

B.TECH. PROGRAMME

MECHANICAL ENGINEERING

CURRICULUM

**for 2010 admissions
onwards**

GENERAL INFORMATION

In this section, category-wise distribution of credits for B.Tech (Mechanical Engineering) program for all semesters are given, followed by curriculum.

Code Numbering

Each course is assigned a code number consisting of two letters followed by three digits. The two-letter code indicates the department offering the course. The digit code indicates the level of the course (100,200,300,400 etc..). The odd number indicates courses offered in odd semesters and even number indicates courses offered in even semesters. When a subject is offered in both even and odd semesters, the digit code ends with a zero. Generally Elective courses begin with * 51 and lab courses begin with *90. Courses in humanity subjects (except language) are offered by any department where expertises are available.

ABBREVIATIONS

Curriculum

L	-	Lecture	H	-	Humanities
T	-	Tutorial	S	-	Science
P	-	Practical	M	-	Mathematics
Cr	-	Credit	G	-	General Engg.
Cat	-	Category	C	-	Core Engg.
ES	-	Exam Slot	Pr	-	Project

Departments

AES	-	Aerospace Engineering
CHE	-	Chemical Engineering
CHY	-	Chemistry
CSE	-	Computer Science and Engineering
CVL	-	Civil Engineering
ECE	-	Electronics and Communication Engineering
EEE	-	Electrical and Electronics Engineering
EIE	-	Electronics and Instrumentation Engineering
HUM	-	Humanities and Languages
MAT	-	Mathematics
MEC	-	Mechanical Engineering
PHY	-	Physics

B Tech Programme
MECHANICAL ENGINEERING
REVISED CURRICULUM
(2010 admissions onwards)

SEMESTER I:

Cat.	Code	Course Title	L-T-P	Cr	ES
H	ENG111	Communicative English	2 0 2	3	G
S	PHY100/ CHY100	Physics/ Chemistry	3 0 0	3	B
M	MAT111	Calculus, Matrix Algebra and Ordinary Differential Equations	3 1 0	4	A
G	EEE100	Electrical Engineering	3 0 0	3	C
G	MEC100/ CSE100	Engineering Mechanics/ Computer Programming	3 1 0 3 0 0	4 3	D
G	MEC181	Engineering Drawing	1 0 3	2	-
S	PHY181/ CHY181	Physics Lab./ Chemistry Lab.	0 0 3	1	-
G	MEC180/ EEE180	Workshop A/ Workshop B	1 0 2	2	-
G	CSE180	Computer Programming Lab.	0 0 3	1	-
H	CUL101	Cultural Education I	2 0 0	2	H

H = 5 S = 4 M = 4 G = 11**Total = 24****SEMESTER II:**

Cat.	Code	Course Title	L-T-P	Cr	ES
H	ENG112	Technical Communication	2 0 2	3	G
S	CHY100/ PHY100	Chemistry/ Physics	3 0 0	3	B
M	MAT112	Vector Calculus, Fourier Series and Partial Differential Equations	3 1 0	4	A
G	ECE100	Electronics Engineering	3 0 0	3	C
G	CSE100/ MEC100	Computer Programming/ Engineering Mechanics	3 0 0 3 1 0	3 4	D
G	MEC182	Computer Aided Drawing	1 0 3	2	-
S	CHY181/ PHY181	Chemistry Lab./ Physics Lab.	0 0 3	1	-
G	EEE180/ MEC180	Workshop B/ Workshop A	1 0 2	2	-
G	CSE180	Computer Programming Lab.	0 0 3	1	-
H	CUL102	Cultural Education II	2 0 0	2	H

H = 5 S = 4 M = 4 G = 11**Total = 24**

III Semester

Cat.	Code	Course Title	L-T-P	Cr	ES
M	MAT211	Integral Transforms and Complex Analysis	3 1 0	4	A
C	MEC200	Metallurgy and Materials Science	4 0 0	4	D
C	MEC210	Mechanics of Solids	3 1 0	4	E
C	MEC220	Engineering Thermodynamics	3 1 0	4	C
S		Science Elective I	3 0 0	3	B
H		Humanities Elective I	1 0 2	2	H
C	MEC290	Machine Drawing	1 1 3	3	-
C	EEE290	Electrical Engineering and Electronics Lab.	0 0 3	1	-

