RAJALAKSHMI INSTITUTE OF TECHNOLOGY

BELIEVE IN THE POSSIBILITIES

AN AUTONOMOUS INSTITUTION

B.E. MECHANICAL ENGINEERING

CURRICULUM FOR SEMESTER I TO VIII

(BATCH 2025-2029)

REGULATIONS 2023

RAJALAKSHMI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution, Affiliated to Anna University, Chennai)

Kuthambakkam, Chennai 600124

RAJALAKSHMI INSTITUTE OF TECHNOLOGY, CHENNAI
An Autonomous Institution, Affiliated to Anna University, Chennai

REGULATIONS 2023
CHOICE BASED CREDIT SYSTEM

B.E. MECHANICAL ENGINEERING

I VISION OF THE DEPARTMENT

To be the premier choice for cultivating proficient mechanical engineers equipped with the essential skills, ethical values, and innovative mindset to excel in a dynamic global landscape through unwavering academic excellence and cutting-edge research.

II MISSION OF THE DEPARTMENT

- To deliver high-quality education in mechanical engineering that meets the dynamic demand of the industries, instils ethical value and fosters innovative thinking and lifelong learning.
- To create a research-driven learning environment for developing sustainable technologies that contribute to societal and industrial growth.
- To cultivate a collaborative ecosystem with academia, industry, and professional bodies to enhance technical competence, leadership skills and global employability.

III PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Graduates can:

1. **PEO 1: Excel in Professional Careers and Higher Education**
   Attain technical expertise, problem-solving skills, and global awareness to excel in industries, research organizations and higher education institutions.
2. **PEO 2: Innovate and Contribute to Sustainability**
   Develop innovative solutions, addressing the real-world mechanical engineering challenges while upholding principles of environmental sustainability.
3. **PEO 3: Demonstrate Ethical and Leadership Qualities**
   Exhibit professional ethics, effective communication, teamwork, and leadership qualities in multidisciplinary environments.
4. **PEO 4: Engage in Lifelong Learning**
   Pursue lifelong learning to adapt to the evolving technologies and contribute to the betterment of society through continuous self-improvement.

IV PROGRAM OUTCOMES (POs)

1. **Engineering Knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/ Development of Solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct Investigations of Complex Problems**: Use research-based knowledge and research methods, including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern Tool Usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and Sustainability**: Understand the impact of the professional engineering solutions to societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and Teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project Management and Finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Lifelong Learning**: Recognize the need and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

V PROGRAM SPECIFIC OUTCOMES (PSOs)

Graduates will be able to:

PSO 1: Core Mechanical Proficiency

Analyze, optimize and develop innovative solutions for the real-world mechanical challenges, by applying the principles of design, thermal engineering and computational tools effectively.

PSO 2: Sustainable and Advanced Manufacturing

Apply advanced manufacturing technologies, automation, and sustainable practices to design and execute efficient production systems, ensuring precision, and resource optimization.

PSO 3: Multidisciplinary Integration and Research

Integrate knowledge from various disciplines to solve complex engineering problems, and foster innovation and research in emerging fields such as mechatronics, robotics, and energy systems.

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REGULATIONS 2023 CHOICE BASED CREDIT SYSTEM
CURRICULUM FOR SEMESTER I TO VIII

B.E. MECHANICAL ENGINEERING

From 2025 – 2029 Batch

SEMESTER I

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
-	IP23111	Induction Programme	-	-	-	-	-	0
THEORY COURSES								
1	HS23111	Communicative English	HSMC	3	0	0	3	3
2	MA23111	Matrices and Calculus	BSC	3	1	0	4	4
3	GE23114	Electrical, Electronics and Instrumentation Engineering	ESC	3	0	0	3	3
4	GE23111	Problem Solving and C Programming	ESC	3	0	0	3	3
5	PH23113	Materials Science	BSC	3	0	0	3	3
6	GE23112	தமிழர் மரபு/Heritage of Tamils	HSMC	1	0	0	1	0
LABORATORY COURSES								
7	PH23121	Physics Laboratory	BSC	0	0	2	2	1
8	GE23121	Problem Solving and C Programming Laboratory	ESC	0	0	2	2	1
9	GE23124	Design Thinking and IDEA Laboratory	ESC	0	0	2	2	1
10	GE23125	Electrical, Electronics and Instrumentation Laboratory	ESC	0	0	2	2	1
TOTAL								**20**

