



KINGSTON ENGINEERING COLLEGE

(An Autonomous Institution)

**(Approved by AICTE & COA, New Delhi, Affiliated to Anna University, Chennai)
Chittoor Main Road, Christianpet,
Katpadi, Vellore-632059**

DEPARTMENT OF MECHANICAL ENGINEERING

AUTONOMOUS CURRICULUM

REGULATION 2026

Academic Year 2026-27 onwards



INSTITUTE VISION

To be a pioneer in engineering and management education by providing amicable ambience and being a centre for learning thereby perpetuating versatile professionals in engineering and management suitable for industry, higher education and research.

INSTITUTE MISSION

- Developing, nurturing and building professionals with technical, research and managerial expertise, intellectual proficiency, right attitude and moral ethics.
- Building infrastructure that earmarks the institution to be the most preferred educational destination and provides the right ambience for creative and innovative teaching - learning process.
- Enabling learners to broaden their horizon and helping to meet global challenges.

QUALITY POLICY

To establish and implement a robust quality system at Kingston Engineering College, encircling teaching, learning, research, and self-reliance, focusing on core and support functions to ensure accountability to stakeholders through continuous improvement and sustenance towards promoting holistic academic excellence.

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B.E - MECHANICAL ENGINEERING

REGULATION 2026

CHOICE BASED CREDIT SYSTEM

VISION OF THE DEPARTMENT

The department of Mechanical Engineering strives to develop skilled, competent, ethical and versatile mechanical engineers capable of designing, developing and analyzing the complex problems and implementation of emerging engineering technologies, to solve the real time problems.

MISSION OF THE DEPARTMENT

- ❖ To impart quality education in Mechanical Engineering and develop competent graduates with strong technical and practical skills.
- ❖ To enable students to identify, analyze, and solve engineering problems using modern tools and emerging technologies.
- ❖ To promote research, consultancy, and lifelong learning with professional ethics and social responsibility for industry and higher education.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The following Programme Educational Objectives are designed based on the department mission.

- PEO 1:** Apply mechanical engineering knowledge to develop engineering solutions for societal and industrial needs.
- PEO 2:** Demonstrate technical competence and practical skills using modern engineering tools and technologies.
- PEO 3:** Identify, analyze, and solve engineering problems with professional and ethical responsibility.
- PEO 4:** Exhibit leadership, teamwork, and effective communication in multidisciplinary environments.
- PEO 5:** Pursue higher education, research, innovation, and lifelong learning for successful careers.

PROGRAM OUTCOMES (POs)

At the time of their graduation students of Mechanical Engineering Programme should be in possession of the following Programme Outcomes

- PO 2 Problem analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

- PO 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.
- PO 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.
- PO 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.
- PO 6 The engineer and the world:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment.
- PO 7 Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO 8 Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
- PO 9 Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.
- PO 10 Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO 11 Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

The Graduates of B.E – Mechanical Engineering programme will be able to:

- PSO 1:** Apply mechanical engineering principles to analyze, design, and develop mechanical systems and allied engineering applications.
- PSO 2:** Utilize modern tools and emerging technologies in design, manufacturing, and analysis to improve engineering solutions and employability.
- PSO 3:** Demonstrate technical and managerial skills to work effectively as competent engineers and contribute to societal and national development.

MAPPING OF PEOs WITH POs											
PEOs	POs										
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
PEO 1:	3	3	3	2	2	2	1	-	-	-	1
PEO 2:	3	2	2	2	3	1	-	-	-	-	2
PEO 3:	2	3	2	2	2	2	3	1	1	-	1
PEO 4:	-	-	1	-	-	1	2	3	3	3	1
PEO 5:	1	1	2	2	2	-	-	1	1	1	3

MAPPING OF PEOs WITH PSOs			
PEOs	PSOs		
	PSO 1	PSO 2	PSO 3
PEO 1:	3	2	2
PEO 2:	2	3	2
PEO 3:	3	2	3
PEO 4:	1	1	3
PEO 5:	2	3	2

SUSTAINABILITY DEVELOPMENT GOALS (SDG)



B.E MECHANICAL ENGINEERING REGULATION 2026

CURRICULUM FOR SEMESTER I to VIII

CHOICE BASED CREDIT SYSTEM

(For the students admitted in the Academic year 2026-2027)