M = 4 H = 2 S = 3 C = 16**Total = 25****IV Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
M	MAT212	Mathematical Statistics and Numerical Methods	3 1 0	4	A
C	MEC206	Kinematics of Machinery	3 1 0	4	B
C	MEC222	Fluid Mechanics and Machinery	3 1 0	4	C
C	MEC230	Manufacturing Technology I	4 0 0	4	D
H		Humanities Elective II	1 0 2	2	H
C	MEC291	Metallurgy and Materials Testing Lab.	0 1 3	2	-
C	MEC292	Manufacturing Process Lab. I	0 1 3	2	-
H	SSK111	SOFT SKILLS I	0 0 3	1	-

M = 4 H = 3 C = 16**Total = 23****V Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
C	MEC301	Heat Power Engineering	3 1 0	4	B
C	MEC302	Dynamics of Machinery	3 0 0	3	C
C	MEC310	Design of Machine Elements I	3 1 0	4	D
C	MEC330	Manufacturing Technology II	4 0 0	4	E
C		Elective I	3 0 0	3	F
C	MEC390	a) Thermal Engineering Lab. b) Fluid Mechanics Lab.	0 1 3	2	-
C	MEC391	Manufacturing Process Lab. II	0 1 3	2	-
H	SSK112	SOFT SKILLS II	0 0 3	1	-

H = 1 C = 22**Total = 23****VI Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
C	MEC311	Introduction to Finite Element Method	3 1 0	4	C
C	MEC312	Design of Machine Elements II	3 1 0	4	D
C	MEC320	Heat Transfer	3 1 0	4	E
C		Elective II	3 0 0	3	F
S		Science Elective II	3 0 0	3	B
C	MEC392	a) Heat Transfer b) Dynamics Lab.	0 1 3	2	-
C	MEC393	a) Fluid Power Lab. b) Fluid Machinery Lab	0 1 3	2	-
H	SSK113	SOFT SKILLS III	0 0 3	1	-

H = 1 S = 3 C = 19**Total = 23**

VII Semester

Cat.	Code	Course Title	L-T-P	Cr	ES
C	MEC400	Instrumentation and Control Systems	3 0 0	3	B
C	MEC401	Operations Research	3 0 0	3	D
C	MEC402	Gas Dynamics and Jet Propulsion	3 1 0	4	E
C		Elective III	3 0 0	3	F
H	MNG400	Principles of Management	3 0 0	3	C
C	MEC491	CAE / CAM Lab.	0 0 3	1	-
C	MEC492	a) Instrumentation and Control Lab. b) Metrology Lab.	0 1 3	2	-
Pr	MEC497	Seminar	0 0 3	1	-

H = 3 C = 16 Pr = 1**Total = 20****VIII Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
H	ENV200	Environmental Studies	3 1 0	4	D
H		Management Elective	3 0 0	3	C
Pr	MEC499	Project		10	-

H = 7 Pr = 10**Total = 17****Total credits for the programme = 179****ELECTIVES****DESIGN STREAM**

MEC350	Theory of Elasticity
MEC351	Automotive Technology
MEC352	Automotive Chassis Design
MEC353	Optimization Techniques in Engineering
MEC354	Condition Monitoring and Diagnostic Maintenance
MEC355	Modeling and Simulation of Engineering Systems
MEC356	Materials Selection in Mechanical Design
MEC357	Aircraft Systems and Engineering
MEC358	Mechatronics
MEC359	Micro Electro Mechanical Systems
MEC360	Tool Engineering Design
MEC361	Fracture Mechanics
MEC362	Computational Methods in Engineering
MEC363	Design for Manufacture and Assembly
MEC364	Pressure Vessel Design
MEC365	Theory of Vibrations

