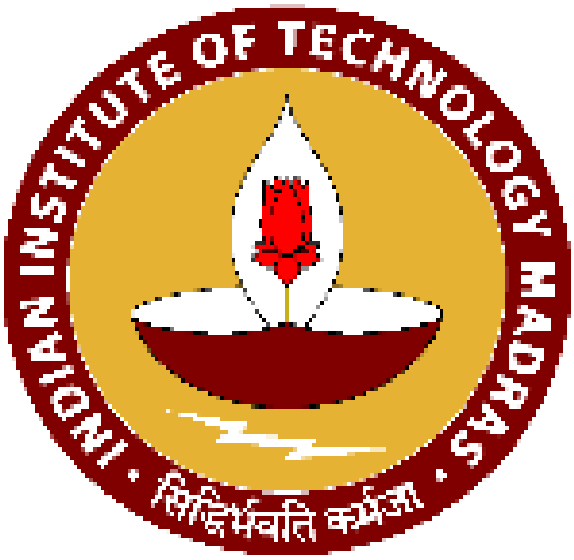

INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI 600 036

Curriculum for
M.Tech. Degree Programme
2016 Batch

INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Curriculum for M.Tech. Degree Programe

2016 Batch

M.Tech. Degree Programme
2016 Batch

MINIMUM CREDIT REQUIREMENTS

Sl.No.	Details	Min. Cr.
1	Aerospace Engineering	205
2	Applied Mechanics	
	Engineering Mechanics	211
	Biomedical Engineering	211
3	Biotechnology	
	Clinical Engineering	191
5	Chemical Engineering	
	Chemical Engineering	192
	Catalysis Engineering	208
6	Civil Engineering	
	Building Technology & Construction Mgmt.	203
	Environmental Engineering	211
	Geotechnical Engineering	213
	Hydraulics & Water Resources Engineering	210
	Structural Engineering	210
	Transportation Engineering	210
	Construction Technology & Management-UoP	203
7	Computer Science & Engineering	207
8	Electrical Engineering	
	Communication & Signal Processing	190
	Power Systems & Power Electronics	196
	Micro Electronics & VLSI Design	190
	Control and Instrumentation	198
	Micro Electronics & Photonics	190
9	Mathematics	
	Industrial Mathematics & Scientific Computing	197
10	Mechanical Engineering	
	Thermal Engineering	205
	Design	206
	Manufacturing Design	198
11	Metallurgical & Materials Engineering	196
12	Ocean Engineering	
	Ocean Engineering	204
	Ocean Technology	204
	Offshore Technology – UoP	203
	Petroleum Engineering	204
13	Physics	
	Functional Materials & Nanotechnology	199

Branch Code: AE1

M.Tech. in Aerospace Engineering

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	AS5010	Aerodynamics and Aircraft performance	3	0	0	0	6	9
2	AS5020	Aerospace Propulsion	3	0	0	0	6	9
3	AS5030	Aerospace Structures	4	0	0	0	8	12
4	AS5110	Laboratory I	0	0	0	3	0	3
5	AS5011	Compressible Fluid flows	3	0	0	0	6	9
6	MAE1	Mathematics Elective 1	3	0	0	0	6	9
		Total Credits :	**16**	**0**	**0**	**3**	**32**	**51**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	AS5040	Flight Mechanics	4	0	0	0	7	11
2	AS5120	Laboratory II (Str. Lab)	0	0	0	3	0	3
3		Aircraft Design Elective*	2	1	2	3	4	12
4	DPE1	Department Elective 1	3	0	0	0	6	9
5	DPE2	Department Elective 2	3	0	0	0	6	9
6	DPE3	Department Elective 3	3	0	0	0	6	9
7	AS5150$	M.Tech. Project Proposal	0	0	0	0	4	4
		Total Credits :	**15**	**1**	**2**	**6**	**37**	**57**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	AS5150#	MTech Project (summer)	**0**	**0**	**0**	**0**	**20**	**20**

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	AS5150+	MTech Project (III semester)	0	0	0	0	27	27
2	AS5100	Mini Project	1	2	1	3	5	12
		Total Credits :	**1**	**2**	**1**	**3**	**32**	**39**

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	AS5150	M.Tech Project (IV semester)	0	0	0	0	38	38
		Total Credits :						**38**

Semester	I	II	Summer	III	IV	Total
Credits	51	57	20	39	38	205

Notes:

1. Credits and grades for MTech Project (AS5150$, AS5150#, AS5150+ and AS5150 together) in fourth semester
2. Students with AE background may take alternate courses in lieu of AS5010, AS5020, AS5030, AS5011 and AS5040 with the consent of the department.
3. A minimum of 2 electives to be taken from the list of AS electives or their equivalents. Any other M.Tech. level course may be taken as the third elective with the consent of Faculty Advisor.
4. Aircraft Design Elective * may be one of the following
    - AS5211 Design of Subsonic aircraft,
    - AS5212 Design of Supersonic aircraft
    - AS5213 Design of MAVs and UAVs.

LIST OF ELECTIVES FOR M.TECH. IN AEROSPACE ENGINEEREING

S.No	Course No	Course Name	L	T	E	P	O	C
1.	AS5300	Physical Gas Dynamics	3	0	0	0	6	9
2.	AS5310	Object Oriented Prog. for Science & Engineers	3	0	0	0	6	9
3.	AS5320	Boundary Layer Theory	3	0	0	0	6	9
4.	AS5330	Computational Aerodynamics	3	0	0	0	6	9
5.	AS5340	Advanced Flight Mechanics	3	0	0	0	6	9
6.	AS5350	Transonic Aerodynamics	3	0	0	0	6	9
7.	AS5360	Advanced Aerodynamics	3	0	0	0	6	9
8.	AS5370	Helicopter Aerodynamics	3	0	0	0	6	9
9.	AS5380	Flight Testing and Performance Reduction	3	0	0	0	6	9
10.	AS5390	Numerical Methods in Gas Dynamics	3	0	0	0	6	9
11.	AS5400	Theory & Computation of Vortex Dominated Flows	3	0	0	0	6	9
12.	AS5410	Grid Generation	3	0	0	0	6	9
13.	AS5420	Introduction to CFD	3	0	0	0	6	9
14.	AS5430	Stability of Shear Flows	3	0	0	0	6	9
15.	AS5440	Hydrodynamic Stability, transition and Flow control	3	0	0	0	6	9
16.	AS5470	Unsteady Aerodynamics of Moving Bodies	3	0	0	0	6	9
17.	AS5550	Aerospace Systems Control and Estimation	3	0	0	0	6	9
18.	AS5610	Rocket Propulsion	3	0	0	0	6	9
19.	AS5620	Theory and Design of Gas Turbines	3	0	0	0	6	9
20.	AS5630	Performance of Gas Turbines	3	0	0	0	6	9
21.	AS5640	Combustion, Explosion and Detonation	3	0	0	0	6	9
22.	AS5650	Multiphase Flow	3	0	0	0	6	9
23.	AS5660	Hypersonic Air breathing Propulsion	3	0	0	0	6	9
24.	AS5670	Transport Processes in Reacting Flows	3	0	0	0	6	9
25.	AS5680	High Temperature Gas Dynamics	3	0	0	0	6	9
26.	AS5690	Radiation Heat Transfer	3	0	0	0	6	9
27.	AS5810	Theories of Modern Plate Structures	3	0	0	0	6	9
28.	AS5820	Analysis of Plates and Shells	3	0	0	0	6	9
29.	AS5830	Approximate Methods in Structural Analysis	3	0	0	0	6	9
30.	AS5840	Thermal Stress Analysis	3	0	0	0	6	9
31.	AS5850	Finite Element Analysis	3	0	0	0	6	9
32.	AS5860	Composite Structures	3	0	0	0	6	9
33.	AS5870	Energy Methods in Structural Analysis	3	0	0	0	6	9
34.	AS5880	Mechanics of Damage Tolerance	3	0	0	0	6	9
35.	AS5890	Mechatronics Design	3	0	0	0	6	9
36.	AS5900	Elasticity	3	0	0	0	6	9
37.	AS5910	Aero elasticity	3	0	0	0	6	9
38.	AS5920	Dynamics of Elastic Systems	3	0	0	0	6	9
39.	AS5930	Elastic Stability	3	0	0	0	6	9
40.	AS5940	Non-Linear Behaviour of Plates and Shells	3	0	0	0	6	9
41.	AS5950	Continuum Mechanics	3	0	0	0	6	9
42.	AS5960	Advanced Strength of Materials	3	0	0	0	6	9
43.	AS5970	Structural Dynamics and Aero-elasticity	3	0	0	0	6	9
44.	AS5980	Contact Mechanics and Tribology	3	0	0	0	6	9
45.	AS6010	Hypersonic Flow Theory	3	0	0	0	6	9
46.	AS6015	Aerodynamics of Missiles and Launch Vehicles	3	0	0	0	6	9
47.	AS6020	Introduction to Turbulent Flows & their Predictions	3	0	0	0	6	9
48.	AS6030	Experimental Methods in Aero / Gas Dynamics	3	0	0	0	6	9
49.	AS6040	Turbulent Flows and their Computation	3	0	0	0	6	9
50.	AS6310	System Simulation and Process Optimization	3	0	0	0	6	9
51.	AS6320	Acoustics Instabilities in Aerospace Propulsion	3	0	0	0	6	9
52.	AS6330	Aero Acoustics	3	0	0	0	6	9
53.	AS6340	Combustion & Flow Diagnostics	3	0	0	0	6	9
54.	AS6510	Experimental Techniques in Structural Mechanics	3	0	0	0	6	9

