

# **MECHANICAL ENGINEERING**

## COURSES/CREDIT DISTRIBUTION OF MECHANICAL ENGINEERING DEPARTMENT

### I Basic Science Courses (BSC)

Semester I					
Course code	Course name	L	T	P	Credits
	Mechanics	3	1	0	4
Semester II					
Course code	Course name	L	T	P	Credits
MAN 106	Partial Differential Equation & Special functions	3	1	0	4
CHN 101	Applied Chemistry	3	1	0	4

### II Engineering Science Courses (ESC)

Semester II					
Course code	Course name	L	T	P	Credits
ESC 206	Electrical Science (ESC-I)	3	0	2	4
Semester III					
Course code	Course name	L	T	P	Credits
ESC 203	Material Science (ESC-2)	3	1	0	4
Semester IV					
ESC 102	Fluid Mechanics (ESC-3)	3	1	0	4

### III Departmental Core Courses (DCC)

Course code	Course name	L	T	P	Credits
MEN 101	Introduction to Mechanical Engineering	2	0	0	2
MEN 102	Elements of Manufacturing Processes	3	0	3	4
MEN 103	Geometrical and Machine Drawing	2	0	4	4
MEN 201	Elements of Thermodynamics	3	1	0	4
MEN 202	Kinematics of Machines	3	1	0	4
MEN 203	Manufacturing Processes	3	1/2	2/2	4
MEN 204	Strength of Material & Basic Concepts of Design	3	0	2	4
MEN 205	Technical Communication	0	0	3	2
MEN 206	Engineering Analysis & Design	3	1	0	4
MEN 207	Dynamics of Machines	3	0	2	4
MEN 208	Mechanics of Materials	3	1	0	4
MEN 209	Applied Thermodynamics	3	0	2	4
MEN 210	Refrigeration & Air Conditioning	3	1	0	4
MEN 301	Production Engineering	3	1	0	4
MEN 302	Heat Transfer	3	0	2	4
MEN 303	Design of Mechanical Systems	3	1	0	4
MEN 304	Mechanical Vibrations	3	1/2	2/2	4
MEN 305	Computer Aided Design & Manufacturing	3	1	0	4

### IV Departmental Elective courses (DEC)

#### Group-I (Opt any One)

Course code	Course name	L	T	P	Credits
MEN 401	Production & Operation Management	3	1	0	4
MEN 402	Maintenance Engineering	3	1	0	4

#### Group-2\* (Opt any Two)

Course code	Course name	L	T	P	Credits
MEN 411	Energy Conversion	3	1	0	4
MEN 412	Tribology & Lubrication	3	1	0	4
MEN 413	Work Study & Ergonomics	3	1	0	4
MEN 414	Power Plant Engineering	3	1	0	4

MEN 415	Industrial Automation and Robotics	3	1	0	4
MEN 416	Mechanical Measurement & Metrology	3	1/2	2/2	4
MEN 417	Automobile Engineering	3	1	0	4

\* Offering of discipline specialization under Group 2 of Elective Course is optional.

#### V. Open Elective Courses (OEC)

Course Code	Course Name	L	T	P	Credits
MEN 461	Quality Engineering & Management	3	1	0	4
MEN 462	Reliability & Maintenance Management	3	1	0	4
MEN 463	Operations Research	3	1	0	4
MEN 464	Finite Element Method	3	1	0	4
MEN 465	Smart Material and Devices	3	1	0	4

#### VI. Departmental Honors Courses (DHC)

Course code	Course name	L	T	P	Credits
MEN 421	Fracture Mechanics	3	1	0	4
MEN 422	Micro and Nano Scale Thermal Engineering	3	1/2	2/2	4
MEN 423	Advanced and Hybrid Manufacturing	3	0	2	4
MEN 424	Computational Fluid Dynamics	3	1	0	4
MEN 425	Internal Combustion Engines	3	1	0	4

#### VII. Minor Specialization Courses (MSC)

Course code	Course name	L	T	P	Credits
MEN 431	Mechanical Engineering Drawing & Design	3	1	0	4
MEN 209	Applied Thermodynamics	3	0	2	4
MEN 432	Manufacturing Science & Processes	3	0	2	4
MEN 210	Refrigeration & Air Conditioning	3	1	0	4
MEN 417	Automobile Engineering	3	1	0	4

**TEACHING SCHEME FOR B.E. MECHANICAL ENGINEERING**  
**First Year**

**Semester-I**

Course Code	Subject	Credit	Category
MAN101	Mathematics -I	4	BSC
MEN101	Introduction to Mechanical Engg.	2	DCC
CSN104/105	Computer Programming (Basic/Advance)	4	ESC
PYN105	Mechanics	4	BSC
HSS101	Ethics and Self-Awareness	2	HSSC
GSC101	Introduction to Environmental Science	3	GSC
	<b>Total</b>	<b>19</b>	

**Semester-II**

Course Code	Subject	Credit	Category
MAN106	Partial Differential Equation & Special functions	4	BSC
HSS102/103	Communication Skills (Basic/Advanced)	2	HSSC
CHN101	Applied Chemistry	4	BSC
ESC 102	Fluid Mechanics	4	ESC
MEN 102	Elements of Manufacturing Processes	4	DCC
MEN 103	Geometrical and Machine Drawing	4	DCC
	<b>Total</b>	<b>22</b>	

\*To be conducted during summer vacation. Evaluation marks to be carried over to next semester

