

REVISED CURRICULUM

FOR

UNDERGRADUATE PROGRAMME

To be adopted from the Academic Year 2006-07



**DEPARTMENT OF MECHANICAL
ENGINEERING**

I . I . T . KHARAGPUR

4 - YEAR B.Tech (HONS.) IN MECHANICAL ENGINEERING

Course curriculum upto second semester is common with regular B.Tech (Hons.) in Mechanical Engineering

3rd SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME20603	Dynamics	3-1-0	4
2	D	ME20601	Fluid Mechanics	3-1-0	4
3	D	MA20003	Transform Calculus	3-0-0	3
4	D	HS20001	HSS Economics	3-1-0	4
5	B		Breadth - 1 (Professional or Basic Sc)	3-0-0	3
6	D	ME23601	Workshop Processes - II	1-0-3	3
7	D	EA19003	EAA - III	0-0-3	1
Total				16-3-6	22

4th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME20612	Thermodynamics	3-1-0	4
2	D	ME20606	Kinematics of Machines	3-1-0	4
3	D	ME29602	Mechanism Sessional	0-0-3	2
4	D	MA20005	Partial Differential Equations	3-0-0	3
5	D	EC21003	Basic Electronics	3-1-0	4
6	D	EC29003	Basic Electronics Lab.	0-0-3	2
7	B		Breadth - II (IT or Professional)	3-0-0	3
8	D	EA19004	EAA - IV	0-0-3	1
Total				15-3-9	23

5th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME30601	Mechanics of Solids	3-1-0	4
2	D	MT30001	Materials Engineering	3-0-0	3
3	D	ME30603	Heat Transfer	3-1-0	4
4	D	ME30605	Casting, Forming & Welding	3-1-0	4
5	D	ME39601	Casting, Forming & Welding Lab	0-0-3	2
6	D	ME39603	Strength of Materials Lab	0-0-3	2
7	B		Breadth - III (IT or Professional)	3-0-0	3
Total				15-3-6	22

6th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME30606	Dynamics of Machines	3-0-0	3
2	D	ME30608	Applied Thermo-Fluids - I	3-0-0	3
3	D	ME30602	Design of Machine Elements	3-1-0	4
4	D	ME30604	Machine Tool & Machining	3-1-0	4
5	D	ME39606	Thermo-Fluid Lab - 1	0-0-3	2
6	D	ME39604	Machine Tool & Machining Lab	0-0-3	2
7	D	ME39602	Machine Design Practice	0-0-3	2
8	B		Breadth - IV (Professional or Management)	3-0-0	3
Total				15-2-9	23

7th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME40603	Applied Thermo-Fluids - II	3-1-0	4
2	D	ME40601	Systems & Control	3-1-0	4
3	D		Elective - 1	3-0-0	3
4	D	ME49601	Thermo-Fluids Lab - II	0-0-3	2
5	B		Breadth - V (Prof / HSS / Mgmt – Dept allowed) {Quality Design & Control}	3-0-0	3
6	D	ME47601	Project	0-0-6	4
7	D	ME48601	Industrial Training	0-0-0	2
Total				12-2-9	22

8th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D		Elective - II	3-0-0	3
2	D		Elective - III	3-0-0	3
3	D		Elective - IV	3-0-0	3
4	B		Breadth - VI (Prof / HSS – Dept allowed)	3-0-0	3
5	D	ME47602	Project	0-0-9	6
6	D	ME48602	Comprehensive Viva	0-0-0	2
Total				12-0-9	20

NOTE : **L = Lecture** **T = Tutorial** **P = Practical**

Credit Distribution:

Semester	1	2	3	4	5	6	7	8	Total
Depth	24	24	19	20	19	20	19	17	162
Breadth	00	00	03	03	03	03	03	03	018
Total Credits									180

REQUIREMENT FOR MINOR IN MECHANICAL ENGINEERING

Six subjects are to be chosen from the following three groups to earn a minor in Mechanical Engineering with at least one subject from each group.