SEMESTER II

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	HS23211	Professional English	HSMC	2	0	0	2	2
2	CY23211	Engineering Chemistry	BSC	3	0	0	3	3
3	MA23211	Statistics and Numerical Methods	BSC	3	1	0	4	4
4	AD23211	Python for Data Science	ESC	3	0	0	3	3

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
5	GE23213	தமிழரும் தொழில்நுட்பமும் /Tamils and Technology	HSMC	1	0	0	1	0
LABORATORY ORIENTED THEORY COURSE								
6	GE23231	Engineering Graphics	ESC	2	0	4	6	4
LABORATORY COURSES								
7	CY23221	Chemistry Laboratory	BSC	0	0	2	2	1
8	AD23221	Python for Data Science Laboratory	ESC	0	0	2	2	1
9	GE23221	Communication Laboratory/Foreign Language	EEC	0	0	2	2	1
-	-	NCC/Service Club Credit Course Level 1#		2	0	0	2	2#
TOTAL								**19**

 # NCC Credit Course Level 1 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however, the same shall not be considered for the computation of CGPA.

SEMESTER III

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	MA23313	Transforms and Partial Differential Equations	BSC	3	1	0	4	4
2	ME23311	Engineering Mechanics	PCC	3	0	0	3	3
3	ME23312	Engineering Thermodynamics	PCC	3	1	0	4	4
4	ME23313	Fluid Mechanics and Machinery	PCC	3	1	0	4	4
5	ME23314	Manufacturing Processes	PCC	3	0	0	3	3
6	CS23312	Object Oriented Programming	ESC	3	0	0	3	3
LABORATORY COURSES								
7	ME23321	Computer Aided Machine Drawing Laboratory	PCC	0	0	2	2	1
8	CS23322	Object Oriented Programming Laboratory	ESC	0	0	2	2	1
TOTAL								**23**

SEMESTER IV

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	GE23412	Environmental Science for Mechanical Engineers	BSC	2	0	0	2	2
2	ME23411	Engineering Materials and Metallurgy	PCC	3	0	0	3	3
3	ME23412	Manufacturing Technology	PCC	3	0	0	3	3
4	ME23413	Mechanics of Solids	PCC	3	0	0	3	3
5	ME23414	Theory of Machines	PCC	3	1	0	4	4
LABORATORY ORIENTED THEORY COURSE								
6	ME23431	Thermal Engineering	PCC	2	1	2	5	4
LABORATORY COURSES								
7	ME23421	Manufacturing Technology Laboratory	PCC	0	0	2	2	1
8	ME23422	Strength of Materials and Fluid Machinery Laboratory	PCC	0	0	2	2	1
INDUSTRY ORIENTED COURSES								
9	ME23IC1	Introduction to Product Lifecycle Management	EEC	1	-	-	1	1
-	-	NCC/Service Club Credit Course Level 2#		3	0	0	3	3#
TOTAL								22

#NCC Credit Course Level 2 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA.

SEMESTER V

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	ME23511	Design of Machine Elements	PCC	3	1	0	4	4
2	ME23512	Heat and Mass Transfer	PCC	3	1	0	4	4
3		Professional Elective I	PEC	-	-	-	-	3
4		Professional Elective II	PEC	-	-	-	-	3
5		Mandatory Course – I&	MC	3	0	0	3	0
LABORATORY ORIENTED THEORY COURSE								
6	ME23531	Mechatronics	PCC	3	0	2	5	4

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
LABORATORY COURSES								
7	ME23521	Heat Transfer Laboratory	PCC	0	0	2	2	1
8	ME23522	Professional/Skill Development	EEC	0	0	2	2	1
INDUSTRY ORIENTED COURSE								
9	ME23IC2	Introduction to Supply Chain Management	EEC	1	-	-	1	1
TOTAL								**21**

&*Mandatory Course – I is a Non-credit Course (Student shall select one course from the list given under Mandatory Course-I)*

