

13. Courses of Study and Scheme of Assessment

BE MECHANICAL ENGINEERING

(2019 Regulations)
(Minimum credits to be earned: 165)

Course Code	Course Title	Periods / week			Maximum Marks				
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER 1									
19M101	Calculus and its Applications	3	1	0	4	50	50	100	BS
19M102	Physics	3	0	0	3	50	50	100	BS
19M103	Chemistry	3	0	0	3	50	50	100	BS
19G105	English Language Proficiency	2	1	0	3	50	50	100	HS
19M110	Engineering Graphics I	0	0	4	2	50	50	100	ES
19M111	Basic Sciences Laboratory	0	0	4	2	50	50	100	BS
19M112	C Programming Laboratory	0	0	4	2	50	50	100	ES
19IP15	Induction Programme **	0	0	0	0	-	-	-	MC
Total 25 periods		11	2	12	19	350	350	700	
SEMESTER 2									
19M201	Complex Variables and Transforms	3	1	0	4	50	50	100	BS
19M202	Materials Science	2	0	0	2	50	50	100	BS
19M203	Chemistry of Engineering Materials	2	0	0	2	50	50	100	BS
19M204	Engineering Mechanics	3	1	0	4	50	50	100	ES
19M205	Manufacturing Processes I	3	0	0	3	50	50	100	PC
19M210	Engineering Graphics II	0	0	4	2	50	50	100	ES
19M211	Engineering Practices and Manufacturing Processes Laboratory	0	0	4	2	50	50	100	ES
19_____	Language Elective	0	0	4	2	50	50	100	HS
19M215	Activity Point Programme \$	-	-	-	Grade	-	-	-	MC
Semester 2- Summer Term									
19M213	Internship €	0	0	0	2£	100	0	100	EEC
Total 27 periods		13	2	12	23	500	400	900	

** As per norms

\$ As per AICTE Norms; Total 60 hrs; Grade : Completed / Not Completed; Not Counted for CGPA

€ This course will be conducted prior to the commencement of the third semester for a period of 3 weeks

£ For internship, one credit is equivalent to minimum 40 hours of work as per norms

CA Continuous Assessment

FE Final Examination

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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER 3									
19M301	Numerical Methods	2	1	0	3	50	50	100	BS
19M302	Manufacturing Processes II	3	0	0	3	50	50	100	PC
19M303	Mechanics of Materials	3	0	0	3	50	50	100	ES
19M304	Kinematics of Machinery	3	1	0	4	50	50	100	PC
19M305	Engineering Thermodynamics	3	1	0	4	50	50	100	PC
19O306	Economics for Engineers	3	0	0	3	50	50	100	HS
19M310	Manufacturing Processes Laboratory	0	0	2	1	50	50	100	PC
19M311	Materials Science and Mechanics of Materials Laboratory	0	0	2	1	50	50	100	ES
19K312	Environmental Science **	2	0	0	0	-	-	-	MC
19M315	Activity Point Programme \$	-	-	-	Grade	-	-	-	MC
Total 26 periods		19	3	4	22	400	400	800	
SEMESTER 4									
19M401	Probability and Statistics	2	1	0	3	50	50	100	BS
19M402	Basics of Electrical and Electronics Engineering	3	0	0	3	50	50	100	ES
19M403	Fluid Mechanics	3	1	0	4	50	50	100	PC
19M404	Dynamics of Machinery	3	1	0	4	50	50	100	PC
19M405	Thermal Engineering I	3	0	0	3	50	50	100	PC
19M406	Industrial Metallurgy	3	0	0	3	50	50	100	ES
19M410	Machine Drawing	0	0	4	2	50	50	100	PC
19M411	Electrical and Electronics Engineering Laboratory	0	0	2	1	50	50	100	ES
19O412	Indian Constitution **	2	0	0	0	-	-	-	MC
19Q413	Soft Skills Development	0	0	2	1	100	0	100	EEC
19M415	Activity Point Programme \$	-	-	-	Grade	-	-	-	MC
Total 30 periods		19	3	8	24	500	400	900	

** As per norms

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Course Code	Course Title	Periods / week			Maximum Marks				
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER 5									
19M501	Design of Machine Elements	3	1	0	4	50	50	100	PC
19M502	Thermal Engineering II	3	1	0	4	50	50	100	PC
19M503	Operations Research	3	1	0	4	50	50	100	HS
19M504	Turbomachinery	3	1	0	4	50	50	100	PC
19M505	Manufacturing Automation	3	0	0	3	50	50	100	PC
19M510	Fluid Machinery Laboratory	0	0	2	1	50	50	100	PC
19M511	Thermal Engineering Laboratory	0	0	2	1	50	50	100	PC
19M512	Manufacturing Automation Laboratory	0	0	2	1	50	50	100	PC
19Q513	Business and Managerial Communications	0	0	2	1	100	0	100	EEC
19M515	Activity Point Programme \$	-	-	-	Grade	-	-	-	MC
Total 27 periods		15	4	8	23	500	400	900	
SEMESTER 6									
19M601	Design of Transmission Elements	3	0	0	3	50	50	100	PC
19M602	Heat and Mass Transfer	3	1	0	4	50	50	100	PC
19M603	Metrology and Instrumentation	3	0	0	3	50	50	100	PC
19M604	Design for Manufacture and Assembly	3	1	0	4	50	50	100	PC
19____	Open Elective I	3	0	0	3	50	50	100	OE
19M610	Metrology and Dynamics Laboratory	0	0	2	1	50	50	100	PC
19M611	Heat Transfer Laboratory	0	0	4	2	50	50	100	PC
19M612	Innovation Practices	0	0	4	2	50	50	100	EEC
19Q613	Quantitative and Reasoning Skills	0	0	2	1	100	0	100	EEC
19M615	Activity Point Programme \$	-	-	-	Grade	-	-	-	MC
Total 29 periods		15	2	12	23	500	400	900	