GROUP - A

Sl. No.	Subject No.	Subject Name	L-T-P	Credit
1	ME30605	Casting, Forming & Welding	3-1-0	4
2	ME30604	Machine Tool & Machining	3-1-0	4
3	ME39601	Casting, Forming & Welding Lab	0-0-3	2

GROUP - B

Sl. No.	Subject No.	Subject Name	L-T-P	Credit
1	ME20601	Fluid Mechanics	3-1-0	4
2	ME20612	Thermodynamics	3-1-0	4
3	ME30603	Heat Transfer	3-1-0	4
4	ME30608	Applied Thermo-Fluids - I	3-0-0	3
5	ME40603	Applied Thermo-Fluids - II	3-1-0	4

GROUP - C

Sl. No.	Subject No.	Subject Name	L-T-P	Credit
1	ME20604	Dynamics	3-1-0	4
2	ME20606	Kinematics of Machines	3-1-0	4
3	ME30601	Mechanics of Solids	3-1-0	4
4	ME30606	Dynamics of Machines	3-0-0	3
5	ME30602	Design of Machine Elements	3-1-0	4
6	ME40601	Systems & Control	3-1-0	4

Elective List

Elective - I

7th Semester

Sl. No.	Subject No.	Subject Name	L-T-P
1	ME41601	Computer Graphics & Solids Modelling	3-0-0
2	MF41601	Soft Computing	3-0-0
3	ME60201	Advanced Fluid Mechanics	3-1-0
4	ME41609	Air Conditioning	3-0-0
5	ME41603	Vibration and Noise Control	3-0-0
6	ME41605	Simulation of Mechanical Systems	3-0-0
7	ME41613	Design Optimisation	3-0-0
8	ME41611	Mechanical Handling Systems & Equipments	3-0-0
9	ME41607	Composite Materials	3-0-0
10	ME41615	Tribology	3-0-0
11	IM31004	Management of Inventory Systems	3-0-0
12	IM31007	Production Planning & Control	3-1-0
13	IM21003	Operation Research - I	3-1-0
14	IM21001	Engineering Economy Costing & Accounting	3-1-0

Elective - II

8th Semester

Sl. No.	Subject No.	Subject Name	L-T-P
1	MF41602	Process Dynamics & Adaptive Control	3-0-0
2	MF41604	Metal Casting Technology	3-0-0
3	MF41606	Technology of Surface Coating	3-0-0
4	ME41620	Fluid Power Control	3-0-0
5	ME60207	Environmental Pollution & Abatement	3-0-0
6	ME60209	Nuclear Power Generation & Safety	3-0-0
7	ME41616	Micro-scale Fluid Flow & Heat Transfer	3-0-0
8	IM31006	Simulation	3-0-0

Elective - III

8th Semester

Sl. No.	Subject No.	Subject Name	L-T-P
1	MF41608	Welding Technology	3-0-0
2	MF41610	Non-destructive Evaluation & Imaging	3-0-0
3	MF30602	Robots and Computer-Controlled Machines	4-0-0
4	MF41612	Quantity Production Methods	3-0-0
5	ME41606	Finite Element Methods in Engineering	3-0-0
6	ME41608	Fatigue, Creep & Fracture	3-0-0
7	ME41610	Automobile Engineering	3-0-0
8	ME60206	Advanced Engineering Thermodynamics	3-0-0
9	ME60208	Solar Energy Technology	3-0-0
10	ME60210	Theory of Combustion & Emissions	3-0-0
11	IM21008	Work Systems Design	3-0-0

Elective - IV**8th Semester**

Sl. No.	Subject No.	Subject Name	L-T-P
1	MF41614	Machine Tool Engineering	3-0-0
2	MF41616	Laser Applications in Manufacturing	3-0-0
3	MF30604	Non-Traditional Manufacturing Processes	3-0-0
4	MF41618	Engineering Metrology	3-0-0
5	ME60212	Turbulent Flows	3-0-0
6	ME60214	Energy Conservation & Waste Heat Recovery	3-0-0
7	ME41618	Turbo Machinery	3-0-0
8	ME41612	Experimental Stress Analysis	3-0-0
9	ME41614	Modern Control Theory	3-0-0
10	ME60204	Computational Fluid Dynamics	3-0-0
11	IM21006	Operation Research - II	3-1-0