SEMESTER VI

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	ME23611	Design of Transmission Systems	PCC	3	0	0	3	3
2		Professional Elective III	PEC	-	-	-	-	3
3		Professional Elective IV	PEC	-	-	-	-	3
4		Open Elective – I*	OEC	3	0	0	3	3
5		Open Elective – II*	OEC	3	0	0	3	3
6		Mandatory Course- II&	MC	3	0	0	3	0
LABORATORY ORIENTED THEORY COURSE								
7	ME23631	Metrology and Measurements	PCC	3	0	2	5	4
LABORATORY COURSES								
8	ME23621	Design and Fabrication Project	EEC	0	0	4	4	2
9	ME23622	CAD and CAM Laboratory	PCC	0	0	2	2	1
10	ME23623	Dynamics Laboratory	PCC	0	0	2	2	1
INDUSTRY ORIENTED COURSE								
11	ME23IC3	Introduction to HVAC Systems	EEC	1	-	-	1	1
-	-	NCC/Service Club Credit Course Level 3#		3	0	0	3	3#
TOTAL								**24**

**Open Electives I and II shall be chosen from the emerging technologies from the list of courses.*

&*Mandatory Course-II is a Non-credit Course (Student shall select one course from the list given under Mandatory Course-II)*

 # NCC Credit Course Level 3 is offered for NCC students only. The grades earned by the students will be recorded in the Mark Sheet, however the same shall not be considered for the computation of CGPA.

SEMESTER VII

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSES								
1	GE23711	Human Values and Ethics	HSMC	2	0	0	2	2
2		Elective – Management[$]	HSMC	3	0	0	3	3
3	ME23712	Industrial Robotics	PCC	4	0	0	4	4
4	ME23713	Finite Element Analysis	PCC	3	1	0	4	4
5		Professional Elective V	PEC	-	-	-	-	3
6		Professional Elective VI	PEC	-	-	-	-	3
LABORATORY COURSES								
7	ME23721	Internship/Certification Course	EEC	-	-	-	-	2
8	ME23722	Simulation Laboratory	PCC	0	0	2	2	1
TOTAL								**22**

[#] Elective – Management shall be chosen from the list of Elective Management courses.

SEMESTER VIII

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
THEORY COURSE								
1		Open Elective – III*	OEC	3	0	0	3	3
LABORATORY COURSE								
2	ME23821	Project Work	EEC	0	0	20	20	10
TOTAL								**13**

*Open Elective III shall be chosen from the list of Open Electives offered by other programmes.

ELECTIVE – MANAGEMENT COURSES

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	GE23712	Engineering Economics and Financial Accounting	HSMC	3	0	0	3	3
2	GE23713	Human Resource Management	HSMC	3	0	0	3	3
3	GE23714	Knowledge Management	HSMC	3	0	0	3	3
4	GE23715	Principles of Management	HSMC	3	0	0	3	3
5	GE23716	Software Project Management	HSMC	3	0	0	3	3

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
6	GE23717	Total Quality Management	HSMC	3	0	0	3	3
7	GE23718	Management Information Systems	HSMC	3	0	0	3	3

MANDATORY COURSES I

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	MX23511	Disaster Risk Reduction and Management	MC	3	0	0	3	0
2	MX23512	Elements of Literature	MC	3	0	0	3	0
3	MX23513	Film Appreciation	MC	3	0	0	3	0
4	MX23514	Introduction to Women and Gender Studies	MC	3	0	0	3	0

MANDATORY COURSES II

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	MX23611	History of Science and Technology in India	MC	3	0	0	3	0
2	MX23612	Industrial Safety	MC	3	0	0	3	0
3	MX23613	State, Nation Building and Politics in India	MC	3	0	0	3	0
4	MX23614	Well-Being with Traditional Practices- Yoga, Ayurveda and Siddha	MC	3	0	0	3	0