I Semester									
S.No.	Course code	Course Title	L	T	P	C	Hours/ Week	Course Category	SDG Mapping
THEORY COURSES									
1	HS26101	Heritage of Tamil	1	0	0	1	1	HS	4,11,17
2	MA26101	Matrices and Calculus	3	1	0	4	4	BS	4,9,11,12
LAB INTEGRATED THEORY COURSES									
3	ME26101	Engineering Drawing and CAD Modelling	2	0	4	4	6	ES	4,9,11
4	HS26102	English for Interpersonal Communications-I	1	0	2	2	3	HS	4, 8,16
5	CS26C02	Python Programming	2	0	2	3	4	ES	4, 8, 9
6	CH26101	Basic Engineering Chemistry	2	0	2	3	4	BS	6,7,9,12
PRACTICAL COURSES									
7	ME26C11	Engineering Foundation Laboratory (Mechanical)	0	0	2	1	2	ES	4,8,9,11
EMPLOYABILITY ENHANCEMENT COURSE									
8	PD26S01	Digital professional Skills	0	0	2	1	2	EE	4,8,9
MANDATORY COURSES									
9	MC26102	Foreign Language – Level I (Japanese/German)	0	0	2	1	2	MC	4,8,17
10	MC26103	Physical Education I	0	0	2	0	2	MC	3,4,5
11	MC26101	Student Induction Programme	3 Weeks					MC	4
AUDIT COURSE									
12	AC26101	NSS/YRC/SDG/Club Activities	1 Week					AC	3,11,17
TOTAL			11	1	18	20	30		

II Semester									
S.No.	Course code	Course Title	L	T	P	C	Hours/ Week	Course Category	SDG Mapping
THEORY COURSES									
1	HS26201	Tamil and Technology	1	0	0	1	1	HS	11
2	MA26201	Linear Algebra	3	1	0	4	4	BS	4,8,9
3	HS26202	Universal Human Values-II: Understanding Harmony	3	0	0	3	3	HS	3,4,16
4	ME26201	Engineering Mechanics	3	1	0	4	4	ES	4,8,9
LAB INTEGRATED THEORY COURSES									
5	HS26203	English for Interpersonal Communication-II	1	0	2	2	3	HS	4,8,9
6	PH26202	Physics for Mechanical Engineers	2	0	2	3	4	BS	4, 7, 9
7	EE26201	Basic Electrical and Drive systems	2	0	2	3	4	ES	4,7,9,12, 13
PRACTICAL COURSES									
8	CS26C11	Engineering Foundation Laboratory (ECE & CSE)	0	0	2	1	2	ES	4,8,9,12
EMPLOYABILITY ENHANCEMENT COURSE									
9	PD26S02	Professional Excellence and career Development	0	0	2	1	2	EE	3,4,8,16
MANDATORY COURSES									
10	MC26201	Foreign Language – Level II (Japanese/German)	0	0	2	1	2	MC	4,8,17
11	MC26202	Physical Education II	0	0	2	0	2	MC	3,4,5
AUDIT COURSE									
12	AC26201	NSS/YRC/SDG/Club Activities	1 Week					AC	3,11,17
TOTAL			15	2	14	23	31		
III Semester									
S.No.	Course code	Course Title	L	T	P	C	Hours/ Week	Course Category	SDG Mapping
THEORY COURSES									
1	MA26301	Transforms and Partial Differential Equations	3	1	0	4	4	BS	4,9
2	ME26301	Applied Thermodynamics	3	1	0	4	4	ES	7,9,12
3	ME26302	Mechanics of Deformable Solids	3	1	0	4	4	PC	9,11,12
LAB INTEGRATED THEORY COURSES									

4	ME26303	Material Processing and Fabrication	2	0	2	3	4	PC	4,9,12
5	ME26304	Design thinking and Idea Innovation	2	0	2	3	4	ES	4,9
PRACTICAL COURSES									
6	ME26311	Computer Aided Machine Graphics Lab	0	0	4	2	4	PC	4,9,12
EMPLOYABILITY ENHANCEMENT COURSES									
7	ME26S01	Employability Enhancement Skill – I	0	0	2	1	2	EE	4,8,12
8	ME26S02	Industry Certification Course-I	0	0	2	1	2	EE	-
MANDATORY COURSES									
9	MC26301	Environmental and sustainable Future	1	0	0	0	1	MC	11,12,13
10	MC26302	Foreign Language – Level III (Japanese/German)	0	0	2	1	2	MC	4,8,17
AUDIT COURSES									
11	AC26301	NSS/YRC/SDG/Club Activities	1 Week				AC	3,11,17	
TOTAL			14	3	14	23	31		
IV Semester									
S.No.	Course code	Course Title	L	T	P	C	Hours/ Week	Course Category	SDG Mapping
THEORY COURSES									
1	ME26401	Industrial Materials and Metallurgy	3	0	0	3	3	PC	7,9,12
2	ME26402	Fluid Mechanics and Machinery	2	1	0	3	1 Week	PC	6,7,9
3	ME26403	Hydraulics and Pneumatics	3	0	0	3	3	PC	7,9,12
LAB INTEGRATED THEORY COURSES									
4	ME26404	Mechanics of Machines	2	1	2	4	5	PC	8,9,12
5	ME26405	Machine Tool Technology	2	0	2	3	4	PC	4,9,12
PRACTICAL COURSES									
6	ME26411	Strength of Materials and Fluid Machinery Lab	0	0	4	2	4	PC	4,9,12
7	ME26412	Innovation and Design Laboratory	0	0	4	2	4	PC	4,9
EMPLOYABILITY ENHANCEMENT COURSES									
8	ME26S03	Employability Enhancement Skill – II	0	0	2	1	2	EE	4,8,12
9	ME26S04	Industry Oriented Course – I	0	0	2	1	2	EE	
MANDATORY COURSES									