Branch Code: AM1

M.Tech. in ENGINEERING MECHANICS

2016 Batch

Stream: Fluid / Solid Mechanics

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	AM5600	Computational Methods in Mechanics	3	0	0	0	6	9
2	AM5610	Measurements in Mechanics	3	0	0	0	6	9
3	AM5390	Advanced Structural Mechanics	3	0	0	0	6	9
4	AM5530	Advanced Fluid Mechanics	3	0	0	0	6	9
5	AM5117/ AM5010	Analytical Methods in Engineering Mechanics/ Biomechanics	3	0	0	0	6	9
6	AM5900	Instrumentation Laboratory	0	0	0	3	2	5
	AM5810	Computational Laboratory	0	0	0	3	2	5
		Total Credits :						**55**

AM1 students need to do AM5117 or AM5010

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1		Specialization Core I	3	0	0	0	6	9
2		Specialization Core II	3	0	0	0	6	9
3		Specialization Core III	3	0	0	0	6	9
4		Specialization Laboratory	0	0	0	3	2	5
5	DPE1	Department Elective 1	3	0	0	0	6	9
6	DPE2	Department Elective 2	3	0	0	0	6	9
7	DPE3	Department Elective 3	3	0	0	0	6	9
		Total Credits :						**59**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	AM5420*	Project-I (Summer)	0	0	0	0	15	15*

**** Project (AM5420*) grade will be assigned in 4th semester***

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	DPE4	Department Elective 4	3	0	0	0	6	9
2	AM5480	Seminar	0	0	0	0	3	3
3	AM5420	Project II	0	0	0	0	30	30*
		Total Credits :						**42**

**** Project (AM5420) grade will be assigned in 4th semester***

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	AM5420#	M.Tech. Project	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	55	59	15	42	40	211

LIST OF SPECIALISATION CORE / LABORATORY

Solid Mechanics								
S.No	**Course No**	**Course Name**	**L**	**T**	**E**	**P**	**O**	**C**
1	AM5240	Experimental Stress Analysis	3	0	0	0	6	9
2	AM5290	Dynamics of structures	3	0	0	0	6	9
3	AM5450	Fundamentals of Finite Element Analysis	3	0	0	0	6	9
4	AM5620	Theory of Plates and Shells	3	0	0	0	6	9
5	AM5400	Experimental Stress Analysis Laboratory	0	0	0	3	2	5
Fluid Mechanics								
1	AM5570	Introduction to Turbulence	3	0	0	0	6	9
2	AM5540	Hydrodynamics	3	0	0	0	6	9
3	AM5630	Foundation of Computational Fluid Dynamics	3	0	0	0	6	9
4	AM5820	Wind Tunnel and Numerical Experiments	0	0	0	3	2	5

Electives from the elective list or any relevant courses from other Departments could be chosen in consultation with Faculty Advisor**.**

Branch Code: AM2

M.Tech. in BIOMEDICAL ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	AM5600	Computational Methods in Mechanics	3	0	0	0	6	9
2	AM5610	Measurements in Mechanics	3	0	0	0	6	9
3	AM5520	Medical Electronics	3	0	0	0	6	9
4	AM5510	Biomedical Signals and Systems	3	0	0	0	6	9
5	AM5010	Biomechanics	3	0	0	0	6	9
6	AM5900	Instrumentation Laboratory	0	0	0	3	2	5
	AM5810	Computational Lab	0	0	0	3	2	5
		Total Credits :	**15**	**0**	**0**	**6**	**34**	**55**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	AM 5130	Quantitative Physiology	3	0	0	0	6	9
2	AM 5160	Biomedical Imaging Systems	3	0	0	0	6	9
3	AM 5140	Biomedical Instrumentation	3	0	0	0	6	9
4	AM 5110	Biomechanics Laboratory	0	0	0	3	2	5
5	DPE1	Department Elective 1	3	0	0	0	6	9
6	DPE2	Department Elective 2	3	0	0	0	6	9
7	DPE3	Department Elective 3	3	0	0	0	6	9
		Total Credits :						**59**

Summer

S.No	Course No	Course Name	L	T	E	P	O	C
1	AM5420*	Project-I (Summer)	0	0	0	0	15	15*

**** Project (AM5420*) grade will be assigned in 4th semester***

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	DPE4	Department Elective 4	3	0	0	0	6	9
2	AM5480	Seminar	0	0	0	0	3	3
3	AM5420	Project II	0	0	0	0	30	30*
		Total Credits :						**42**

**** Project (AM5420) grade will be assigned in 4th semester***

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	AM5420#	M.Tech. Project	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	55	59	15	42	40	211

Electives from the elective list or any relevant courses from other Departments could be chosen in consultation with Faculty Advisor**.**

M.Tech. in CLINICAL ENGINEERING
2016 Batch

Semester I (August-December) @ IIT-Madras

S.No	Course No	Course Name	L	T	E	P	O	C	TH
1	BT6540	Cellular,Molecular Biology & Genetic Engg	3	0	0	0	6	9	9
2	AM5010	Biomechanics	3	0	0	0	6	9	9
3	ID6020	Intro to Research	2	0	0	0	4	6	6
4	MS5260	Management Science+	4	0	0	0	8	6	12
5		Engg Elective*	3	0	0	0	6	9	9
6		Engg Elective*	3	0	0	0	6	9	9
		Total Credits						**48**	

* Open elective from following department - Aerospace Engineering, Applied Mechanics, Chemical Engineering, Computer Science and Engineering, Electrical Engineering, Engineering Design, Mechanical Engineering, Metallurgical and Materials Engineering and Physics

\+ Electives pertaining to maintenance management, supply chain, QC, finance

Semester II (January-July) @ CMC-Vellore

S.No	Course No	Course Name	Credit
1	……	Functional Anatomy & Physiology	4
2	……	Anatomy & Physiology Lab	2
3	……	Biomedical Imaging Systems	3
4	……	Clinical Attachment	4
5	……	Transducers & Instrumentation	3
6	……	Elective	3
		Total Credits	**19**
		Equivalent IIT-M credits	**57**

Semester III (August-December) @ SCTIMST-Tvm

S.No	Course No	Course Name	Credit
1	……	Medical Device Technology	3
2	……	Biomaterials	3
3	……	Clinical Engg, Health Systems & Mgmt	3
4	……	Elective	3
5	……	Design Tools for ClinEngg - Lab	2
6	……	Engg Problems in Hospitals - Lab	2
7	……	Clinical Attachment	4
8	……	Clinical Engg Internship - External	2
		Total Credits	**22**
		Equivalent IIT-M credits	**66**

Semester IV (January-June)

S.No	Course No	Course Name	L	T	E	P	O	C	TH
1	BT6910	Project	0	0	0	0	0	20	20
		Total Credits						**20**	

Semester	I	II	III	IV	Total
Credits	48	57	66	20	191

Branch Code: CH1

M.Tech. in CHEMICAL ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CH5010	Chemical Reactor Theory	3	1	0	0	6	10
2	CH5050	Advanced Chemical Engg. Thermodynamics	3	1	0	0	6	10
3	CH5520	Mathematical Methods for Chemical Engrs	3	1	0	0	6	10
4	DPE1	Department Elective 1	3	0	0	0	6	9
		Total Credits						**39**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CH5030	Transport Phenomena	3	1	0	0	6	10
2	CH5060	Seminar	0	0	0	3	0	3
3	DPE2	Department Elective 2	3	0	0	0	6	9
4	DPE3	Department Elective 3	3	0	0	0	6	9
5	DPE4	Department Elective 4	3	0	0	0	6	9
6	CH5530	Process Simulation Lab	0	0	0	6	3	9
		Total Credits						**49**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CH5560*	Project 1	0	0	0	0	25	**25***
		Total Credits						**25**

**** Project (CH5560*) grade will be assigned in 4th semester***

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	DPE5	Department Elective 5	3	0	0	0	6	9
2	CH5560	Project-II	0	0	0	0	30	30*
3		**Total Credits**						**39**

**** Project (CH5560*) grade will be assigned in 4th semester***

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CH5561	Project-III	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	39	49	25	39	40	192