PROFESSIONAL ELECTIVE COURSES: VERTICALS

Sl. No.	Vertical 1	Vertical 2	Vertical 3	Vertical 4	Vertical 5	Vertical 6
	MODERN MOBILITY SYSTEMS	**PRODUCT AND PROCESS DEVELOPMENT**	**ROBOTICS AND AUTOMATION**	**DIGITAL AND GREEN MANUFACTURING**	**DIVERSIFIED COURSES**	**SUPPLY CHAIN MANAGEMENT FOR INDUSTRIES**
1	ME23V11 Automobile Engineering	ME23V21 Advanced Product Quality Planning (APQP)	ME23V31 Automation in Manufacturing	ME23V41 Carbon Footprint Estimation and Reduction	ME23V51 Computational Fluid Dynamics in Heat Transfer	ME23V61 Industry 5.0
2	ME23V12 Autonomous Vehicles	ME23V22 Intellectual Property Rights	ME23V32 Collaborative Robot (COBOT)	ME23V42 Composite Materials and Mechanics	ME23V52 Design of Jigs, Fixtures and Press Tools	ME23V62 Planning in Logistics
3	ME23V13 Battery Thermal Management System	ME23V23 Lean Manufacturing and Six Sigma	ME23V33 Drone Technology	ME23V43 Computer Integrated Manufacturing	ME23V53 Ergonomics in Design	ME23V63 Supply Chain Analytics
4	ME23V14 Hybrid and Electrical Vehicles	ME23V24 New Product Development	ME23V34 Embedded Systems and Programming	ME23V44 Digital Manufacturing and IoT	ME23V54 Gas Dynamics and Jet Propulsion	ME23V64 Supply Chain Information System
5	ME23V15 Off Road Vehicles	ME23V25 Process Planning and Cost Estimation	ME23V35 Haptic and Immersive Technologies	ME23V45 Green Manufacturing Design and Practices	ME23V55 Hydraulics and Pneumatics	ME23V66 Supply Chain for Manufacturing
6	ME23V16 Renewable Powered Off Highway Vehicles and Emission Control	ME23V26 Product Design and Manufacturing	ME23V36 Introduction to PLC Programming	ME23V46 Metal Additive Manufacturing	ME23V56 Power Plant Engineering	ME23V67 Sustainable Inventory Management
7	ME23V17 Sustainable Energy Technology	ME23V27 Production Planning and Control	ME23V37 Mobile Robot	ME23V47 Smart Manufacturing	ME23V57 Refrigeration and Air Conditioning	ME23V68 Warehouse Automation

Registration of Professional Elective Courses from Verticals:

A student can choose all the Professional Elective Courses either from one of the verticals or a combination of courses from all verticals in a semester. However, students irrespective of enrolling for additional courses for B.E. / B. Tech. (Hons.) are not permitted to choose more than one course from a row. Students are permitted to enroll more than one elective course from the same vertical in a semester. In the subsequent semesters students are permitted to enroll one more course in a row, provided if he/she has cleared the earlier course of the same row.

PROFESSIONAL ELECTIVE COURSES: VERTICALS

VERTICAL 1: MODERN MOBILITY SYSTEMS

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23V11	Automobile Engineering	PEC	3	0	0	3	3
2	ME23V12	Autonomous Vehicles	PEC	3	0	0	3	3
3	ME23V13	Battery Thermal Management System	PEC	3	0	0	3	3
4	ME23V14	Hybrid and Electrical Vehicles	PEC	3	0	0	3	3
5	ME23V15	Off Road Vehicles	PEC	3	0	0	3	3
6	ME23V16	Renewable Powered Off Highway Vehicles and Emission Control	PEC	3	0	0	3	3
7	ME23V17	Sustainable Energy Technology	PEC	3	0	0	3	3

VERTICAL 2: PRODUCT AND PROCESS DEVELOPMENT

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23V21	Advanced Product Quality Planning (APQP)	PEC	3	0	0	3	3
2	ME23V22	Intellectual Property Rights	PEC	3	0	0	3	3
3	ME23V23	Lean Manufacturing and Six Sigma	PEC	3	0	0	3	3
4	ME23V24	New Product Development	PEC	3	0	0	3	3
5	ME23V25	Process Planning and Cost Estimation	PEC	3	0	0	3	3
6	ME23V26	Product Design and Manufacturing	PEC	3	0	0	3	3
7	ME23V27	Production Planning and Control	PEC	3	0	0	3	3