4 - YEAR B.Tech (HONS.) IN MANUFACTURING SCIENCE AND ENGINEERING

Course curriculum upto second semester is common with regular B.Tech (Hons.) in Manufacturing Science and Engineering

3rd SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME20603	Dynamics	3-1-0	4
2	D	ME23601	Workshop Processes - II	1-0-3	3
3	D	MA20003	Transform Calculus	3-0-0	3
4	D	HS20001	HSS Economics	3-1-0	4
5	D	IM21003	Operation Research - I	3-1-0	4
6	B		Breadth - 1 (Professional or Basic Sc)	3-0-0	3
7	D	EA19003	EAA - III	0-0-3	1
Total				16-3-6	22

4th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME20602	Thermo-Fluid Science	3-1-0	4
2	D	ME20610	Mechanisms & Machines	3-1-0	4
3	D	ME29602	Mechanism Sessional	0-0-3	2
4	D	MA20002	Probability & Statistics	3-0-0	3
5	D	EC21001	Basic Electronics	3-1-0	4
6	D	EC29001	Basic Electronics Lab.	0-0-3	2
7	B		Breadth - II (IT or Professional)	3-0-0	3
8	D	EA19004	EAA - IV	0-0-3	1
Total				15-3-9	23

5th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME30601	Mechanics of Solids	3-1-0	4
2	D	MT30001	Materials Engineering	3-0-0	3
3	D	ME30603	Heat Transfer	3-1-0	4
4	D	ME30605	Casting, Forming & Welding	3-1-0	4
5	D	ME39601	Casting, Forming & Welding Lab	0-0-3	2
6	D	ME39603	Strength of Materials Lab	0-0-3	2
7	B		Breadth -III (IT or Professional)	3-0-0	3
Total				15-3-6	22

6th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	MF30602	Robots & Computer-Controlled Machines	4-0-0	4
2	D	MF30604	Non-Traditional Manufacturing Processes	3-0-0	3
3	D	ME30602	Design of Machine Elements	3-1-0	4
4	D	ME30604	Machine Tool & Machining	3-1-0	4
5	D	MF39602	Non-Traditional Manufacturing + CNC Lab	0-0-3	2
6	D	ME39604	Machine Tool & Machining Lab	0-0-3	2
7	D	ME39602	Machine Design Practice	0-0-3	2
8	B		Breadth - IV (Professional or Management)	3-0-0	3
Total				16-2-9	24

7th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D	ME40601	Systems & Control	3-1-0	4
2	D	MF40601	Computer Integrated Manufacturing	3-0-0	3
3	D		Elective - I	3-0-0	3
4	D	MF49601	Robotics & CIM Lab	0-0-3	2
5	B		Breadth - V Prof / HSS / Mgmt – Dept allowed {Quality Design & Control}	3-0-0	3
6	D	MF47601	Project	0-0-6	4
7	D	MF48601	Industrial Training	0-0-0	2
Total				12-1-9	21

8th SEMESTER

Sl. No.	Depth/ Breadth	Subject No.	Subject Name	L-T-P	Credit
1	D		Elective -II	3-0-0	3
2	D		Elective - III	3-0-0	3
3	D		Elective - IV	3-0-0	3
4	B		Breadth - VI (Prof / HSS – Dept allowed)	3-0-0	3
5	D	MF47602	Project	0-0-9	6
6	D	MF48602	Comprehensive Viva	0-0-0	2
Total				12-0-9	20

NOTE : **L = Lecture** **T = Tutorial** **P = Practical**

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Breadth	00	00	03	03	03	03	03	03	018
Total Credits									180