Branch Code: CA1

M.Tech. in CATALYSIS TECHNOLOGY

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CA5010	Fundamentals of Adsorption and Catalysis	3	0	0	0	6	9
2	CA5020	Principles of Solids and Surfaces	3	0	0	0	6	9
3	CH5010	Chemical Reactor Theory	3	1	0	0	6	10
4	DPE1	Elective 1	3	0	0	0	6	9
5	DPE2	Elective 2	3	0	0	0	6	9
	DPE 3	Elective 3	3	0	0	0	6	9
		Total Credits						**55**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CA5030	Experimental Methods in Catalysis	3	0	0	0	6	9
2	CA5040	Principles of Surface Analysis	3	0	0	0	6	9
3	CH5030	Transport Phenomena	3	1	0	0	6	10
4	CA5050	Catalyst Preparation and Characterization Laboratory	0	0	0	3	0	3
5	DPE 4	Elective 4	3	0	0	0	6	9
6	DPE 5	Elective 5	0	0	0	0	9	9
		Total Credits						**49**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CA6510*	Project – Stage I	0	0	0	0	20	20
		Total Credits						**20**

**** Project (CA6510*) grade will be assigned in 4th semester***

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CA6510	Project – Stage II	0	0	0	0	20	20
2	CA6520	Seminar I	0	0	0	0	3	3
3	DPE 6	Elective 6	3	0	0	0	6	9
4	DPE 7	Elective 7	3	0	0	0	6	9
		Total Credits						**41**

**** Project (CA6510) grade will be assigned in 4th semester***

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CA6510#	Project III	0	0	0	0	40	40
2	CA6530	Seminar II	0	0	0	0	3	3
		Total Credits :						**43**

Semester	I	II	Summer	III	IV	Total
Credits	55	49	20	41	43	208

Branch Code: CE1

M.Tech. in CIVIL ENGINEERING

Stream: Building Technology and Construction Management

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5010	Modern Construction Materials	3	0	0	0	6	9
2	CE5110	Building Services	3	0	0	0	6	9
3	CE6010	Construction Contracts & Specifications	3	0	0	0	6	9
4	CE5020	Construction Planning and Control	3	0	0	0	6	9
5	DPE1	Department Elective 1	3	0	0	0	6	9
6	CE5060	Industrial Seminar	0	0	0	3	1	4
7	CE5070	Building Sciences Laboratory	0	0	0	3	1	4
		Total Credits						**53**

(Work Load = 53 hours + 8 hours for HTTA/HTRA=61 hours)

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5040	Construction, Methods & Equipment	3	0	0	0	6	9
2	CE5100	Construction Software Lab	1	0	0	2	3	6
3	CE5090	Construction Materials Laboratory	0	0	0	3	3	6
4	DPE2	Dept. Elective 2	3	0	0	0	6	9
5	DPE3	Dept. Elective 3	3	0	0	0	6	9
6	FRE1	Free Elective 1	3	0	0	0	6	9
		Total Credits						**48**

(Work Load = 48 hours + 8 hours for HTTA/HTRA=56 hours)

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6020*	Project	0	0	0	0	20	**20**

(Work Load = 20 hours + 8 hours for HTTA/HTRA=28 hours)

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6020#	Project	0	0	0	0	28	28
3	DPE4	Dept. Elective 4	3	0	0	0	6	9
		Total Credits						**37**

(Work Load = 37 hours + 8 hours of HTTA/HTRA=45 hours)

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6020	Project	0	0	0	0	45	45
		Total Credits :						**45**

(Work Load = 45 hours + 8 hours of HTTA/HTRA=53 hours)

Semester	I	II	Summer	III	IV	Total
Credits	53	48	20	37	45	203

REMARKS

- Credits and grades for M.Tech Project (CE6020*, CE6020# and CE6020 together) will be assigned in 4th semester

Branch Code: CE2

M.Tech. in CIVIL ENGINEERING

Stream: ENVIRONMENTAL ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5150	Environmental Chemistry and Microbiology	4	0	0	0	8	12
2	CE5170	Physico-chemical Processes for Water & WW Treatment	4	0	0	0	8	12
3	CE5190	Environmental Monitoring Lab	0	0	0	3	1	4
4	CE6015	Solid Waste Management	3	0	0	0	6	9
5	DPE1	Dept. Elective 1	3	0	0	0	6	9
6	MAE1	Math. Elective	3	0	0	0	6	9
		Total Credits						**55**

(Work Load = 55 hours + 8 hours for HTTA/HTRA=63 hours)

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5160	Biological Process Design for Wastewater Treatment	4	0	0	0	8	12
2	CE5180	Air Pollution and Control Engineering	4	0	0	0	8	12
3	CE5200	Environmental Microbiology and Engineering Lab	0	0	0	6	2	8
4	CE5220	Environmental Engineering Seminar	1	0	0	0	2	3
5	DPE2	Dept. Elective 2	3	0	0	0	6	9
6	DPE3	Dept. Elective 3	3	0	0	0	6	9
		Total Credits						**53**

(Work Load = 52 hours + 8 hours for HTTA/HTRA=60 hours)

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6290*	Project	0	0	0	0	20	**20**

(Work Load = 20 hours + 8 hours for HTTA/HTRA=28 hours)

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6290#	Project	0	0	0	0	30	30
2	DPE4	Dept. Elective 4	3	0	0	0	6	9
3	DPE5	Dept. Elective 5	3	0	0	0	6	9
		Total Credits						**48**

(Work Load = 48 hours + 8 hours of HTTA/HTRA=56 hours)

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6290	Project	0	0	0	0	35	35
		Total Credits :						**35**

(Work Load = 35 hours + 8 hours of HTTA/HTRA=43 hours)

Semester	I	II	Summer	III	IV	Total
Credits	55	53	20	48	35	211

REMARKS

- Credits and Grades for M.Tech Project (CE6290*, CE6290# and CE6290 together) will be assigned in 4th semester
- One of the Department Elective can be a FREE Elective

Branch Code: CE3

M.Tech. in CIVIL ENGINEERING

Stream: GEOTECHNICAL ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5310	Advanced Soil Mechanics	4	0	0	0	8	12
2	CE5330	Advanced Foundation Engg	3	1	0	0	6	10
3	CE5320	Soil Dynamics	3	1	0	0	6	10
4	CE5421	Geotechnical Engg. Seminar	1	0	0	0	1	2
5	DPE1	Dept. Elective	3	0	0	0	6	9
6	MAE1	Math. Elective	3	0	0	0	6	9
		Total Credits						**52**

(Work Load = 52 hours + 8 hours for HTTA/HTRA=60 hours)

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5300	Applied Soil Mechanics	3	1	0	0	6	10
2	CE5340	FEM and Constitutive Modelling in Geomechanics	4	0	0	0	8	12
3	CE5410	Experimental Geotechnics	0	0	0	6	2	8
4	DPE2	Dept. Elective	3	0	0	0	6	9
5	DPE3	Dept. Elective	3	0	0	0	6	9
6	DPE4	Dept. Elective	3	0	0	0	6	9
		Total Credits						**57**

(Work Load = 55 hours + 8 hours for HTTA/HTRA=63 hours)

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6430*	Project	0	0	0	0	20	**20**

(Work Load = 20 hours + 8 hours for HTTA/HTRA=28 hours)

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6430#	Project	0	0	0	0	25	25
2	CE5430	GT Engg. Design Studio	1	0	0	3	2	6
3	DPE5	Dept. Elective	3	0	0	0	6	9
		Total Credits						**40**

(Work Load = 40 hours + 8 hours of HTTA/HTRA=48 hours)

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6430	Project	0	0	0	0	44	44
		Total Credits :						**44**

(Work Load = 44 hours + 8 hours of HTTA/HTRA=52 hours)

Semester	I	II	Summer	III	IV	Total
Credits	52	57	20	40	44	213

REMARKS

- Credits and Grades for M.Tech Project (CE6430*, CE6430# and CE6430 together) will be assigned in 4th semester
- One of the Department Elective can be a FREE Elective

Branch Code: CE4

M.Tech. in CIVIL ENGINEERING

Stream: HYDRAULICS AND WATER RESOURCES ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5450	Applied Hydraulic Engineering	3	1	0	0	6	9
2	CE5470	Surface Water Hydrology	4	0	0	0	8	12
3	CE5460	Ground Water Engineering	4	0	0	0	8	12
4	CE5490	Hydraulic Engineering Lab.	0	0	0	3	1	4
5	DPE1	Dept. Elective 1	3	0	0	0	6	9
6	MAE1	Math. Elective	3	0	0	0	6	9
		Total Credits						**55**

(Work Load = 55 hours + 8 hours for HTTA/HTRA=63 hours)