At the end of 6th semester, the students are required to earn the minimum number of activity points from the AICTE mandated ACTIVITY POINT PROGRAMME to qualify for the award of BE/BTech degree (Refer Section 4 (vii) (c) of 2019 Regulations)

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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
SEMESTER 7									
19M701	Finite Element Analysis	3	0	0	3	50	50	100	PC
19____	Open Elective II	3	0	0	3	50	50	100	OE
19M____	Professional Elective - I	3	0	0	3	50	50	100	PE
19M____	Professional Elective - II	3	0	0	3	50	50	100	PE
19M____	Professional Elective III	3	0	0	3	50	50	100	PE
19M____	Professional Elective - IV	3	0	0	3	50	50	100	PE
19M710	Finite Element Analysis Laboratory	0	0	2	1	50	50	100	PC
19M720	Project Work - I	0	0	4	2	50	50	100	EEC
Total 24 periods		18	0	6	21	400	400	800	
SEMESTER 8									
19M____	Professional Elective V	3	0	0	3	50	50	100	PE
19M____	Professional Elective VI	3	0	0	3	50	50	100	PE
19M820	Project Work II	0	0	8	4	50	50	100	EEC
Total 14 periods		6	0	8	10	150	150	300	

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PROFESSIONAL ELECTIVES

Design Stream

- 19M001 Geometric Modeling
- 19M002 Advanced Strength of Materials
- 19M003 Advanced Finite Element Analysis
- 19M004 Failure Analysis and Design
- 19M005 Vibration and Noise Engineering
- 19M006 Mechanical Design of CNC Machine Tools
- 19M007 Theory of Elasticity and Plasticity
- 19M008 Mechanics of Composite Materials
- 19M009 Introduction to Aircraft Systems
- 19M010 System Modeling and Control
- 19M011 Foundation Skills in Integrated Product Development
- 19M012 Design of Automotive Systems
- 19M013 Automobile Engineering

Manufacturing Stream

- 19M026 Manufacture and Inspection of Gears
- 19M027 Pneumatic and Hydraulic Systems
- 19M028 Non-Traditional Machining
- 19M029 Additive Manufacturing
- 19M030 Flexible Manufacturing Systems
- 19M031 Artificial Intelligence and Deep Learning
- 19M032 Solid State Joining Processes
- 19M033 Internet of Things for Mechanical Applications
- 19M034 Production Tooling

Industrial Engineering Stream

- 19M051 Lean Manufacturing
- 19M052 Supply Chain Management
- 19M053 Quality Engineering
- 19M054 Engineering Economics
- 19M055 Enterprise Resource Planning
- 19M056 Six Sigma in Manufacture and Service
- 19M057 Statistical Process Analysis and Optimization
- 19M058 Value Analysis and Value Engineering

Thermal Stream

- 19M076 Computational Fluid Dynamics
- 19M077 Refrigeration and Air Conditioning
- 19M078 Renewable Energy
- 19M079 Solar Energy Conversion Systems
- 19M080 Energy Conservation and Management
- 19M081 Advanced Heat and Mass Transfer
- 19M082 Energy and Climate Change
- 19M083 Power Plant Engineering
- 19M084 Advanced Fluid Dynamics

ONE-CREDIT COURSES

MECHANICAL ENGINEERING

- 19MF01 Simulators for Integrated Products
- 19MF02 Corrosion Science and Engineering
- 19MF03 Non-Destructive Testing of Aircraft Structures
- 19MF04 Cooling of Electronic Equipment
- 19MF05 Experimental Methods in Thermal and Fluid Sciences
- 19MF06 Challenges in Implementing Lean Manufacturing
- 19MF07 Process Engineering and Costing
- 19MF08 Applications of Value Engineering
- 19MF09 Pressure Vessel and Piping
- 19MF10 Design Validation and Qualification: Testing and Evaluation
- 19MF11 High Temperature Materials for Energy Applications
- 19MF12 Nanotechnology for Clean Energy Applications

ENGLISH

- 19GF01 Interpersonal and Organizational Communication
- 19GF02 Human Values through Literature

HUMANITIES

- 19OFA1 Export – Import Practices
- 19OFA2 Insurance - Concepts and Practices
- 19OFA3 Public Finance
- 19OFA4 Security Analysis and Portfolio Management
- 19OFA5 Social Entrepreneurship

LANGUAGE ELECTIVES

- 19G001 Communication Skills for Engineers
- 19G002 German- Level A1.1
- 19G003 French Language Level 1
- 19G004 Basic Japanese

Summary of Credit Distribution

BE MECHANICAL ENGINEERING										
S. No	Course Category	Credits Per Semester								Total Credits
		1	2	3	4	5	6	7	8	
1	HS	3	2	3	0	4	0	0	0	12
2	BS	12	8	3	3	0	0	0	0	26
3	ES	4	8	4	7	0	0	0	0	23
4	PC	0	3	12	13	18	17	4	0	67
5	PE	0	0	0	0	0	0	12	6	18
6	OE	0	0	0	0	0	3	3	0	6
7	EEC	0	0+2 [£]	0	1	1	3	2	4	13
8	MC	-	-	-	-	-	-	-	-	-
	TOTAL	19	21+2[£]	22	24	23	23	21	10	165

£ Summer Term Course(s)

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