**Second Year**

**Semester-I**

Course Code	Subject	Credit	Category
ESC 203	Materials Science	4	ESC
MEN 201	Elements of Thermodynamics	4	DCC
MEN 202	Kinematics of Machines	4	DCC
MEN203	Manufacturing Processes	4	DCC
MEN 204	Strength of Material & Basic Concepts of Design	4	DCC
	Economics	3	HSSMEC
MEN 205	Technical Communication	2	DCC
	<b>Total</b>	<b>25</b>	

**Semester-II**

Course Code	Subject	Credit	Category
MEN 206	Engineering Analysis and Design	4	DCC
MEN 207	Dynamics of Machines	4	ESC
MEN 208	Mechanics of Materials	4	DCC
MEN 209	Applied Thermodynamics	4	DCC
MEN 210	Refrigeration & Air Conditioning	4	DCC
ESC 206	Basics of Electrical Science	4	DCC
MEN 221	Educational Tour	Non-credit	DCC
	<b>Total</b>	<b>24</b>	

### Third Year

#### Semester-I

Course Code	Subject	Credit	Category
MEN 301	Production Engineering	4	DCC
MEN 302	Heat Transfer	4	DCC
MEN 303	Design of Mechanical Systems	4	DCC
MEN 304	Mechanical Vibrations	4	DCC
MEN 305	Computer Aided Design Drafting & Manufacturing	4	DCC
MEN 321	Minor Project	2	DCC
	<b>Total</b>	<b>22</b>	

#### Semester-II

Course Code	Subject	Credit	Category
MEN 331	Semester Internship*	20	DCC
	<b>Total</b>	<b>20</b>	

\*Internship Seminar presentations may be held a week before the date of Registration in Semester-I of Fourth Year

### Fourth Year

#### Semester-I

Course Code	Subject	Credit	Category
	Open Elective	4	GSEC/MEC
	Department Elective course-I	4	DEC
	Department Elective course-II	4	DEC
MEN 441	Major Project	2	DCC
MEN 421	Fracture Mechanics	4	DHC
MEN 431	Mechanical Engineering Drawing and Design	4	MSC
MEN 422	Micro and Nano scale thermal Engineering	4	DHC
MEN 209	Applied Thermodynamics	4	MSC
	<b>Total</b>	<b>14/22</b>	

#### Semester-II

Course Code	Subject	Credit	Category
	Business Environment & Business Laws	3	HSSMEC
	Department Elective course-III	4	DEC
MEN 451	Major Project	6	DCC
MEN 423	Advanced and Hybrid Manufacturing	4	DHC
MEN 432	Manufacturing Science & Processes	4	MSC
MEN 424	Computational Fluid Dynamics	4	DHC
MEN 210	Refrigeration & Air Conditioning	4	MSC
MEN 425	Internal Combustion Engines	4	DHC
MEN 417	Automobile Engineering	4	MSC
	<b>Total</b>	<b>13/25</b>	

**COURSES OFFERED BY APPLIED SCIENCE DEPARTMENT TO ALL DEPARTMENTS**

**I. Departmental Elective courses (DEC)**

**Group-I**

Course code	Course name	L	T	P	Credits
CHN 401	Modern Instrumental Methods Of Chemical Analysis	3	1	0	4
PYN 401	Advanced Physics	3	1	0	4
PYN 402	Crystal Physics	3	1	0	4
PYN 403	Solid State Physics	3	1	0	4
MAN 401	Operation Research	3	1	0	4
MAN 402	Optimization Techniques	3	1	0	4

**II. Minor Specialization Courses For 7<sup>th</sup> Semester**

Course Code	Course Name	L	T	P	Credits
<b>Humanities Section</b>					
HSM 401	Principles of Management	2	2	0	4
HSM 402	Business Environment and Business Laws	2	2	0	4
HSM 431	Managing Innovation and Change	2	2	0	4
<b>Chemistry Section</b>					
CHN 431	Inorganic Chemistry	3	0	3	4
CHN 432	Organic Chemistry	3	0	3	4
<b>Physics Section</b>					
PYN 431	Quantum Mechanics	3	1	0	4
PYN 432	Statistical Physics	3	1	0	4
<b>Mathematics Section</b>					
MAN 431	Algebra	3	1	0	4
MAN 432	Number Theory	3	1	0	4

**Minor Specialization Courses For 8<sup>th</sup> Semester**

Course Code	Course Name	L	T	P	Credits
<b>Humanities Section</b>					
HSM 404	Financial Management	2	2	0	4
HSM 405	Marketing Management	2	2	0	4
HSM 406	Human Resource Management	2	2	0	4
HSM 432	Business Research	2	2	0	4
<b>Chemistry Section</b>					
CHN 433	Physical Chemistry / Analytical Chemistry	3	1	0	4
CHN 434	Environmental Chemistry	3	1	0	4
CHN 435	Recent Advances in Chemical Sciences	3	1	0	4
<b>Physics Section</b>					
PYN 433	Nuclear Physics	3	1	0	4
PYN 434	Experimental Nuclear Physics	3	1	0	4
PYN 435	X-Ray Crystallography	3	1	0	4
<b>Mathematics Section</b>					
MAN 433	Fourier Series and Integral Transforms	3	1	0	4
MAN 434	Calculus of Variations	3	1	0	4
MAN 435	Algebraic Coding Theory	3	1	0	4