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5480	Water Res. Planning & Mgmt.	4	0	0	0	8	12
2	CE6013	River Engineering	3	0	0	0	6	9
3	CE5520	Hyd. & Water Resources Engg. Seminar	1	0	0	0	1	2
4	CE5500	Hydro-Informatics Lab.	1	0	0	3	2	6
5	DPE2	Dept. Elective	3	0	0	0	6	9
6	DPE3	Dept. Elective	3	0	0	0	6	9
7	DPE4	Dept. Elective	3	0	0	0	6	9
		Total Credits						**56**

(Work Load = 56 hours + 8 hours for HTTA/HTRA=64 hours)

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6490*	Project	0	0	0	0	20	**20**

(Work Load = 20 hours + 8 hours for HTTA/HTRA=28 hours)

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6490#	Project	0	0	0	0	30	30
2	DPE5	Dept. Elective	3	0	0	0	6	9
		Total Credits						**39**

(Work Load = 39 hours + 8 hours of HTTA/HTRA=47 hours)

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6490	Project	0	0	0	0	40	40
		Total Credits :						**40**

(Work Load = 40 hours + 8 hours of HTTA/HTRA=48 hours)

Semester	I	II	Summer	III	IV	Total
Credits	55	56	20	39	40	210

REMARKS

- Grades for M.Tech Project (CE6490*, CE6490# and CE6490 together) will be assigned in 4th semester
- One of the Department Elective can be a FREE Elective

Branch Code: CE5

M.Tech. in CIVIL ENGINEERING

Stream: Structural Engineering

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6780	Advanced Mechanics of Structures	3	1	0	0	6	10
2	CE5620	Structural Dynamics	3	1	0	0	6	10
3	CE5630	Adv. Design of Concrete Structures	3	1	0	0	6	10
4	CE5740	Experimental Techniques	1	0	0	2	3	6
5	DPE1	Dept. Elective 1	3	0	0	0	6	9
6	MAE1	Math. Elective 1	3	0	0	0	6	9
		Total Credits						**54**

(Work Load = 54 hours + 8 hours for HTTA/HTRA=62 hours)

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5610	Finite Element Analysis	3	0	1	0	8	12
2	CE5660	Adv. Metal Structures	3	1	0	0	6	10
3	CE6650	St. Engg. Seminar	1	0	0	0	1	2
4	DPE2	Dept. Elective 2	3	0	0	0	6	9
5	DPE3	Dept. Elective 3	3	0	0	0	6	9
6	DPE4	Dept. Elective 4	3	0	0	0	6	9
		Total Credits						**51**

(Work Load = 51 hours + 8 hours for HTTA/HTRA=59 hours)

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6690*	Project	0	0	0	0	20	**20**

(Work Load = 20 hours + 8 hours for HTTA/HTRA=28 hours)

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6670	St. Engg. Design Studio	0	0	0	3	6	9
2	CE6690#	Project	0	0	0	0	32	32
3	DPE5	Dept. Elective	3	0	0	0	6	9
		Total Credits						**50**

(Work Load = 50 hours + 8 hours of HTTA/HTRA=58 hours)

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6690	Project	0	0	0	0	35	35
		Total Credits :						**35**

(Work Load = 35 hours + 8 hours of HTTA/HTRA=43 hours)

Semester	I	II	Summer	III	IV	Total
Credits	54	51	20	50	35	210

REMARKS

- Credits and Grades for M.Tech Project (CE6690*, CE6690# and CE6690 together) will be assigned in 4th semester
- One of the Department Elective can be a FREE Elective

Branch Code: CE6

M.Tech. in CIVIL ENGINEERING

Stream: Transportation Engineering

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5810	Urban Transportation Planning	3	0	0	0	6	9
2	CE5530	Pavement Materials	3	0	0	0	6	9
3	CE5830	Traffic Engg & Management	3	0	0	0	6	9
4	CE6810	Geometric Design of Highways	3	0	0	0	6	9
5	DPE1	Dept. Elective	3	0	0	0	6	9
6	MAE1	Math. Elective	3	0	0	0	6	9
		Total Credits						**54**

(Work Load = 54 hours + 8 hours for HTTA/HTRA=62 hours)

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5800	Pavement Analysis and Design	3	0	0	0	6	9
2	CE5840	Tr. Engg. Seminar	1	0	0	0	1	2
3	CE5850	Pavement Mat. and Eval. Lab	1	0	0	2	3	6
4	DPE2	Dept. Elective	3	0	0	0	6	9
5	DPE3	Dept. Elective	3	0	0	0	6	9
6	DPE4	Dept. Elective	3	0	0	0	6	9
7	DPE5	Dept. Elective	3	0	0	0	6	9
		Total Credits						**53**

(Work Load = 53 hours + 8 hours for HTTA/HTRA=61 hours)

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6930*	Project	0	0	0	0	20	**20**

(Work Load = 20 hours + 8 hours for HTTA/HTRA=28 hours)

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5831	Transp. Engg. Design Studio	0	0	0	3	6	9
2	CE6930#	Project	0	0	0	0	22	22
3	DPE6	Dept. Elective	3	0	0	0	6	9
		Total Credits						**40**

(Work Load = 40 hours + 8 hours of HTTA/HTRA=48 hours)

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6930	Project	0	0	0	0	43	43
		Total Credits :						**43**

(Work Load = 43 hours + 8 hours of HTTA/HTRA=51 hours)

Semester	I	II	Summer	III	IV	Total
Credits	54	53	20	40	43	210

REMARKS

- Credits and Grades for M.Tech Project (CE6930*, CE6930# and CE6930 together) will be assigned in 4th semester
- One of the Department Elective can be a FREE Elective

Branch Code: CE7

M.Tech. in Construction Technology and Management
(L&T - UOP) 2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5020	Construction Planning & Control	3	0	0	0	6	9
2	CE6010	Construction Contracts & Specifications	3	0	0	0	6	9
3	CE6050	Lean Construction Concepts, Tools & Practices f	2	1	0	0	6	9
4	MS5020	Organizational Behaviour	2	0	0	0	4	6
5	CE5060	Industrial Seminar	0	0	0	3	1	4
6	DPE1	Department Elective 1**	3	0	0	0	6	9
		Total Credits						**46**

(Work Load = 46 hours + 8 hours for HTTA/HTRA=54 hours)

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE5040	Construction, Methods& Equipment	3	0	0	0	6	9
2	CE6030	Construction Economics & Finance	3	0	0	0	6	9
3	CE5100	Construction Software Lab	1	0	0	2	3	6
4	DPL1	Department Elective Lab 1	0	0	0	3	3	6
5	DPE2	Department Elective 2**	3	0	0	0	6	9
6	DPE3	Department Elective 3**	3	0	0	0	6	9
		Total Credits						**48**

(Work Load = 48 hours + 8 hours for HTTA/HTRA=56hours)

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6140*	Project	0	0	0	0	20	**20**

(Work Load = 20 hours + 8 hours for HTTA/HTRA=28 hours)

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6140#	Project	0	0	0	0	20	20
2	CE5130	Construction Quality and Safety Management	4	0	0	0	8	12
3	CE5334	Global construction Engineering and Management	3	0	0	0	6	9
		Total Credits						**41**

(Work Load = 41 hours + 8 hours of HTTA/HTRA=49 hours)

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CE6140	Project	0	0	0	0	48	48
		Total Credits :						**48**

(Work Load = 48 hours + 8 hours of HTTA/HTRA=56 hours)

Semester	I	II	Summer	III	IV	Total
Credits	46	48	20	41	48	203

REMARKS

* Credits and Grades for M.Tech Project (CE6140*, CE6140# and CE6140 together) will be assigned only in 4th semester

** From the "Approved List of Elective for L & T UOP CTAM

Approved List of Elective for L&T UOP CTAM

COMMON ELECTIVE COURSES								
S.No	**Course No**	**Course Name**	**L**	**T**	**E**	**P**	**O**	**C**
1	CE5014	Sustainable Construction	3	0	0	0	6	9
2	MS5113	Basics of Probability and Statistics	3	0	0	0	6	9
3	MS5131	Data Analysis for Management	3	0	0	0	6	9
4	MS5130	Operations Research	3	0	0	0	6	9
5	MS5480	Cross Cultural Management	3	0	0	0	6	9
6	MS6620	Infrastructure Finance	3	0	0	0	6	9
7	MS5320	Human Resource Management	3	0	0	0	6	9
8	MS5330	Supply Chain Management	3	0	0	0	6	9
9	MS6710	Financial Risk Management	3	0	0	0	6	9
10	MA5540	Probability and Statistics	3	0	0	0	6	9
11	MA5313	Introduction to Mathematical Statistics	3	0	0	0	6	9