10	MC26401	Foreign Language – Level IV (Japanese/German)	0	0	2	1	2	MC	4,8,17
11	MC26402	Indian Constitution	1	0	0	0	1	MC	4,16
AUDIT COURSES									
12	AC2601	NSS/YRC/SDG/Club Activities	1 Week					AC	3,11,17
TOTAL			13	2	18	23	33		
V Semester									
S.No.	Course code	Course Title	L	T	P	C	Hours/ Week	Course Category	SDG Mapping
THEORY COURSES									
1	ME26501	Design of Machine Elements	3	1	0	4	4	PC	8,9,12
2		Open Elective – I	3	0	0	3	3	OE	
3	ME26503	Vehicle Technology	3	0	0	3	3	PC	7,9,11,12, 13
LAB INTEGRATED THEORY COURSES									
4	ME26504	Engineering Metrology and Inspection	2	0	2	3	4	PC	8,9,12
5	ME26505	Heat transfer and Thermal Machines	2	1	2	4	5	PC	7,9,12,13
6	AD26504	AI for Mechanical Engineers	2	0	2	3	4	ES	7,9,12,13
PRACTICAL COURSES									
7	ME26511	Innovation - Product Development -I Laboratory	0	0	4	2	4	PC	4,8,9,12
EMPLOYABILITY ENHANCEMENT COURSES									
8	ME26S03	Career Readiness - I	0	0	2	1	2	EE	4,8,12
MANDATORY COURSES									
9	MC26501	Disaster Management	1	0	0	0	1	MC	12,13
AUDIT COURSES									
10	AC26501	NSS/YRC/SDG/Club Activities	1 Week					AC	3,11,17
TOTAL			16	2	12	23	30		
For Honours Degree (Passion to study particular subject depth)									
11		Multi-Disciplinary Project (Capstone Design project - Level-I)	0	0	12	6	12	EE	4,8,9,11 12
OR									
12		Honours Elective - I	3	0	0	3	3	PE	
13		Honours Elective - II	3	0	0	3	3	PE	

Minor Degree (Passion for gaining knowledge beyond their discipline)									
14		Minor Elective - I	3	0	0	3	3	PC	
15		Minor Elective - II	3	0	0	3	3	PC	
VI Semester									
S.No	Course code	Course Title	L	T	P	C	Hours/Week	Course Category	SDG Mapping
THEORY COURSES									
1	ME26501	Design of Transmission Engineering	3	1	0	4	4	PC	8,9,12
2	ME26601	Finite Element Analysis	3	1	0	4	4	PC	9,7,12
3		Open Elective – II	3	1	0	4	4	OE	
4		Management Theory	3	0	0	3	3	HS	
LAB INTEGRATED THEORY COURSES									
5	ME26603	Mechatronics and IOT	3	0	2	3	5	PC	7,8,9,12
PRACTICAL COURSES									
6	ME26611	CAD/CAM/CAE Lab	0	0	4	2	4	PC	9,12,8
7	ME26612	Innovation - Product Development – II Laboratory	0	0	4	2	4	PC	4,9,8,12
EMPLOYABILITY ENHANCEMENT COURSES									
8	ME26S06	Career Readiness - II	0	0	2	1	2	EE	4,8,9,12
9	ME26S07	Industry Oriented Course - II	0	0	2	1	2	EE	
MANDATORY COURSES									
10	MC26601	Introduction to Indian Knowledge System	1	0	0	0	1	MC	4,11,12
AUDIT COURSES									
11	AC26601	NSS/YRC/SDG/Club Activities	1 Week					AC	3,11,17
TOTAL			16	2	14	23	37		
For Honours Degree (Passion to study particular subject depth)									
12	ME26613	Multi-Disciplinary Project (Capstone Design project Level-II)	0	0	12	6	12	EE	4,8,9,11 12
OR									
13		Honours Elective - III	3	0	0	3	3	PE	
14		Honours Elective - IV	3	0	0	3	3	PE	

	Minor Degree (Passion for gaining knowledge beyond their discipline)								
15		Minor Elective - III	3	0	0	3	3	PC	
16		Minor Elective - IV	3	0	0	3	3	PC	
VII Semester									
S.No.	Course code	Course Title	L	T	P	C	Hours/ Week	Course Category	SDG Mapping
THEORY COURSES									
1	HS26701	Research Publication and Ethics	3	0	0	3	3	HS	4,9,16,17
2		Open Elective – III	3	0	0	3	3	OE	
3		Professional Elective - I	3	0	0	3	3	PE	
4		Professional Elective - II	3	0	0	3	3	PE	
5		Professional Elective - III	3	0	0	3	3	PE	
PRACTICAL COURSES									
6	ME26711	Mini Project	0	0	4	2	4	EE	4,8,9,12
7	ME26712	Internship	4 Weeks in 6 th Semester			2	0	EE	
8	ME26713	Smart Factory Lab	0	0	4	2	4	PC	7,8,9,12
EMPLOYABILITY ENHANCEMENT COURSES									
9	ME26S08	Industry Readiness and Professional Excellence	0	0	2	1	2	EE	4,8,9,12
10	ME267S09	Industry Certification Course - II	0	0	2	1	2	EE	
TOTAL			15	0	12	23	27		
For Honours Degree (Passion to study particular subject depth)									
11	ME26713	Multi-Disciplinary Project (Capstone Design project Level-III)	0	0	12	6	12	EE	4,8,9,11 12
OR									
12		Honours Elective - V	3	0	0	3	3	PE	
13		Honours Elective - VI	3	0	0	3	3	PE	
Minor Degree (Passion for gaining knowledge beyond their discipline)									
14		Minor Elective - V	3	0	0	3	3	PC	
15		Minor Elective - VI	3	0	0	3	3	PC	