REQUIREMENT FOR MINOR IN MANUFACTURING SCIENCE AND TECHNOLOGY

- All the subjects from Group A
- Two subjects from Group B
- Two Subjects from Group C
- Total Credit Requirement – Minimum 18

GROUP - A

Sl. No.	Subject No.	Subject Name	L-T-P	Credit
1	ME30605	Casting, Forming & Welding	3-1-0	4
2	ME30604	Machine Tool & Machining	3-1-0	4
3	ME39601	Casting, Forming & Welding Lab	0-0-3	2

GROUP - B

Sl. No.	Subject No.	Subject Name	L-T-P	Credit
1	MF30602	Robots & Computer-Controlled Machines	4-0-0	4
2	MF30604	Non-Traditional Manufacturing	3-0-0	3
3	MF40601	Computer Integrated Manufacturing	3-0-0	3

GROUP - C

Sl. No.	Subject No.	Subject Name	L-T-P	Credit
1	ME20602	Thermo-Fluid Science	3-1-0	4
2	ME20604	Dynamics	3-1-0	4
3	ME20610	Mechanisms & Machines	3-1-0	4
4	ME30603	Heat Transfer	3-1-0	4

In lieu of Group C subject

ME20610	Mechanisms & Machines
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The following two subjects may be taken as well:

ME20606	Kinematics of Machines
ME30606	Dynamics of Machines

Elective List

Elective – I

7th Semester

Sl. No.	Subject No.	Subject Name	L-T-P
1	ME41601	Computer Graphics & Solids Modelling	3-0-0
2	MF41601	Soft Computing	3-0-0
3	MF41603	Rapid Prototyping	3-0-0
4	MF41605	Metal Forming and Processing of Plastics	3-0-0
5	ME41603	Vibration and Noise Control	3-0-0
6	ME41605	Simulation of Mechanical Systems	3-0-0
7	ME41607	Composite Materials	3-0-0
8	ME40603	Applied Thermo-Fluid - II	3-1-0
9	ME41609	Air Conditioning	3-0-0
10	ME41611	Mechanical Handling Systems & Equipments	3-0-0
11	ME41613	Design Optimisation	3-0-0
12	ME41615	Tribology	3-0-0
13	IM31004	Management of Inventory Systems	3-0-0
14	IM31007	Production Planning & Control	3-1-0
15	IM21001	Engineering Economy Costing & Accounting	3-1-0

Elective - II

8th Semester

Sl. No.	Subject No.	Subject Name	L-T-P
1	MF41602	Process Dynamics & Adaptive Control	3-0-0
2	MF41604	Metal Casting Technology	3-0-0
3	MF41606	Technology of Surface Coating	3-0-0
4	IM31006	Simulation	3-0-0
5	ME41620	Fluid Power Control	3-0-0
6	ME30608	Applied Thermo-Fluid - I	3-0-0
7	IM41008	Production Design & Process Planning	3-1-0

Elective - III

8th Semester

Sl. No.	Subject No.	Subject Name	L-T-P
1	MF41608	Welding Technology	3-0-0
2	MF41610	Non-destructive Evaluation and Imaging	3-0-0
3	MF41612	Quantity Production Methods	3-0-0
4	IM21008	Work Systems Design	3-0-0
5	ME41606	Finite Element Methods in Engineering	3-0-0
6	ME41608	Fatigue, Creep and Fracture	3-0-0
7	ME41610	Automobile Engineering	3-0-0
8	ME60206	Advanced Engineering Thermodynamics	3-1-0

Elective - IV

8th Semester

Sl. No.	Subject No.	Subject Name	L-T-P
1	MF41614	Machine Tool Engineering	3-0-0
2	MF41616	Laser Applications in Manufacturing	3-0-0
3	MF41618	Engineering Metrology	3-0-0
4	IM21006	Operation Research - II	3-1-0
5	ME41612	Experimental Stress Analysis	3-0-0
6	ME41614	Modern Control Theory	3-0-0
7	ME41616	Micro-scale Fluid Flow & Heat Transfer	3-0-0