ELECTIVE COURSES FOR CIVIL ENGINEERING STUDENTS								
S.No	**Course No**	**Course Name**	**L**	**T**	**E**	**P**	**O**	**C**
1	CE5010	Modern Construction Materials	3	0	0	0	6	9
2	CE5080	GIS in Civil Engineering	3	0	0	0	6	9
3	CE5014	Sustainable Construction	3	0	0	0	6	9
4	CE5110	Building Services	3	0	0	0	6	9
5	CE5120	Maintenance and Rehabilitation of Constructed Facilities	3	0	0	0	6	9
6	CE5210	Transport of Water and Wastewater	3	0	0	0	6	9
7	CE5280	Hazardous Waste Management	3	0	0	0	6	9
8	CE5300	Applied Soil Mechanics	3	0	0	0	6	9
9	CE5330	Advanced Foundation Engineering	3	0	0	0	6	9
10	CE5350	Reinforced Soil Structures	3	0	0	0	6	9
11	CE5360	Soil Exploration and Field Tests	3	0	0	0	6	9
12	CE5370	Geotechnics for Infrastructure	3	0	0	0	6	9
13	CE5800	Analysis and Design of Pavements	3	0	0	0	6	9
14	CE6110	Advanced Concrete Technology	3	0	0	0	6	9
15	CE5950	Characterization of Construction Materials	3	0	0	0	6	9
16	CE7013	Advanced Topics in Project Delivery Finance	3	0	0	0	6	9
17	CE5870	Infrastructure Planning and Management	3	0	0	0	6	9
18	CE5750	CAD in Civil Engineering	3	0	0	0	6	9
19	CE6011	Smart Buildings and Automation	3	0	0	0	6	9
20	CE6130	Construction Project Modeling	3	0	0	0	6	9
21	CE6420	Ground Improvement Techniques	3	0	0	0	6	9
22	OE5050	Ocean Structures and Materials	3	0	0	0	6	9
23	OE5090	Marine Geotechnical Engineering	3	0	0	0	6	9
24	OE5210	Port Planning and Development	3	0	0	0	6	9
25	OE5340	Ocean Environment, Policy and Coastal Zone Mgmt.	3	0	0	0	6	9
26	OE5400	Port and Harbour Structures	3	0	0	0	6	9
27	OE6400	Marine Foundations	3	0	0	0	6	9
28	OE6850	Concrete and Concrete Structure for Oceans	3	0	0	0	6	9

ELECTIVE COURSES FOR MECHANICAL ENGINEERING STUDENTS								
S.No	**Course No**	**Course Name**	**L**	**T**	**E**	**P**	**O**	**C**
1	ME6320	Pump Application Engineering	3	0	0	0	6	9
2	ME6530	HVAC Systems and Applications	3	0	0	0	6	9
3	ME6960	Design of Materials Handling Equipment	3	0	0	0	6	9
4	ME5570	Pipeline Engineering	3	0	0	0	6	9
5	MM5180	Nondestructive Evaluation	3	0	0	0	6	9
6	MM5012	Welding Processes	3	0	0	0	6	9
7	ME5710	Welding Processes – I	3	0	0	0	6	9
8	MM5760	Advanced Topics in Metal Joining	3	0	0	0	6	9
9	ME6005	Solar energy for process heat and power generation	3	0	0	0	6	9
10	ME7010	Microprocessors in Automation	3	0	0	0	6	9
11	ME7740	Structural Health and Integrity Monitoring	3	0	0	0	6	9
12	ME7680	Optimization Methods for Mechanical Design	3	0	0	0	6	9
13	NE6000	Introduction to Nuclear Engineering	3	0	0	0	6	9
14	NE6010	Advanced Non-destructive Evaluation	3	0	0	0	6	9

ELECTIVE COURSES FOR ELECTRICAL ENGINEERING STUDENTS								
S.No	**Course No**	**Course Name**	**L**	**T**	**E**	**P**	**O**	**C**
1	EE5020	Topics in Electromagnetic Compatibility	3	0	0	0	6	9
2	EE5070	Instrumentation Engineering	3	0	0	0	6	9
3	EE5140	Computer Communication Network	3	0	0	0	6	9
4	EE5360	Microprocessor and Application	3	0	0	0	6	9
5	EE5430	Optical Communication	3	0	0	0	6	9
6	EE5510	Analysis of Networks & Systems	3	0	0	0	6	9
7	EE5610	Transducers	3	0	0	0	6	9
8	EE5620	Power System Instrumentation	3	0	0	0	6	9
9	EE5870	Power Electronic Control of Electric Mechanics	3	0	0	0	6	9
10	EE5910	Computer Methods in Power System Analysis	3	0	0	0	6	9
11	EE5920	High Voltage Technology	3	0	0	0	6	9
12	EE5940	Power Circuit Breakers & Protective Relays	3	0	0	0	6	9
13	EE5950	High Voltages Power Transmission	3	0	0	0	6	9
14	E5960	Computer Applications in Power System Operation & Planning	3	0	0	0	6	9
15	EE5970	Energy Management System & SCADA	3	0	0	0	6	9
16	EE6920	Advance Topics in Electrical Insulation	3	0	0	0	6	9

LIST OF ELECTIVE LAB COURSES FOR CIVIL ENGINEERING STUDENTS								
S.No	**Course No**	**Course Name**	**L**	**T**	**E**	**P**	**O**	**C**
1	CE5090	Construction Materials Laboratory	0	0	0	3	3	6
2	CE5850	Pavement Engineering Laboratory	0	0	0	3	3	6
3	CE5410	Experimental Geotechnics Laboratory	0	0	0	3	3	6
4	CE5190	Environmental Monitoring Laboratory	0	0	0	3	3	6

LIST OF ELECTIVE LAB COURSES FOR MECHANICAL ENGINEERING STUDENTS								
S.No	**Course No**	**Course Name**	**L**	**T**	**E**	**P**	**O**	**C**
1	MM5190	Non-Destructive Testing Laboratory	0	0	0	3	3	6
2	MM5770	Welding Laboratory I	0	0	0	3	3	6

LIST OF ELECTIVE LAB COURSES FOR ELECTRICAL ENGINEERING STUDENTS								
S.No	**Course No**	**Course Name**	**L**	**T**	**E**	**P**	**O**	**C**
1	EE5000	Electrical Engineering Laboratory I	0	0	0	3	3	6
2	EE5500	Electrical Engineering Laboratory II (CGI/PS Stream/Microprocessors)	0	0	0	3	3	6

Branch Code: CS1

M.Tech. in COMPUTER SCIENCE AND ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	CS5800	Advanced Data Structures and Algorithms	3	1	0	0	8	12
2	CS6030/ CS6015	Logic and Combinatorics for Computer Science (OR) Linear Algebra and Random Processes	3	1	0	0	8	12
3	CS6140	Advanced Programming Laboratory	0	0	0	6	3	9
4	ELE1	Elective 1	3	1	0	0	8	12
5	ELE2	Elective 2	3	1	0	0	8	12
		Total Credits						**57**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	ELE3	Elective 3	3	1	0	0	8	12
2	ELE4	Elective 4	3	1	0	0	8	12
3	ELE5	Elective 5	3	1	0	0	8	12
4	ELE6	Elective 6	3	1	0	0	8	12
		Total Credits						**48**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	CS5980	Project I	3	1	0	0	20	20
		Total Credits						**20**

**** Project (CS5980) grade will be assigned in 4th semester***

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	CS5970	Seminar	0	0	0	0	2	2
2	CS5990	Project II*	0	0	0	0	44	44
		Total Credits						**46**

**** Project (CS5990) grade will be assigned in 4th semester***

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	CS6000	Project III	0	0	0	0	36	36
		Total Credits :						**36**

Semester	I	II	Summer	III	IV	Total
Credits	57	48	20	46	36	207

- Project I and II are a prerequisite for Project III. Project-I and II will be evaluated together by a PG committee in the month of November.
- Students who obtain a grade of D or E for Project I and II (combined) are not allowed to register for Project III. They must register for three Dept. elective courses (equivalent total credits of 36) in lieu of Project III.
- Students who fail in Project-I and II will be required to register for Project-II again in the fourth semester and complete it successfully. These students will not be allowed to register for Project-III and they are required to register for 3 Dept. elective courses equivalent to 36 credits.