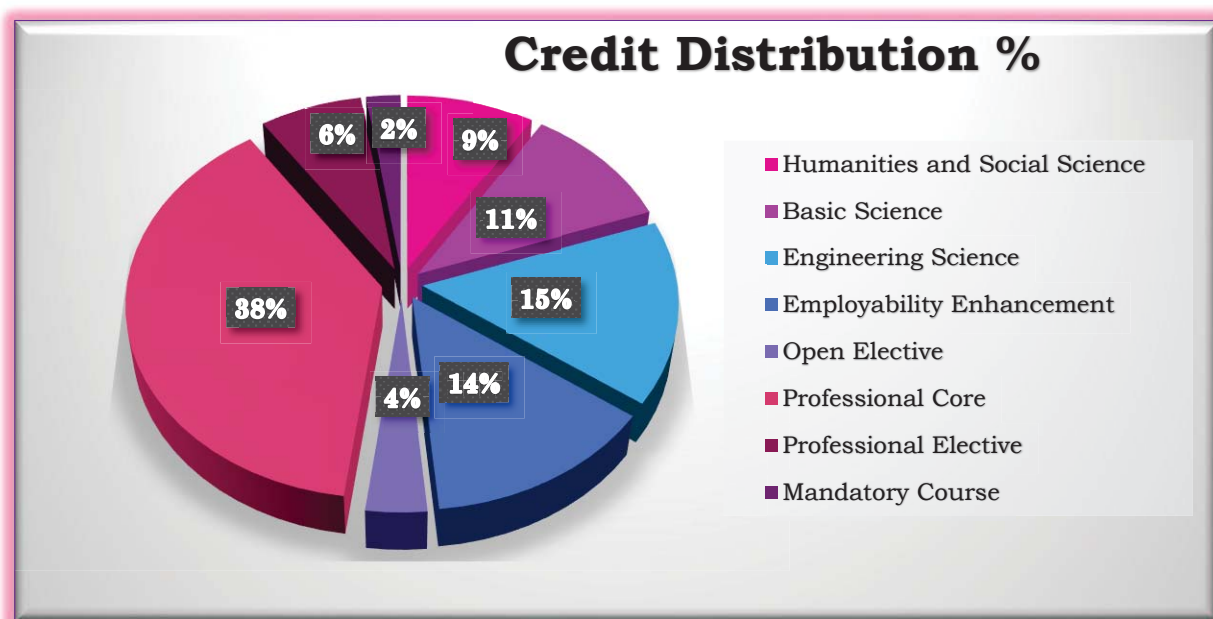
VIII Semester									
PRACTICAL									
S.No	Course code	Course Title	L	T	P	C	Hours/ Week	Course Category	SDG Mapping
1	ME26811	Project Work	0	0	16	8	16	EE	4,8,9
	TOTAL		0	0	16	8	16		

B.E MECHANICAL ENGINEERING

CREDIT DISTRIBUTION CURRICULLUM R-2026

Sl. No.	Course Category	Credits per semester								AICTE Credits	KEC Credits	Credits %
	Semester	I	II	III	IV	V	VI	VII	VIII			
1	Humanities and Social Science (HS)	3	6				3	3		12*	15	9.03
2	Basic Science (BS)	7	7	4						29*	18	10.84
3	Engineering Science (EC)	8	8	7		3				27*	26	15.65
4	Employability Enhancement (EE)	1	1	2	2	1	2	6	8	16*	23	13.85
5	Open Elective (OE)					3	3	3		9*	9	5.42
6	Professional Core (PC)			9	20	16	15	2		58*	62	37.34
7	Professional Elective (PE)							9		9*	9	5.42
8	Mandatory Course (MC)	1	1	1	1					0*	4	2.41
TOTAL		20	23	23	23	23	23	23	8	160*	166	100

*Minor variation is allowed as per need of the respective discipline.