VERTICAL 3: ROBOTICS AND AUTOMATION

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23V31	Automation in Manufacturing	PEC	3	0	0	3	3
2	ME23V32	Colloborative Robot (COBOT)	PEC	3	0	0	3	3
3	ME23V33	Drone Technology	PEC	3	0	0	3	3
4	ME23V34	Embedded Systems and Programming	PEC	3	0	0	3	3
5	ME23V35	Haptic and Immersive Technologies	PEC	3	0	0	3	3
6	ME23V36	Introduction to PLC Programming	PEC	3	0	0	3	3
7	ME23V37	Mobile Robot	PEC	3	0	0	3	3

VERTICAL 4: DIGITAL AND GREEN MANUFACTURING

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23V41	Carbon Footprint Estimation and Reduction	PEC	3	0	0	3	3
2	ME23V42	Composite Materials and Mechanics	PEC	3	0	0	3	3
3	ME23V43	Computer Integrated Manufacturing	PEC	3	0	0	3	3
4	ME23V44	Digital Manufacturing and IoT	PEC	3	0	0	3	3
5	ME23V45	Green Manufacturing Design and Practices	PEC	3	0	0	3	3
6	ME23V46	Metal Additive Manufacturing	PEC	3	0	0	3	3
7	ME23V47	Smart Manufacturing	PEC	3	0	0	3	3

VERTICAL 5: DIVERSIFIED COURSES

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23V51	Computational Fluid Dynamics in Heat Transfer	PEC	3	0	0	3	3
2	ME23V52	Design of Jigs, Fixtures and Press Tools	PEC	3	0	0	3	3
3	ME23V53	Ergonomics in Design	PEC	3	0	0	3	3
4	ME23V54	Gas Dynamics and Jet Propulsion	PEC	3	0	0	3	3
5	ME23V55	Hydraulics and Pneumatics	PEC	3	0	0	3	3
6	ME23V56	Power Plant Engineering	PEC	3	0	0	3	3
7	ME23V57	Refrigeration and Air Conditioning	PEC	3	0	0	3	3

VERTICAL 6: SUPPLY CHAIN MANAGEMENT FOR INDUSTRIES

Sl.No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23V61	Industry 5.0	PEC	3	0	0	3	3
2	ME23V62	Planning in Logistics	PEC	3	0	0	3	3
3	ME23V63	Supply Chain Analytics	PEC	3	0	0	3	3
4	ME23V64	Supply Chain Information System	PEC	3	0	0	3	3
5	ME23V66	Supply Chain for Manufacturing	PEC	3	0	0	3	3
6	ME23V67	Sustainable Inventory Management	PEC	3	0	0	3	3
7	ME23V68	Warehouse Automation	PEC	3	0	0	3	3

OPEN ELECTIVES

(Students shall choose the Open Elective Courses, such that the course contents are not similar to any other course contents/title under other course categories).

OPEN ELECTIVES – I

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	O23AD11	Programming for Data Science	OEC	3	0	0	3	3
2	O23AL11	Fundamentals of AI and ML	OEC	3	0	0	3	3
3	O23BT11	Mushroom Cultivation and Vermicomposting	OEC	3	0	0	3	3
4	O23CB11	Software Testing	OEC	3	0	0	3	3
5	O23CC11	AI for Robotics	OEC	3	0	0	3	3
6	O23CS11	Introduction to Cloud Computing	OEC	3	0	0	3	3
7	O23EC11	Space Engineering	OEC	3	0	0	3	3
8	O23EC12	IT in Agricultural System	OEC	3	0	0	3	3
9	O23EV11	Fundamentals of VLSI	OEC	3	0	0	3	3
10	O23MA11	Probability and Statistics for Data Analytics	OEC	3	0	0	3	3
11	O23ME11	Foundation of Robotics	OEC	3	0	0	3	3

OPEN ELECTIVES – II

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	O23AD21	Data Science Fundamentals	OEC	3	0	0	3	3
2	O23AL21	Fundamentals of Data Analytics	OEC	3	0	0	3	3
3	O23BT21	Biofuels	OEC	3	0	0	3	3