Branch Code: EE1

M.Tech. in ELECTRICAL ENGINEERING
STREAM: COMMUNICATIONS AND SIGNAL PROCESSING
2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1		MTech core I^	4	0	0	0	8	12
2		MTech core II^	4	0	0	0	8	12
3		MTech core III^	4	0	0	0	8	12
4		MTech core IV^	4	0	0	0	8	12
		Total	**16**	**0**	**0**	**0**	**32**	**48**

^ Total number of core credits must be at least 48. Core courses are to be taken from the following basket of core courses (courses can be added to this basket with HOD approval):

No.	Course No.	Title	L	T	E	P	O	C
1	EE5110	Probability Foundations for Electrical Engineers	4	0	0	0	8	12
2	EE5120	Applied Linear Algebra I for EE	4	0	0	0	8	12
3	EE5130	Digital signal processing	4	0	0	0	8	12
4	EE5151	Communication techniques	4	0	0	0	8	12
5	EE5140	Digital modulation and coding	4	0	0	0	8	12
6	EE5150	Communication Networks	4	0	0	0	8	12
7	EE5505	Wave propagation in communications	3	0	0	0	6	9
8	EE5500	Introduction to photonics	4	0	0	0	8	12
9	EE5142	Introduction to Information Theory and Coding	4	0	0	0	8	12
10	EE5153	Foundations of Optical Networking	4	0	0	0	8	12

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1		Electives**	0	0	0	0	0	0

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6901	M.Tech. Project 1	0	0	0	0	25	25

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6902+	M.Tech. Project 2	0	0	0	0	20	20
2		Electives**						

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6903+	M.Tech. Project 3	0	0	0	0	40	40
		Total						**40**

Semester	I	II	Summer	III	IV	Total
Credits	48	0**	25	20**	40	190

* Credits and grades for M.Tech. Project (EE6901, EE6902+ and EE6903+ together) will be given in fourth semester

** Indicated credits are only for core programme. In addition, 57 credits of electives have to be taken. Of these 57 elective credits, 45 credits of electives have to be taken from Elec. Engg. (or equivalent) at the 5000 level or higher, and 12 credits can be taken in any department at the 5000 level or higher. All elective lab courses will also be eligible. Courses from the core basket can also be taken as electives after the minimum requirement for core courses are satisfied.

Branch Code: EE2

M.Tech. in ELECTRICAL ENGINEERING
STREAM: Power Systems and Power Electronics
2016 Batch

Semester 1

S.No	Course No	Course yuh5567Name	L	T	E	P	O	C
1	EE5200	Power Converter Analysis and Design	3	0	0	0	6	9
2	EE5201	Modeling and Analysis of Electric Machines	3	0	0	0	6	9
3	EE5253	Computer Method in Power System Analysis	4	0	0	0	8	12
4		Electives **						**
		Total						**30****

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE5254	High Voltage Engineering	4	0	0	0	8	12
2	EE5702	Laboratory (Power)	0	0	0	3	3	6
3		Electives **						**
		Total						**18****

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6901	M.Tech. Project 1	0	0	0	0	25	25

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6902	M.Tech. Project 2	0	0	0	0	30	30

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6903+	M.Tech. Project 3	0	0	0	0	30	30
		Total						**30**

Semester	I	II	Summer	III	IV	Total
Credits	30**	18**	25*	30*	30*	196

* Credits and grades for M.Tech Project (EE6901, EE6902 and EE6903+together) given in fourth semester

** Indicated credits are only for core programme. In addition, a minimum of **63 credits** of electives have to be taken either from the list of electives added in the next page or from the electives offered by any Department of the Institution at the 5000 level or higher.

SUGGESTED LIST OF ELECTIVES

S.No	Course No	Course Name	L	T	E	P	O	C
1.	EE5202	Computer Aided Design of Electrical Machines	3	0	0	0	6	9
2.	EE5203	Switched mode power conversion	4	0	0	0	8	12
3.	EE5212	Digital Control of Power Electronics	4	0	0	0	8	12
4.	EE5256	Computer Applications in power system operation and planning	3	0	0	0	6	9
5.	EE5257	EMS & SCADA	3	0	0	0	6	9
6.	EE5258	Power System Optimization	4	0	0	0	8	12
7.	EE5260	Power Quality	4	0	0	0	8	12
8.	EE5261	FACTS	3	0	0	0	6	9
9.	EE6010	Smart Power Grids	3	0	0	0	6	9
10.	EE6200	Power electronic control of electrical machines	3	0	0	0	6	9
11.	EE6201	Digital simulation of power electronic circuits & systems	4	0	0	0	8	12
12.	EE6253	Power System Stability and Control	3	0	0	0	6	9
13.	EE6254	Advanced topics in Insulation	4	0	0	0	8	12
14.	EE6255	Power system protection	4	0	0	0	8	12
15.	EE6258	DC Power Transmission	4	0	0	0	8	12
16.	EE6259	Distributed Power systems	4	0	0	0	8	12
17.	EE6261	Restructured Power Systems	3	0	0	0	6	9
18.	EE6262	Advanced motor control	3	0	0	0	6	9
19.	EE7201	Directed study on Research Topics	4	0	0	0	8	12

Branch Code: EE3

M.Tech. in ELECTRICAL ENGINEERING

STREAM: Micro Electronics and VLSI Design

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1		MTech core I^	4	0	0	0	8	12
2		MTech core II^	4	0	0	0	8	12
3		MTech core III^	4	0	0	0	8	12
4		MTech core IV^	4	0	0	0	8	12
		Total	**16**	**0**	**0**	**0**	**32**	**48**

^ Total number of core credits must be at least 48. Core courses are to be taken from the following basket of core courses (courses can be added to this basket with HOD approval):

No.	Course No.	Title	L	T	E	P	O	C
1	EE5311	Digital IC design	4	0	0	0	8	12
2	EE5310	Analog electronic circuits	4	0	0	0	8	12
3	EE5190	Analog IC Design	4	0	0	0	8	12
4	EE5313	Semiconductor device modelling	4	0	0	0	8	12
5	EE5312	VLSI technology	4	0	0	0	8	12
6	EE5341	MOS device modeling	3	0	0	0	6	9
7	EE5340	Micro electro mechanical systems	3	0	0	0	6	9
8	EE5130	Digital signal processing	4	0	0	0	8	12

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1		Electives**	0	0	0	0	0	0**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6901	M.Tech. Project 1	0	0	0	0	25	25

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6902+	M.Tech. Project 2	0	0	0	0	20	20
2		Electives**						

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6903+	M.Tech. Project 3	0	0	0	0	40	40
		Total						**40**

Semester	I	II	Summer	III	IV	Total
Credits	48	0**	25	20	40	190

* Credits and grades for M.Tech. Project (EE6901, EE6902+ and EE6903+ together) will be given in fourth semester

** Indicated credits are only for core programme. In addition, 57 credits of electives have to be taken. Of these 57 credits, 39 credits of electives have to be taken from a specified basket of EE3 electives in Elec. Engg. (or equivalent) at the 5000 level or higher, and 18 credits can be taken from any course in Elec. Engg. (or equivalent) at the 5000 level or higher. All elective lab courses will also be eligible. Courses from the core basket can also be taken as electives after the minimum requirement for core courses are satisfied.

Branch Code: EE4

M.Tech. in ELECTRICAL ENGINEERING
STREAM: Control and Instrumentation
2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE5400	Analog and Digital Systems	2	0	0	3	7	12
2	EE5401	Measurements and Instrumentation	4	0	0	0	8	12
3	EE5410	Introduction to Digital Signal Processing	3	1	0	0	8	12
4	EE5411	Synthesis of Control Systems	4	0	0	0	8	12
5	EE5412	Mathematical Methods in Systems Engg.	4	0	0	0	8	12
		Total						**60**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE5704	Control Laboratory	1	0	0	3	4	8
2		Electives **	0	0	0	0	0	0
		Total						**8****

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6901	M.Tech. Project 1	0	0	0	0	25	25

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6902	M.Tech. Project 2	0	0	0	0	30	30

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6903	M.Tech. Project 3	0	0	0	0	30	30
		Total						**30**

Semester	I	II	Summer	III	IV	Total
Credits	60	8**	25	30	30	198

* Credits and grades for M.Tech Project (EE6901, EE6902 and EE6903 together) will be given in fourth semester

** Indicated credits are only for the core programme. In addition, **at least 27 credits of electives have to be taken from the basket of stream** electives specified below. The remaining 18 elective credits can be taken in any department at the 5000 level or higher, subject to approval of Faculty Advisor. All elective lab courses will also be eligible. **The total number of elective credits for the programme is 45.**

Rules for choice of elective

1. The total number of elective credits for the programme is 45.
2. A minimum of 27 elective credits must be chosen from the stream electives (P category) given below. The remaining 18 elective credits can be from any category 5000/6000/7000 level courses in the Institute subject to the approval of the faculty advisor.

List of Elective EE4 stream

No.	Subject
CS6230	CAD for VLSI Systems
EE5030	DSP Architectures and Embedded Systems
EE5430	Discrete Data Systems
EE5431	Adaptive & Optimal Control
EE5432	Robotic Control Systems
EE5510	Analysis of Networks & Systems
EE5970	Energy Management Systems & SCADA
EE6402	Biomedical Electronic Systems
EE6403	Transducers
EE6404	Power System Instrumentation
EE6405	Precision Measurements
EE6406	Embedded Systems in Instrumentation
EE6410	Mobile Robotics, Sensors, Vision & Control
EE6411	Allied Topics in Control Systems
EE6415	Non-linear Control Systems
EE6416	Robust Control
EE6419	Geometric nonlinear control theory
EE6490	Advanced Topics in Control Systems Technology
EE7420	Advanced Topics in Instrumentation
EE7421	Advanced Topics in Biomedical Instrumentation
EE7401	Directed Study on Research Topics
MA5070	Calculus of variations
MA6050	Dynamical Systems
MA6240	Algorithmic Graph Theory
PH6150	Dynamical Systems
******	Any other course with the approval of the Department.

