

**COURSE STRUCTURE
AND
DETAILED SYLLABUS**

R19

**MECHANICAL
ENGINEERING**

For

B.TECH. FOUR YEAR DEGREE COURSE

(Applicable for the students admitted into Academic Year 2019-20)

(I – IV Years Syllabus)



RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES

Basar, Nirmal, Telangana - 504107

COURSE STRUCTURE (R19) FOR B.TECH.(REGULAR)

**Applicable for the students of B.Tech. (Regular) from the Academic Year 2019-20
and onwards**

Course code and Definition:

Course Category	Definitions
BSC	Basic Science Courses
ESC	Engineering Science Courses
HSMC	Humanities and Social Sciences including Management Courses
PCC	Professional core courses
PEC	Professional Elective Courses
OEC	Open Elective Courses
LC	Laboratory Courses
MC	Mandatory Courses
SI	Summer Industry Internship
PROJ	Project

L : Lecture hours per week

T: Tutorial hours per week

P: Practical hours per week

C: Credits per subject

B.Tech 1st Year

Semester I						
Subject Code	Subject	SSN	L	T	P	C
MA1101	Linear Algebra and Calculus	BSC	3	1	0	4
PH1103	Engineering Physics	BSC	3	1	0	4
ME1101	Engineering Drawing	ESC	1	0	4	3
EE1101	Basic Electrical Engineering	ESC	3	1	0	4
HS1101	English	HSMC	2	0	0	2
PH1603	Engineering Physics Lab	BSC	0	0	2	1
EE1701	Basic Electrical Engineering Lab	ESC	0	0	2	1
HS1701	English Lab	HSMC	0	0	2	1
ME1701	Elements of Mechanical Engineering	ESC	0	0	2	1
Total			12	3	12	21

Semester II						
Subject Code	Subject	SSN	L	T	P	C
MA1201	Differential Equations and Vector Calculus	BSC	3	1	0	4
CY1202	Engineering Chemistry	BSC	3	1	0	4
ME1201	Engineering Mechanics	ESC	3	1	0	4
CS1201	Programming for Problem Solving	ESC	3	0	0	3
ME1202	Engineering Workshop	ESC	2	0	4	4
ME1801	Fuels and Lubricants Lab	BSC	0	0	2	1
CS1801	Programming for Problem Solving Lab	ESC	0	0	4	2
BM0005	Constitution of India		2	0	0	0
Total			16	3	10	22

B.Tech 2nd Year

Semester III						
Subject Code	Subject	SSN	L	T	P	C
MA2106	Partial Differential Equations	BSC	3	1	0	4
EC2104	Basic Electronics Engineering	ESC	3	0	0	3
ME2101	Strength of Materials	PCC	3	1	0	4
ME2102	Thermodynamics	PCC	3	1	0	4
ME2103	Materials Engineering	PCC	3	0	0	3
ME2701	Strength of Materials Lab	PCC	0	0	2	1
ME2702	Materials Engineering Lab	PCC	0	0	2	1
HS2101	Essence of Indian Traditional Knowledge		2	0	0	0
Total			17	3	4	20

Semester IV						
Subject Code	Subject	SSN	L	T	P	C
ME2201	Fluid Mechanics and Hydraulic Machines	PCC	3	1	0	4
ME2202	Instrumentation and Control	PCC	3	1	0	4
ME2203	Manufacturing Process	PCC	3	1	0	4
ME2204	Kinematics of Machinery	PCC	3	1	0	4
ME2205	Metrology and Machine Tools	PCC	3	0	0	3
ME2801	Fluid Mechanics & Hydraulic Machinery Lab	PCC	0	0	2	1
ME2802	Metrology and Instrumentation Lab	PCC	0	0	2	1
ME2803	Manufacturing Process Lab	PCC	0	0	2	1
Total			17	3	6	21

B.Tech 3rd Year

Semester V						
Subject Code	Subject	SSN	L	T	P	C
ME3101	Applied Thermodynamics	PCC	3	1	0	4
ME3102	Dynamics of Machinery	PCC	3	1	0	4
ME3103	Design of Machine Members	PCC	3	1	0	4
ME31xx	Professional Elective-1	PEC	3	0	0	3
ME31xx	Professional Elective-2	PEC	3	0	0	3
ME3701	Applied Thermodynamics Lab	PCC	0	0	2	1
ME3702	Theory of Machines Lab	PCC	0	0	2	1
ME3703	Computer Aided Machine Drawing Practice	PCC	0	0	3	1.5
ME3001	Mini Project-I		0	0	2	1
Total			15	3	9	22.5

Semester VI						
Subject Code	Subject	SSN	L	T	P	C
ME3201	Heat Transfer	PCC	3	1	0	4
ME3202	Design of Transmission Elements	PCC	3	0	0	3
ME32xx	Professional Elective-3	PEC	3	0	0	3
ME32xx	Professional Elective-4	PEC	3	0	0	3
BM3001	Managerial Economics and Financial Analysis	HSMC	3	0	0	3
ME3801	Heat Transfer Lab	PCC	0	0	2	1
ME3802	Computer Aided Engineering Lab	PCC	0	0	3	1.5
BS3201	Environmental Science		3	0	0	0
ME3002	Project – II		0	0	6	3
Total			17	1	11	21.5