B.E MECHANICAL ENGINEERING

CURRICULLUM R-2026

LIST OF OPEN ELECTIVES

OPEN ELECTIVE									
S.No.	Course code	Course Title	L	T	P	C	Hours/ Week	Course Category	SDG Mapping
1	OE26C01	Environment and social impact Assessment	3	0	0	3	3	OE	11,13,15
2	OE26C02	Data Communication	3	0	0	3	3	OE	9,7
3	OE26C03	Renewable energy Systems	3	0	0	3	3	OE	7,9,13
4	OE26C04	E-Vehicle	3	0	0	3	3	OE	7,11,13
5	OE26C05	Holistic Nutrition	3	0	0	3	3	OE	2,3
6	OE26C06	NGOs and Sustainable Development	3	0	0	3	3	OE	1,10,17
7	OE26C31	Robotic process Automation	3	0	0	3	3	OE	8,9,12
8	OE26C08	Biotechnology in Health Care	3	0	0	3	3	OE	3,9
9	OE26C09	Space Science	3	0	0	3	3	OE	4,9,13
10	OE26C10	Introduction to Industrial Engineering	3	0	0	3	3	OE	8,9,12
11	OE26C11	Food, Nutrition and Health	3	0	0	3	3	OE	2,3
12	OE26C12	Introduction to Industrial Instrumentation and control	3	0	0	3	3	OE	9,12
13	OE26C13	Graph Theory	3	0	0	3	3	OE	4,9
14	OE26C14	IT in Agricultural Systems	3	0	0	3	3	OE	2, 9,15
15	OE26C15	Digital Payment Systems	3	0	0	3	3	OE	8,9,10
16	OE26C16	Project Report Writing	3	0	0	3	3	OE	4
17	OE26C32	Sensors and Actuators	3	0	0	3	3	OE	9,11,12
18	OE26C33	Drone Technology	3	0	0	3	3	OE	2, 9,15
19	OE26C19	Life Style Diseases	3	0	0	3	3	OE	3

20	OE26C20	Concepts in Mobile Robots	3	0	0	3	3	OE	8,9,12
21	OE26C21	Cost Management of Engineering Projects	3	0	0	3	3	OE	8,9,12
22	OE26C22	Industrial Nano technology	3	0	0	3	3	OE	3,9
23	OE26C23	Resource Management Techniques	3	0	0	3	3	OE	6,12,13
24	OE26C24	Fintech Regulation	3	0	0	3	3	OE	8, 9,16
25	OE26C25	Introduction to Control Engineering	3	0	0	3	3	OE	9,12
26	OE26C26	Pharmaceutical Nanotechnology	3	0	0	3	3	OE	3, 9
27	OE26C27	Aviation Management	3	0	0	3	3	OE	8,9,11
28	OE26C28	AI for Business and Society	3	0	0	3	3	OE	8,9,16
29	OE26C34	Digital Twin Technology and Industrial Metaverse	3	0	0	3	3	OE	7,9,11,12
30	OE26C30	Cyber Loss and Digital Forensics	3	0	0	3	3	OE	9,16
31	OE26C31	Enterprise Resource Planning with SAP	3	0	0	3	3	OE	8,9,12,17
32	OE26C32	Industrial Installation and Commissioning	3	0	0	3	3	OE	7,8,9,12

B.E MECHANICAL ENGINEERING
CURRICULLUM R-2026
LIST OF MANAGERIAL SUBJECTS

MANAGEMENT THEORY COURSES									
S.No.	Course code	Course Title	L	T	P	C	Hours/Week	Course Category	SDG Mapping
1	HS26601	Principles of Management	3	0	0	3	3	HS	8, 9
2	HS26602	Total Quality Management	3	0	0	3	3	HS	9, 12
3	HS26603	Strategic Management	3	0	0	3	3	HS	8,12, 17
4	HS26604	Business Analytics	3	0	0	3	3	HS	4, 9
5	HS26605	Entrepreneurship Development	3	0	0	3	3	HS	8, 17
6	HS26606	Digital Marketing	3	0	0	3	3	HS	8, 9
7	HS26607	Engineering Economics and cost Analysis	3	0	0	3	3	HS	8,9,12,17
8	HS26608	Supply chain Management	3	0	0	3	3	HS	8,9,12,13
9	HS26609	Marketing Management	3	0	0	3	3	HS	8,9,12,17