Branch Code: EE5

M.Tech. in ELECTRICAL ENGINEERING
STREAM: Micro Electronics & Photonics
2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE5500	Introduction to photonics	4	0	0	0	8	12
2	EE5505	Wave propagation in communication	3	1	0	0	5	9
3	EE5313	Semiconductor Device Modeling	4	0	0	0	8	12
4	EE5312	VLSI Technology	4	0	0	0	8	12
		Total						**45**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE5400	Analog and digital circuits	2	0	0	3	7	9
		Total						**9**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6901	M.Tech. Project 1	0	0	0	0	25	25

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6902+	M.Tech. Project 2	0	0	0	0	20	20

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	EE6903+	M.Tech. Project 3	0	0	0	0	40	40
		Total						

Semester	I	II	Summer	III	IV	Total
Credits	45	9	25	20	40	190

* Credits and grades for M.Tech Project (EE6901, EE6902+ and EE6903+ together) will be given in fourth semester

** Indicated credits are only for core programme. In addition, 51 credits of electives have to be taken. All elective credits should be at the 5000 level or higher- courses of the institute, subject to the approval of the faculty advisor. Suggested list of elective courses are given below.

Suggested List of Elective Courses

Sl.No	Course No.	Course Name	Typically offered in Semester
1	EE5502	Optical Engineering	Odd
2	EE5430	Foundations of Optical Networking	Odd
3	EE5105/ EE5109	Introduction to DSP/ Digital Signal Processing	Odd
4	EE5011	Computer Methods in EE	Odd
5	EE6501	Optical Sensors	Odd
6	PH5814	Laser Physics and Applications	Odd
7	EE5104	Instrumentation Engineering	Odd
8	EE5110	Probability Foundations for Signal Processing	Odd and even
9	EE6999/ EE7999	Special Topics in Electrical Engineering	Odd and Even
10	EE6700	Advanced Photonics Lab	Odd and Even
11	EE5140	Communication Networks	Odd
12	EE5504	Fibre Optic Communication Technology	Even
13	EE5491/ EE6505	Waveguides, Microwave Circuits and Antennae	Even
14	EE5550/ EE5340	Micro Electro Mechanical Systems	Even
15	EE6506	Computational EM	Even
16	ED5511	Lasers in Measurements and Micro manufacturing	Even
17	EE5450/ EE6500	Integrated Optoelectronic Devices and Circuits	Even
18	PH5620	Coherent and Quantum Optics	Even
19	PH5660	Nonlinear optics and devices	Even
20			
21	PH5890	Ultrafast Laser and Applications	Even
22	EE6420	Optical Communication Networks	Even
23	EE5700	DSP Applications Laboratory	Even
24	EE6470	Optical Signal Processing and Quantum Communication	Even
25	ED5316	Antenna Theory and Design	Even
26	EE5341	MOS Device Modelling & Characterisation	Even
27	AM5100	Biomedical Laser Instrumentation	

Branch Code: MA1

M.Tech. in INDUSTRIAL MATHEMATICS & SCIENTIFIC COMPUTING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	MA5710	Mathematical Modelling in Industry	2	0	0	2	6	10
2	MA6270	Numerical Solutions of Partial Differential Equations	3	0	0	0	6	9
3	MA5910	Data Structures and Algorithms	4	0	0	0	8	12
4	Elective - 1	Elective – 1	3	0	0	0	6	9
5	MA5741	Object Oriented Programming	1	0	0	2	4	7
		Total Credits						**47**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	MA5790	Computer Modelling and Simulation	2	0	0	2	6	10
2	MA5750	Applied Statistics	3	0	0	2	8	13
3	MA5850	Operations Research	4	0	0	0	8	12
4	Elective - 2	Elective – 2	3	0	0	0	6	9
	MA5770	Modelling Workshop	0	0	0	3	3	6
		Total Credits						**50**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	MA5990#	Project	0	0	0	0	20	20

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	Elective - 3	Elective – 3	3	0	0	0	6	9
2	Elective - 4	Elective – 4	3	0	0	0	6	9
3	Elective - 5	Elective – 5	3	0	0	0	6	9
4	MA5960	Project Seminar	0	0	0	0	3	3
5	MA5990*	Project	0	0	0	0	10	10
		Total Credits						**40**

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	MA5990	Project	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	47	50	20	40	40	197

- These are only notional credits; the actual credits will be allotted totally in the fourth semester
- Students can choose their elective courses from any Department of the Institute

Branch Code: ME1

M.Tech. in MECHANICAL ENGINEERING

STREAM: Thermal Engineering

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME6010	Advanced Heat and Mass Transfer	3	0	0	0	6	9
2	ME6020	I.C. Engines Combustion and Pollution	3	0	0	0	6	9
3	ME6030	Refrigeration and Cryogenics	3	0	0	0	6	9
4	ME6040	Incompressible Fluid Flow	3	0	0	0	6	9
5	ME6050	Principles of Turbomachinery	3	0	0	0	6	9
6	ME6140	Applied Thermodynamics	3	0	0	0	6	9
		Total Credits :						**54**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME6150	Numerical Methods in Thermal Engineering	2	0	0	3	4	9
2	ME6080	Measurements in Thermal Engineering	2	0	0	3	4	9
3	ME6290	Advanced Energy Conversion	3	0	0	0	6	9
4	ME	Professional Elective I	3	0	0	0	6	9
5	ME	Professional Elective II	3	0	0	0	6	9
6	ME6070	Thermal Engg. Lab	0	0	0	3	0	3
		Total Credits :						**48**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990*	Project Phase I	0	0	0	0	20	20*
		Total Credits						**20**

** Project (ME7990 *) grade assigned in 4th semester*

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990	Project Phase II	0	0	0	0	25	25*
2	ME	Professional Elective III/Free elective	3	0	0	0	6	9
3	ME	Professional Elective IV	3	0	0	0	6	9
4		**Total Credits :**						**43**

** Project (ME7990+) grade assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990#	Project Phase III	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	54	48	20	43	40	205

* Free Elective can be taken either in 2nd or 3rd semester

* Grade assigned in fourth semester

LIST OF ELECTIVES

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME5520	Explosion and Safety	3	0	0	0	6	9
2	ME5530	Thermofluid dynamics of climate	3	0	0	0	6	9
3	ME5550	Flow and Thermal Instabilities	3	0	0	0	6	9
4	ME5560	Heat and Mass Transfer in Biological Systems	3	0	0	0	6	9
5	ME5570	Jetflow & Acoustics	3	0	0	0	6	9
6	ME6001	Theory of Fire Propagation	3	0	0	0	6	9
7	ME6002	Turbomachinery Noise and Control	3	0	0	0	6	9
8	ME6060	Fundamentals of Combustion	3	0	0	0	6	9
9	ME6100	Rocket technology	3	0	0	0	6	9
10	ME6110	Combustion technology	3	0	0	0	6	9
11	ME6120	Air-breathing engines	3	0	0	0	6	9
12	ME6130	Transport Phenomena	3	0	0	0	6	9
13	ME6180	Energy and Environment	3	0	0	0	6	9
14	ME6200	Conduction & Radiation	3	0	0	0	6	9
15	ME6220	Heat exchanger design	3	0	0	0	6	9
16	ME6230	Convection and two-phase flow	3	0	0	0	6	9
17	ME6250	Heat Transfer in Energy Systems	3	0	0	0	6	9
18	ME6270	Design of Power Plant Systems	3	0	0	0	6	9
19	ME6280	Design and Optimization of Energy Systems	3	0	0	0	6	9
20	ME6300	Design of hydro-turbines	3	0	0	0	6	9
21	ME6310	Design of pumps	3	0	0	0	6	9
22	ME6320	Pump Application Engg.	3	0	0	0	6	9
23	ME6330	Cavitation	3	0	0	0	6	9
24	ME6340	Vortex Element Methods	3	0	0	0	6	9
25	ME6350	Mechanical Design of Hydroturbomachines	3	0	0	0	6	9
26	ME6360	Standards in Hydroturbomachines	3	0	0	0	6	9
27	ME6370	Experimental Methods in Hydroturbomachines	3	0	0	0	6	9
28	ME6380	Design of Turbomachines	3	0	0	0	6	9
29	ME6390	Micro Hydro Power	3	0	0	0	6	9
30	ME6400	Design of combustion engines	3	0	0	0	6	9
31	ME6410	Two Stroke Engines	3	0	0	0	6	9
32	ME6420	Simulation of IC Engines Processes	3	0	0	0	6	9
33	ME6430	Engine systems and performance	3	0	0	0	6	9
34	ME6440	Alternative Fuels	3	0	0	0	6	9
35	ME6450	Gas Turbines	3	0	0	0	6	9
36	ME6460	CFD and Its Applications to Engine Processes	3	0	0	0	6	9
37	ME6470	Engine Instrumentation & Electronic Management	3	0	0	0	6	9
38	ME6480	Transport Processes in Engines	3	0	0	0	6	9
39	ME6490	Laser Diagnostics in Engines	3	0	0	0	6	9
40	ME6500	Airconditioning and ventilation	3	0	0	0	6	9
41	ME6510	Refrigeration machinery and components	3	0	0	0	6	9
42	ME6520	Sorption refrigeration and heating systems	3	0	0	0	6	9
43	ME6530	HVAC Systems and Applications	3	0	0	0	6	9
44	ME6540	Food Processing, Storage and Transport	3	0	0	0	6	9
45	ME6550	Vacuum Engineering	3	0	0	0	6	9
46	ME6560	Advanced Cryogenic Systems	3	0	0	0	6	9
47	ME6570	Thermal Energy Conservation	3	0	0	0	6	9
48	ME6580	Utilization of Solar Energy	3	0	0	0	6	9
49	ME6590	Renewable Energy Technology	3	0	0	0	6	9
50	ME6600	Aerodynamic Design of Axial Compressors and Turbines	3	0	0	0	6	9