THERMAL STREAM

MEC366	Refrigeration and Air-conditioning
MEC367	Design of Thermal Systems
MEC368	Internal Combustion Engines and Pollution control
MEC369	Turbomachinery
MEC370	Fluid Power Drives and Controls
MEC371	Renewable Sources of Energy
MEC372	Advanced Fluid Mechanics
MEC373	Combustion Engineering
MEC374	Computational Fluid Dynamics
MEC375	Automotive Electronics
MEC376	Fundamentals of Nuclear Engineering
MEC377	Power Plant Engineering

MANUFACTURING STREAM

MEC450	Metal Forming Technology
MEC451	Composite Materials and Processing
MEC452	Modern Practices in Product Design and Manufacture
MEC453	Non-Destructive Testing
MEC454	Industrial Robotics Systems
MEC455	Advanced Casting Technology
MEC456	Micro-manufacturing
MEC457	Advanced Welding Technology
MEC458	Advanced Manufacturing Processes
MEC459	Advanced Materials and Processes
MEC460	Advanced Metrology and Sensing Systems
MEC461	Quality Control and Reliability Engineering
MEC462	Simulation Modeling of Manufacturing

MANAGEMENT ELECTIVES

MEC480	Operations Management
MEC481	Total Quality Management
MEC482	Financial Management
MEC483	Managerial Statistics
MEC484	Project Management
MEC485	Supply Chain Management
MEC486	Engineering Economic Analysis
MEC487	Industrial Engineering
MEC488	Marketing Management
MEC489	Lean Manufacturing
MEC490	Enterprise Management

SCIENCE ELECTIVES (3 0 0 3)

CHY250	Catalytic Chemistry
CHY251	Chemistry of Engineering Materials
CHY252	Chemistry of Advanced Materials
CHY253	Advanced Polymer Chemistry
CHY254	Polymers for Electronics
CHY255	Chemistry of Toxicology
CHY256	Chemistry of Nanomaterials
CHY257	Biomaterials Science
CHY258	Environmental Chemistry
CHY259	Instrumental Methods of Analysis
CHY260	Organic Synthesis and Stereochemistry
CHY261	Unit Processes in Organic Synthesis
CHY262	Medicinal Organic Chemistry
CHY263	Organic Reaction Mechanisms
CHY264	Green Chemistry and Technology
CHY270	Corrosion Science
CHY271	Electrochemical Energy Systems and Processes
CHY272	Computational Chemistry and Molecular Modelling
CHY273	Fuel Cells – Principles and Applications
CHY274	Solid State Chemistry
PHY250	Electrical Engineering Materials
PHY251	Optoelectronic Devices
PHY252	Physics of Semiconductor Devices
PHY253	Electromagnetic Fields and Waves
PHY254	Microelectronic Fabrication
PHY255	Electronic Materials Science
PHY260	Physics of Lasers and Applications
PHY261	Lasers in Material Processing
PHY262	Non-linear Dynamics
PHY263	Concepts of Nanophysics and Nanotechnology
PHY264	Thin Film Physics
PHY270	Medical Physics
PHY271	Advanced Classical Dynamics
PHY272	Quantum Physics and its Applications
PHY273	Computational Physics
PHY274	Astrophysics

HUMANITIES ELECTIVES (1 0 2 2)

CUL151	Achieving Excellence in Life - An Indian Perspective
CUL152	Exploring Science and Technology in Ancient India
CUL153	Excellence in Daily Life
CUL154	Yoga Psychology
ENG250	Professional Communication
ENG251	Business Communication
ENG252	Indian Thought in English
ENG253	Insights into Life through English Literature
FRE201	Proficiency in French Language (Lower)
FRE202	Proficiency in French Language (Higher)
GER201	Proficiency in German Language (Lower)
GER202	Proficiency in German Language (Higher)
GER211	German for Beginners I
GER212	German for Beginners II
HUM250	Indian Classics for the Twenty-first Century
HUM251	Introduction to India Studies
HUM252	Glimpses of Eternal India
HUM253	Glimpses into the Indian Mind - The Growth of Modern India
HUM254	Glimpses of Indian Economy and Polity
HUM255	Science and Society – An Indian Perspective
JAP201	Proficiency in Japanese Language (Lower)
JAP202	Proficiency in Japanese Language (Higher)