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
4	O23CB21	Essentials of Digital Marketing	OEC	3	0	0	3	3
5	O23CC21	Space Science	OEC	3	0	0	3	3
6	O23CS21	Introduction to Cyber Security	OEC	3	0	0	3	3
7	O23EC21	Wearable Devices and its Applications	OEC	3	0	0	3	3
8	O23EC22	Introduction to IoT	OEC	3	0	0	3	3
9	O23EV21	Electrical, Electronics and Magnetic Materials	OEC	3	0	0	3	3
10	O23MA21	Optimization Techniques	OEC	3	0	0	3	3
11	O23ME21	Mechanical Foundations of Mechatronic Systems	OEC	3	0	0	3	3

OPEN ELECTIVES – III

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	O23AD31	AI for Industrial Applications	OEC	3	0	0	3	3
2	O23AL31	Information Technology Essentials	OEC	3	0	0	3	3
3	O23BT31	Forensic Technology	OEC	3	0	0	3	3
4	O23CB31	Start-up and Innovations	OEC	3	0	0	3	3
5	O23CC31	Introduction to R Programming	OEC	3	0	0	3	3
6	O23CS31	Introduction to Blockchain	OEC	3	0	0	3	3
7	O23EC31	Batteries and Management Systems	OEC	3	0	0	3	3
8	O23EC32	Basics of Biomedical Instrumentation	OEC	3	0	0	3	3
9	O23EV31	HDL Programming	OEC	3	0	0	3	3
10	O23MA31	Multivariate Data Analysis	OEC	3	0	0	3	3
11	O23ME31	Introduction to 3D Printing Technologies	OEC	3	0	0	3	3

SUMMARY

Name of the Programme : B.E. Mechanical Engineering										
Sl.No.	Subject Area	Credits per Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1	HSMC	3	2	-	-	-	-	5	-	10
2	BSC	8	8	4	2	-	-	-	-	22
3	ESC	9	8	-	-	-	-	-	-	17
4	PCC	-	-	19	19	13	9	9	-	69
5	PEC	-	-	-	-	6	6	6	-	18
6	OEC	-	-	-	-	-	6	-	3	9
7	EEC	-	1	-	1	2	3	2	10	19
8	Non-Credit /(Mandatory)	Y	Y	-	Y	-	Y	-	-	-
Total		**20**	**19**	**23**	**22**	**21**	**24**	**22**	**13**	**164**

ENROLLMENT FOR B.E. / B. TECH. (HONOURS) / MINOR DEGREE (OPTIONAL)

A student can also optionally register for additional courses (18 credits) to secure B.E./B. Tech. (Honours) or Minor Degree.

For B.E. / B. Tech. (Honours), a student shall register for the additional courses (18 credits) from semester V onwards. These courses should be from the same vertical or a combination of different verticals of the same programme of study only.

For a minor degree, a student shall register for the additional courses (18 credits) from semester V onwards. All these courses have to be in a particular vertical from any one of the other programmes, Moreover, for minor degree the student can register for courses from any one of the following verticals also.

VERTICALS FOR MINOR DEGREE

(In addition to all the verticals of other programmes)

(Choice of courses for Minor degree is to be made from any one vertical of other programmes or from anyone of the following verticals)