B.E MECHANICAL ENGINEERING CURRICULLUM R-2026

PROFESSIONAL ELECTIVE COURSES: VERTICALS

VERTICAL 1	VERTICAL 2	VERTICAL 3	VERTICAL 4	VERTICAL 5	VERTICAL 6	VERTICAL 7
Robotics and automation	Smart Mobility Systems	Design and Manufacturing	Digital and Green Manufacturing	Product and process development	Green Energy Technologies	Artificial Intelligence and Machine Learning
Sensor and Instrumentation	Automobile Engineering	Robot and Machine element Design	Robots and systems in smart Manufacturing	Design for manufacturing and assembly	Energy conservation in Industries	Machine diagnostics and condition monitoring
Electrical drives and actuators	Electric and Hybrid Vehicle	Design concepts in Engineering	Industrial robotics and expert systems	Total Quality Management	Energy storage devices	Microsystem design and Applications
Collaborative robotics	Automotive Electronics	Unconventional Machining Processes	Lean manufacturing	Advanced Manufacturing systems	Energy Efficient Buildings	Machine Vision
Industry 4.0	Vehicle styling and design	Precision Manufacturing	Logistics and supply chain management	Product life cycle management	Bioenergy conservation techniques	Haptics and immersive technologies
Embedded system and Programming	Aircraft Mechatronics	Failure Analysis and NDT Techniques	Computer Aided Inspection and Testing	Process planning and cost estimation	Renewable powered of highway vehicles	Advanced statistics and Data Analytics
Robot kinematics and dynamics	Smart mobility and intelligent vehicles	Computer Aided Design and Manufacturing	Digital Manufacturing and IOT	Product design and development	Thermal management of Batteries and Fuel Cells	Generative AI for Engineering Design
Drone Technologies	Advanced driver assistance systems	Tool design	Green Manufacturing design and practices	Robotic process automation	Renewable energy Technologies	Exploratory Data Analysis and visualization
Digital Twin and Industry 5.0	Automotive system modelling and simulation	Rotating Machinery Design	Environment sustainability and impact assessment	Additive Manufacturing	Equipment's for pollution control	IoT systems Design

B.E MECHANICAL ENGINEERING

CURRICULLUM R-2026

LIST OF PROFESSIONAL ELECTIVEs

PROFESSIONAL ELECTIVE COURSES									
S.No.	Course code	Course Title	L	T	P	C	Hours/Week	Course Category	SDG Mapping
VERTICAL – I ROBOTICS AND AUTOMATION									
1	ME26RA1	Sensor measurement and Instrumentation	3	0	0	3	3	PE	4,9,12
2	ME26RA2	Electrical drives and actuators	3	0	0	3	3	PE	7,9,12
3	ME26RA3	Collaborative robotics	3	0	0	3	3	PE	8,9,12
4	ME26RA4	Industry 4.0	3	0	0	3	3	PE	8,9,12
5	ME26RA5	Embedded system and Programming	3	0	0	3	3	PE	4,8,9
6	ME26RA6	Robot kinematics and dynamics	3	0	0	3	3	PE	8,9,12
7	ME26RA7	Drone Technologies	3	0	0	3	3	PE	2,9,11
8	ME26RA8	Digital Twin and Industry 5.0	3	0	0	3	3	PE	8,9,12
VERTICAL – II SMART MOBILITY SYSTEMS									
1	ME26SM1	Automobile Engineering	3	0	0	3	3	PE	7,9,13
2	ME26SM2	Electric and Hybrid Vehicle	3	0	0	3	3	PE	7,9,13
3	ME26SM3	Automotive Electronics	3	0	0	3	3	PE	8,9,12
4	ME26SM4	Vehicle styling and design	3	0	0	3	3	PE	9,11,12
5	ME26SM5	Aircraft Mechatronics	3	0	0	3	3	PE	8,9,12
6	ME26SM6	Smart and intelligent mobility	3	0	0	3	3	PE	9,11,13
7	ME26SM7	Advanced driver assistance systems	3	0	0	3	3	PE	3,9,11
8	ME26SM8	Automotive system modelling and simulation	3	0	0	3	3	PE	8,9,12
VERTICAL – III DESIGN AND MANUFACTURING									
1	ME26DM1	Robot and Machine element Design	3	0	0	3	3	PE	8, 9, 12
2	ME26DM2	Design concepts in Engineering	3	0	0	3	3	PE	4, 9, 12

3	ME26DM3	Unconventional Machining Processes	3	0	0	3	3	PE	8, 9, 12
4	ME26DM4	Precision Manufacturing	3	0	0	3	3	PE	8,9,12
5	ME26DM5	Failure Analysis and NDT Techniques	3	0	0	3	3	PE	3, 9, 12
6	ME26DM6	Computer Aided Design and Manufacturing	3	0	0	3	3	PE	8, 9, 12
7	ME26DM7	Tool design	2	0	2	3	3	PE	8, 9, 12
8	ME26DM8	Rotating Machinery Design	3	0	0	3	3	PE	7, 9, 12
VERTICAL – IV DIGITAL AND GREEN MANUFACTURING									
1	ME26GM1	Robots and systems in smart Manufacturing	3	0	0	3	3	PE	8, 9, 12
2	ME26GM2	Industrial robotics and expert systems	3	0	0	3	3	PE	4, 8, 9
3	ME26GM3	Lean manufacturing	3	0	0	3	3	PE	8, 9, 12
4	ME26GM4	Logistics and supply chain management	3	0	0	3	3	PE	8, 9, 12
5	ME26GM5	Computer Aided Inspection and Testing	3	0	0	3	3	PE	8, 9, 12
6	ME26GM6	Digital Manufacturing and IOT	3	0	0	3	3	PE	8, 9, 12
7	ME26GM7	Green Manufacturing design and practices	2	0	2	3	3	PE	9, 12, 13
8	ME26GM8	Environment sustainability and impact assessment	3	0	0	3	3	PE	11, 12, 13
VERTICAL – V PRODUCT AND PROCESS DEVELOPMENT									
1	ME26PD1	Design for manufacturing and assembly	3	0	0	3	3	PE	8, 9, 12
2	ME26PD2	Total Quality Management	3	0	0	3	3	PE	8, 9, 12
3	ME26PD3	Advanced Manufacturing systems	3	0	0	3	3	PE	8, 9, 12
4	ME26PD4	Product life cycle management	3	0	0	3	3	PE	8, 9, 12
5	ME26PD5	Process planning and cost estimation	3	0	0	3	3	PE	8, 9, 12
6	ME26PD6	Product design and development	3	0	0	3	3	PE	4, 9, 12
7	ME26PD7	Robotic process automation	3	0	0	3	3	PE	8, 9, 12
8	ME26PD8	Additive Manufacturing	3	0	0	3	3	PE	8, 9, 12
VERTICAL – VI GREEN ENERGY TECHNOLOGIES									
1	ME26GE1	Energy conservation in Industries	3	0	0	3	3	PE	7, 9, 13
2	ME26GE2	Energy storage devices	3	0	0	3	3	PE	7, 9, 13