B.Tech 4th Year

Semester VII						
Subject Code	Subject	SSN	L	T	P	C
ME4101	Automation in Manufacturing	PCC	3	0	0	3
ME4102	Industrial Engineering	HSMC	3	0	0	3
ME41xx	Professional Elective – 5	PEC	3	0	0	3
XXxxxx	Open Elective – 1	OEC	3	0	0	3
XXxxxx	Open Elective – 2	OEC	3	0	0	3
ME4701	Automation in Manufacturing Lab	PCC	0	0	2	1
ME4001	Project – III		0	0	10	5
Total			15	0	12	21

Semester VIII						
Subject Code	Subject	SSN	L	T	P	C
ME42xx	Professional Elective – 6	PEC	3	0	0	3
XXxxxx	Open Elective – 3	OEC	3	0	0	3
ME4801	Comprehensive Viva	PCC	0	0	0	1
ME4002	Project – IV		0	0	12	6
Total			6	0	12	13

List of Professional Electives

Sl. No	Code	Subject	Semester	L-T-P	Credits
3rd Year Sem1					
1	ME3111	Internal Combustion Engines	V	3-0-0	3
2	ME3112	Non Traditional Manufacturing Process	V	3-0-0	3
3	ME3113	Power Plant Engineering	V	3-0-0	3
4	ME3114	Powder Metallurgy	V	3-0-0	3
5	ME3115	Mechanics of Composite Materials	V	3-0-0	3
6	ME3116	Advanced Mechanics of Solids	V	3-0-0	3
7	ME3117	Mechanical Behavior of Materials	V	3-0-0	3
8	ME3118	Gas Dynamics and Jet Propulsion	V	3-0-0	3
9	ME3119	Bio-Medical Engineering	V	3-0-0	3
3rd Year Sem2					
10	ME3211	Computer Aided Design	VI	3-0-0	3
11	ME3212	Theory of Elasticity	VI	3-0-0	3
12	ME3213	Production Planning & Control	VI	3-0-0	3
13	ME3214	Advanced Fluid Mechanics	VI	3-0-0	3
14	ME3215	Mechanical Vibrations	VI	3-0-0	3
15	ME3216	Micro and Nano Machining	VI	3-0-0	3
16	ME3217	Computational Fluid Dynamics	VI	3-0-0	3
17	ME3218	Conduction and Radiation Heat Transfer	VI	3-0-0	3
4th Year Sem1					
18	ME4111	Refrigeration and Air Conditioning	VII	3-0-0	3
19	ME4112	Tribology	VII	3-0-0	3
20	ME4113	Mechanics of Sheet Metal Forming	VII	3-0-0	3
21	ME4114	Convective Heat And Mass Transfer	VII	3-0-0	3
22	ME4115	Advanced Engineering Thermodynamics	VII	3-0-0	3
23	ME4116	Theory of Combustion and Emissions	VII	3-0-0	3
24	ME4117	Mechanical Handling Systems And Equipments	VII	3-0-0	3
25	ME4118	Phase Transformation and Heat Treatment of Materials	VII	3-0-0	3
26	ME4119	Technology of Surface Coating	VII	3-0-0	3
27	ME4120	Fatigue, Creep and Fracture	VII	3-0-0	3
4th Year Sem2					
28	ME4211	Welding Technology	VIII	3-0-0	3
29	ME4112	Laser Applications in Manufacturing	VIII	3-0-0	3
30	ME4213	Introduction to MEMS	VIII	3-0-0	3
31	ME4214	Experimental Stress Analysis	VIII	3-0-0	3
32	ME4215	Design Optimization	VIII	3-0-0	3

List of Open Electives

Sl. No	Subject Code	Subject	L-T-P	Credits
1	ME4121	Product Design and Development	3-0-0	3
2	ME4122	Finite Element Analysis	3-0-0	3
3	ME4123	Automobile Engineering	3-0-0	3
4	ME4124	Rapid Manufacturing Processes	3-0-0	3
5	ME4221	Fundamentals of Mechatronics Systems	3-0-0	3
6	ME4222	Alternative Sources of Energy	3-0-0	3
7	ME4223	Non Destructive Testing	3-0-0	3

Semester Wise Credits								
Semester	HSMC(12)	BSC(25)	ESC(24)	PCC(48/54.5)	PEC(18)	OEC(18)	Project Work(15)	Total
I Semester	3	9	9					21
II Semester		9	13					22
III Semester		4	3	13				20
IV Semester				21				21
V Semester				15.5	6		1	22.5
VI Semester	3			9.5	6		3	21.5
VII Semester	3			4	3	6	5	21
VIII Semester				1	3	3	6	13
Total(RGUKT)	9	22	25	64	18	9	15	162
%	6	14	15	40	11	6	9	
AICTE(Model Curriculum)	6	30	24	54.5	18	12	15	159.5
%	4	19	15	34	11	8	9	