Sl. No.	Vertical 1	Vertical 2	Vertical 3	Vertical 4	Vertical 5
	FINTECH AND BLOCK CHAIN	**ENTREPRENEURSHIP**	**BUSINESS DATA ANALYTICS**	**INTERNET OF THINGS**	**QUANTUM TECHNOLOGIES**
1	CS23M01 Banking, Financial Services and Insurance	ME23M01 Foundations of Entrepreneurship	CB23M01 Data Mining for Business Intelligence	EC23M01 IoT Architecture	VL23M01 Mathematical Foundations for Quantum Computing
2	CS23M02 Principles of Financial Management	ME23M02 Team Building and Leadership Management for Business	CB23M02 Financial Analytics	EC23M02 IoT Device Programming	VL23M02 Fundamentals of Quantum Computing
3	CS23M03 Fintech Personal Finance and Payments	ME23M03 Creativity and Innovation in Entrepreneurship	CB23M03 Human Resource Analytics	EC23M03 IoT Foundations	VL23M03 Quantum Materials
4	CS23M04 Fundamentals of Investment	ME23M04 Principles of Marketing Management for Business	CB23M04 Marketing and Social Media Web Analytics	EC23M04 Industrial Internet of Things	VL23M04 Quantum Information Science
5	CS23M05 Introduction to Blockchain and its Applications	ME23M05 Human Resource Management for Entrepreneurs	CB23M05 Operation and Supply Chain Analytics	EC23M05 IoT protocols	VL23M05 Quantum Measurement and Control
6	CS23M06 Introduction to Fintech	ME23M06 Financing New Business Ventures	CB23M06 Statistics for Management	EC23M06 Sensor Technologies and IoT	VL23M06 Quantum Communication
7	-	-	-	-	VL23M07 Quantum Optics
8	-	-	-	-	VL23M08 Quantum Cryptography

VERTICAL 1: FINTECH AND BLOCKCHAIN

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	CS23M01	Banking, Financial Services and Insurance	PEC	3	0	0	3	3
2	CS23M02	Principles of Financial Management	PEC	3	0	0	3	3
3	CS23M03	Fintech Personal Finance and Payments	PEC	3	0	0	3	3
4	CS23M04	Fundamentals of Investment	PEC	3	0	0	3	3
5	CS23M05	Introduction to Blockchain and its Applications	PEC	3	0	0	3	3
6	CS23M06	Introduction to Fintech	PEC	3	0	0	3	3

VERTICAL 2: ENTREPRENEURSHIP

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	ME23M01	Foundations of Entrepreneurship	PEC	3	0	0	3	3
2	ME23M02	Team Building and Leadership Management for Business	PEC	3	0	0	3	3
3	ME23M03	Creativity and Innovation in Entrepreneurship	PEC	3	0	0	3	3
4	ME23M04	Principles of Marketing Management for Business	PEC	3	0	0	3	3
5	ME23M05	Human Resource Management for Entrepreneurs	PEC	3	0	0	3	3
6	ME23M06	Financing New Business Ventures	PEC	3	0	0	3	3

VERTICAL 3: BUSINESS DATA ANALYTICS

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	CB23M01	Data Mining for Business Intelligence	PEC	3	0	0	3	3
2	CB23M02	Financial Analytics	PEC	3	0	0	3	3
3	CB23M03	Human Resource Analytics	PEC	3	0	0	3	3
4	CB23M04	Marketing and Social Media Web Analytics	PEC	3	0	0	3	3
5	CB23M05	Operation and Supply Chain Analytics	PEC	3	0	0	3	3
6	CB23M06	Statistics for Management	PEC	3	0	0	3	3

VERTICAL 4: INTERNET OF THINGS

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	EC23M01	IoT Architecture	PEC	3	0	0	3	3
2	EC23M02	IoT Device Programming	PEC	3	0	0	3	3
3	EC23M03	IoT Foundations	PEC	3	0	0	3	3
4	EC23M04	Industrial Internet of Things	PEC	3	0	0	3	3
5	EC23M05	IoT Protocols	PEC	3	0	0	3	3
6	EC23M06	Sensor Technologies and IoT	PEC	3	0	0	3	3

VERTICAL 5: QUANTUM TECHNOLOGIES

Sl. No.	Course Code	Course Title	Category	Periods Per Week			Total Contact Periods	Credits
				L	T	P		
1	VL23M01	Mathematical Foundations for Quantum Computing	PEC	3	0	0	3	3
2	VL23M02	Fundamentals of Quantum Computing	PEC	3	0	0	3	3
3	VL23M03	Quantum Materials	PEC	3	0	0	3	3
4	VL23M04	Quantum Information Science	PEC	2	0	2	4	3
5	VL23M05	Quantum Measurement and Control	PEC	3	0	0	3	3
6	VL23M06	Quantum Communication	PEC	2	0	2	4	3
7	VL23M07	Quantum Optics	PEC	3	0	0	3	3
8	VL23M08	Quantum Cryptography	PEC	3	0	0	3	3