3	ME26GE3	Energy Efficient Buildings	3	0	0	3	3	PE	7, 11, 13
4	ME26GE4	Bioenergy conservation techniques	3	0	0	3	3	PE	7, 12, 13
5	ME26GE5	Renewable power for highway vehicles	3	0	0	3	3	PE	7, 9, 13
6	ME26GE6	Thermal management of Batteries and Fuel Cells	3	0	0	3	3	PE	7, 9, 13
7	ME26GE7	Renewable energy Technologies	3	0	0	3	3	PE	7, 9, 13
8	ME26GE8	Equipment's for pollution control	3	0	0	3	3	PE	6, 9, 13
VERTICAL – VII ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING									
1	ME26AI1	Machine diagnostics and condition monitoring	3	0	0	3	3	PE	8,9,12
2	ME26AI2	Microsystem design and Applications	3	0	0	3	3	PE	3,9, 12
3	ME26AI3	Machine Vision	3	0	0	3	3	PE	9,11, 12
4	ME26AI4	Haptics and immersive technologies	3	0	0	3	3	PE	4,9,11
5	ME26AI5	Advanced statistics and Data Analytics	3	0	0	3	3	PE	8,9,12
6	ME26AI6	Generative AI for Engineering Design	3	0	0	3	3	PE	9,11, 12
7	ME26AI7	Exploratory Data Analysis and visualization	3	0	0	3	3	PE	4,9,17
8	ME26AI8	IoT systems Design	3	0	0	3	3	PE	9,11, 13

B.E MECHANICAL ENGINEERING
CURRICULLUM R - 2026
LIST OF MINOR ELECTIVES

Minor (Additional 18 Credits): Students may opt for a **Minor Degree** in a discipline other than their parent program by earning an additional **18 credits** from the courses prescribed under the Minor Degree curriculum. These credits are to be completed **in addition to the minimum credit requirements** of the Undergraduate Degree Programme.

MINOR DEGREE: SMART MANUFACTURING AND MECHANICAL SYSTEMS										
S.No.	Course code	Course Title	L	T	P	C	Hours/Week	Course Category	SDG Mapping	
1	ME26RA1	Smart and Intelligent Mobility	3	0	0	3	3	PE	9,11,13	
2	ME26RA2	Modern Robotics	3	0	0	3	3	PE	8,9,12	
3	ME26RA3	Additive Manufacturing	3	0	0	3	3	PE	8,9,12	
4	ME26RA4	Renewable Energy Technologies	3	0	0	3	3	PE	7,9,13	
5	ME26RA5	Product Life Cycle Management	3	0	0	3	3	PE	8,9,12	
6	ME26RA6	Product Design and Development	3	0	0	3	3	PE	4,9,12	
7	ME26RA7	Industrial Layout, Safety and Production Management	3	0	0	3	3	PE	8,9,12	
8	ME26RA8	Supply Chain Management	3	0	0	3	3	PE	8,9,12,13	


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PRINCIPAL

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 Phone : 0416-2298300

ME26101	ENGINEERING DRAWING AND CAD	L	T	P	C
SDG: 4,9 & 11	MODELLING	2	0	4	4

Course Objective:

1. To develop skills in geometrical construction and freehand sketching for engineering visualisation.
2. To understand and apply orthographic projection techniques for points, lines, and plane surfaces.
3. To enable drawing and visualisation of projections of simple and truncated solids.
4. To impart knowledge on the sectioning of solids and the development of surfaces used in engineering applications.
5. To develop the ability to represent three-dimensional objects using isometric and perspective projection methods.

