR/HONOURS /REMEDIAL	4	0	0	0			4/ 4/ 0	40	60
TOTAL									**24**	**26**	**19**		

SEVENTH SEMESTER														
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23ERP701	PCC	Computer Vision	2	1	2	0	4	5	4	60	40
2	B	23ERP702	PCC	Industrial Instrumentation and Automation	2	1	2	0	4	5	4	60	40
3	C	23ERE7X3	PEC	Professional Elective-3	3	0	0	0	3	3	3	40	60
4	D	23ERO7X4/ 23ERI7X4	OEC /IEC	Open Elective 1/ Industry Elective	3	0	0	0	3	3	3	40	60
5	U	23ERR705	RMP	Research Based Mini Project	0	0	12	0	12	12	6	100	
6	M /H /R	23ERM706 /23ERH706	PRM /HR/ RL	PROJECT IN MINOR/HONOURS/ REMEDIAL	0	0	0	4			4/4 /0	100	
TOTAL									**26**	**28**	**20**		

EIGHTH SEMESTER													
Sl No	Slot	Code	Category	Title	L	T	P	J	S	Hours	Credits	Total Marks	
												CIA	ESE
1	A	23ERE8X1	PEC	Professional Elective-4 /MOOC	3	0	0	0	3	3	3	40	60
2	B	23ERO8X2	OEC	Open Elective-2 /MOOC	3	0	0	0	3	3	3	40	60
3	C	23ERO8X3	OEC	Open Elective- 3/MOOC	3	0	0	0	3	3	3	40	60
4	U	23ERD804/ 23ERN804	PR/IP	PROJECT/INTERNSHIP/	0	0	12	0	12	12	6	100	
5	H/R	23ERH805	PRH/ RL	PROJECT IN HONOURS/ REMEDIAL	0	0	0	4			4/0	100	
TOTAL									**21**	**21**	**15**		

ELECTIVE LIST	
Micro specialization	**I. EMBEDDED SYSTEM DESIGN AND IOT**
	Introduction to FPGA Cyber security, Robotics and automation, E Mobility
	II. ADVANCED PROGRAMMING TECHNIQUES
	Design and analysis of Algorithms Modern optimization Techniques Web technology R Programming Computer graphics
	III. COMPUTER NETWORKS
	Wireless networks and communication Mobile computing Cloud computing Edge computing
	IV. ARTIFICIAL INTELLIGENCE
	Introduction to Data science Artificial Intelligence with Python Big data Analysis Machine Learning for smart grids
	V. SIGNALS &SYSTEMS
	Bio-signal processing, Bio instrumentation

		Pattern recognition Natural language processing Digital Image processing
Professional Elective I		
	1	Bio-signal processing
	2	Introduction to FPGA
	3	Computer graphics
	4	Introduction to Data science
	5	Wireless networks and communication
Professional Elective II		
	1	Bio instrumentation
	2	Robotics and automation
	3	Mobile computing
	4	Cyber security
	5	Biology for Engineers
Professional Elective III		
	1	E Mobility
	2	Modern optimization Techniques
	3	Design and analysis of Algorithms
	4	Machine Learning for smart grids
	5	Edge computing
Professional Elective IV		
	1	Big data Analysis
	2	Cloud computing

3	R programming
4	Natural language processing
5.	Artificial Intelligence with Python

Industrial electives:

Professional Elective II:

1.Cyber security (TCS)

Open Elective :

Energy Systems (ANERT)

Engineering Applications of Block Chain Technology (Block chain Academy)

List of Open Electives

1. Renewable Energy Systems
2. Engineering Applications of Block Chain Technology
3. Energy Conservation and Management
4. Artificial Intelligence with Python
5. Introduction to Electric and hybrid vehicles

MINORS				
SEMESTER	BASKET-1		BASKET-2	
	Specialization – Energy Management		Specialization - Electrical Vehicle Technology	
	COURSE NO	COURSE NAME	COURSE NO	COURSE NAME
S 3	23EEM309	ELECTRICAL ENERGY SYSTEM	23EEM310	ELECTRICAL MACHINES
S 4	23EEM409	DISTRIBUTED GENERATION	23EEM410	POWER ELECTRONIC CONVERTERS
S 5	23EEM509	SMART GRID	23EEM510	BATTERY TECHNOLOGY
S 6	23EEM609	ENERGY MANAGEMENT & AUDITING	23EEM610	THERMAL MANAGEMENT OF ELECTRIC VEHICLES
S7	23EEM709	PROJECT IN MINOR	23EEM710	PROJECT IN MINOR

SEMESTER	HONOURS			
	Basket 1 Specialization – Smart Grids		Basket 2 Specialization – Cyber Security	
	COURSE NO	COURSE NAME	COURSE NO	COURSE NAME
S4	23ERH409	NETWORK ANALYSIS AND SYNTHESIS	23ERH410	INFORMATION THEORY FOR CYBER SECURITY
S5	23ERH509	LINEAR INTEGRATED CIRCUITS	23ERH510	DATA ENCRYPTION
S6	23ERH609	ADVANCED CONTROL THEORY	23ERH610	STEGANOGRAPHY AND DIGITAL WATERMARKING
S7	23ERH709	MICRO GRID AND NANO GRID	23ERH710	CYBER FORENSICS
S8	23ERH805	PROJECT IN HONORS	23ERH806	PROJECT IN HONORS