UNIT I: ENGINEERING CURVES AND ORTHOGRAPHIC PROJECTIONS 12

Drawing instruments, Drawing standards (BIS), Lettering In engineering, Sheet layout, elements of dimensioning, and systems of dimensioning. (Not for Exams)

Basic Geometrical constructions, Curves used in engineering practices: Conics. Construction of ellipse, parabola and hyperbola by the eccentricity method. Visualisation concepts and Free Hand sketching: Visualisation principles –Representation of Three-Dimensional objects — Layout of views- Freehand sketching of multiple views from pictorial views of objects.

Activities: Draw an ellipse, parabola, and hyperbola using drawing instruments and verify using CAD software.

UNIT II – PROJECTION OF POINTS, LINES, AND PLANE SURFACES 12

Orthographic projection- principles-Principal Planes-First angle projection-projection of points. Projection of straight lines inclined to both the principal planes — Determination of true lengths and true inclinations by the rotating line method. Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by the rotating line method.

Activities: Prepare orthographic projections of simple objects and compare them with physical models.

UNIT III – PROJECTION OF SOLIDS 12

Projection of simple solids like prism, pyramid, cylinder and cone when the axis is inclined to one of the principal planes by the rotating object method.

Activities: Create paper models of prism, pyramid, cylinder and cone and its projections.

UNIT IV PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES 12

Sectioning of the above solids in a simple vertical position, when the cutting plane is inclined to one of the principal planes and perpendicular to the other, obtains the true shape of the section. Development of lateral surfaces of simple and sectioned solids — Prism, pyramid, cylinder and cone.

Activities: Develop and assemble the surface development of a sectioned solid using chart paper or CAD.

UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS. 12


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Principles of isometric projection- Isometric scale –Isometric projections of simple solids and truncated solids—Prism, pyramid, cylinder, cone – Perspective projection of simple solids-Prism, pyramid and cylinder by visual ray method.

Activities: Draw isometric and perspective views of simple solids and validate them using CAD software.

Total Hours: 90 PERIODS

Experiments:

1. Drawing instruments, BIS standards, lettering, sheet layout, and dimensioning practice
2. Construction of conic sections using the eccentricity method.
3. Freehand sketching and orthographic views from pictorial objects.
4. Projection of points in different quadrants.
5. Projection of plane surfaces inclined to principal planes.
6. Projection of prism, pyramid, cylinder, and cone.
7. Sectional projections and true shape of sections.
8. Development of lateral surfaces of simple and sectioned solids.
9. Isometric projection of simple and truncated solids.
10. Perspective projection of simple solids using the visual ray method.

Course Outcome:

At the end of the course, the students will be able to:

CO1: Apply engineering drawing standards and construct basic engineering curves and freehand sketches.

CO2: Draw orthographic projections of points, lines, and planes using standard projection techniques.

CO3: Prepare accurate projections of simple solids in different positions.

CO4: Construct sectional views and develop the surfaces of different solids.

CO5: Create isometric and perspective views for effective three-dimensional visualization.

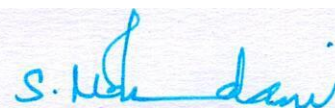
Textbook:

1. Venugopal, K., & Prabhu Raja, V. (2022). Engineering Drawing + AutoCAD. New Age International Publishers.
2. Natarajan, K. V. (2015). A Text Book of Engineering Graphics. Dhanalakshmi Publisher
3. Ibrahim Zeid and R. Sivasubramanian, (2009) CAD/CAM Theory and Practice, 2nd Edition, McGraw-Hill Education.

References:

1. N.D. Bhatt and V.M. Panchal, *Engineering Drawing*, 53rd Edition, Charotar Publishing House, 2016.
 2. M.B. Shah and B.C. Rana, *Engineering Drawing and Computer Graphics*, 2nd Edition, Pearson Education, 2009.
 3. K.R. Gopalakrishna, *Engineering Graphics*, Subhas Publications, 2014.
 4. P. Radhakrishnan, S. Subramanyan and V. Raju, *CAD/CAM/CIM*, 3rd Edition, New Age International Publishers, 2008.
 5. Tickoo-CADCIM Series, *AutoCAD 2024 Training Guide*, CADCIM Technologies, 2024.
- Douglas Smith, *Engineering Drawing Using AutoCAD*, McGraw-Hill Education, 2015.

ONLINE RESOURCES:



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- <https://nptel.ac.in/courses/112/107/112107209/>
- <https://nptel.ac.in/courses/112/104/112104031/>
- <https://www.autodesk.com/education/educators>
- <https://www.solidworks.com/education>
- <https://www.coursera.org/learn/cad-design-and-manufacturing>
- <https://ocw.mit.edu/courses/mechanical-engineering/>

CO – PO Mapping:

CO	PO											PSO		
	1	2	3	4	5	6	7	8	9	10	11	1	2	3
1	3	2	1	1	2				1		2	3	2	1
2	3	3	2	2	2				1		2	3	2	1
3	3	3	3	2	3				1		2	3	3	1
4	3	3	3	3	3				1	1	2	3	3	2
5	3	3	3	2	3	1		1	2	1	3	3	3	2
Avg	3	3	2	2	3	1		1	1	1	2	3	3	1
Low (1); Medium (2); High (3)														


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