S.No	Course No	Course Name	L	T	E	P	O	C
51	ME6610	Theory of steam and gas turbines	3	0	0	0	6	9
52	ME6620	Theory and design of centrifugal m/c	3	0	0	0	6	9
53	ME6630	Theory of axial compressors	3	0	0	0	6	9
54	ME6640	Advanced Topics in Turbomachinery	3	0	0	0	6	9
55	ME6650	Computational Fluid Dynamics of Turbomachinery	3	0	0	0	6	9
56	ME6660	Fans, Blowers and Compressors	3	0	0	0	6	9
57	ME6670	Gas Turbine Engineering	3	0	0	0	6	9
58	ME6680	Measurement Techniques in Thermal Turbomachines	3	0	0	0	6	9
59	ME6690	Compact Heat Exchangers	3	0	0	0	6	9
60	ME6910	Diagnostic Methods in Combustion Systems	3	0	0	0	6	9
61	ME6920	Performance Analysis of Hydroturbomachines	3	0	0	0	6	9
62	ME6930	Engine Tribology	3	0	0	0	6	9
63	ME6940	Engine Noise and Vibrations	3	0	0	0	6	9
64	ME7270	Microscale Fluid Flow and Machinery	3	0	0	0	6	9
65	ME7770	Theory & Tech. of Fuel Cells	3	0	0	0	6	9
66	ME7790	Heat and Mass Transfer in Porous Media	3	0	0	0	6	9

Branch Code: ME2

M.Tech. in MECHANICAL ENGINEERING

STREAM: DESIGN

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME6000	Computational Methods in Engineering	3	1	0	0	6	10
2	ME6700	Advanced Mechanics of Solids	3	0	0	0	6	9
3	ME6830	Principles of Product Design	3	0	0	0	6	9
4	ME7360	Theory of Vibration	3	0	0	0	6	9
5	ME7390	Design with Advanced Materials	3	0	0	0	6	9
6	ME6790	CAD and Machine Elements Laboratory	0	0	0	3	0	3
		Total Credits :						**49**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME6800	Finite Element Analysis	3	0	0	0	6	9
2	ME7700	Design Practice	1	0	0	3	2	6
3	ME6730	Mechanical Design Lab	0	0	0	3	0	3
4		Professional Elective I	3	0	0	0	6	9
5		Professional Elective II	3	0	0	0	6	9
6		Professional Elective III	3	0	0	0	6	9
7		Professional Elective IV	3	0	0	0	6	9
		Total Credits :						**54**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990*	Project Phase I	0	0	0	0	20	20*
		Total Credits						**20**

** Project (ME7990 *) grade assigned in 4th semester*

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990+	Project Phase II	0	0	0	0	25	25*
2		Professional Elective V	3	0	0	0	6	9
3		Professional Elective VI	3	0	0	0	6	9
		Total Credits :						**43**

** Project (ME7990+) grade assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990#	Project Phase III	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	49	54	20	43	40	206

* Grade assigned in fourth semester

LIST OF ELECTIVES

S.No	Course No	Course Name	L	T	E	P	O	C
1	CT7000	Composite Materials Science	3	0	0	0	6	9
2	CT7120	Modeling and Equipment Des for Comp Proc	3	0	0	0	6	9
3	ID5020	Multi-body Dynamics and Applications	3	0	0	0	6	9
4	ID6010	Constitutive Modeling in Continuum Mechanics	3	0	0	0	6	9
5	ID7010	Advanced Finite Element Analysis	3	0	0	0	6	9
6	ME6750	Gear Design	3	0	0	0	6	9
7	ME6760	Design of Mechanical Transmission Elements	3	0	0	0	6	9
8	ME6770	Design of Pressure vessels and Piping	3	0	0	0	6	9
9	ME6780	Design Synthesis	3	0	0	0	6	9
10	ME6810	Transmission Mechanisms and Manipulators	3	0	0	0	6	9
11	ME6840	Design for Manufacture and Assembly	3	0	0	0	6	9
12	ME6850	Product Reliability	3	0	0	0	6	9
13	ME6870	CAD/CAM for product design	3	0	0	0	6	9
14	ME7020	Robotics and Robot applications	3	0	0	0	6	9
15	ME7120	Sensors for Intelligent Manufacturing and Condition Monitoring	3	0	0	0	6	9
16	ME7300	Friction and Wear in Machinery	3	0	0	0	6	9
17	ME7400	Mechatronic Systems	3	0	0	0	6	9
18	ME7430	Oil Hydraulics and Pneumatic Systems	3	0	0	0	6	9
19	ME7470	Industrial Instrumentation	3	0	0	0	6	9
20	ME7500	Measurement Systems	3	0	0	0	6	9
21	ME7640	Tribo Design and Analysis	3	0	0	0	6	9
22	ME7660	Nonlinear Solid Mechanics	3	0	0	0	6	9
23	ME7680	Optimization Methods for Mechanical Design	3	0	0	0	6	9
24	ME7710	Advanced Vibration and Acoustics	3	0	0	0	6	9
25	ME7740	Structural Health and Integrity Monitoring	3	0	0	0	6	9
26	ME7820	Rotor Dynamics	3	0	0	0	6	9
27	ME7830	Random Vibrations	3	0	0	0	6	9
28	ME7840	Signal Processing in Mechanical systems	3	0	0	0	6	9
29	ME7850	Modal Analysis of Mechanical systems	3	0	0	0	6	9
30	ME7860	Tribo-Instrumentation	3	0	0	0	6	9
31	ME7870	Diagnostic Maintenance	3	0	0	0	6	9
32	ME7880	Vehicular Vibration	3	0	0	0	6	9
33	ME7890	Advanced Applied Finite Element	3	0	0	0	6	9
34	ME7910	Acoustics and Noise Control	3	0	0	0	6	9
35	ME7920	Applied Finite Element	3	0	0	0	6	9
36	ME7930	Chaotic Vibrations	3	0	0	0	6	9
37	ME 7190	Introduction to Fracture Mechanics	3	0	0	0	6	9
38	ME6012	Mechanics of Human Movement	3	0	0	0	6	9
39	ME6710	Theory of Mechanisms	3	0	0	0	6	9
40	ME6720	Failure Analysis and Design	3	0	0	0	6	9
41	ME6016	Mechanics of Thin Films for Microsystem Design	3	0	0	0	6	9
42	ME6003	Variational Principles in Mechanics	3	0	0	0	6	9
43	ME6820	Fundamentals of Engineering Design	3	0	0	0	6	9
44	ME6015	Elastic waves and ultrasonics	3	0	0	0	6	9
45	ID6070	Mechanics of Viscoelastic materials	3	0	0	0	6	9
46	ME8001	Mechanics of Mixtures	3	0	0	0	6	9
47	ME7023	Foundations of computational materials modelling	3	0	0	0	6	9

Branch Code: ME3

M.Tech. in MECHANICAL ENGINEERING
STREAM: MANUFACTURING ENGINEERING
2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7090	Advanced Materials and Processing	3	0	0	0	6	9
2	ME6000	Computational Methods in Engineering	3	1	0	0	6	10
3	ME7010	Microprocessors in Automation	3	0	0	0	6	9
4	ME7040	Computer Aided Design in Manufacturing	3	0	0	0	6	9
5	ME7050	Computer Numerical Control and Adaptive Control	3	0	0	0	6	9
		Total Credits :						**46**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7030	Metrology and Computer Aided Inspection	3	0	0	0	6	9
2	ME7060	Manufacturing and Precision Engineering Lab	0	0	0	4	0	4
3	ME7120	Sensors for Intelligent Manufacturing and Condition Monitoring	3	0	0	0	6	9
4	ME7430	Oil Hydraulic and Pneumatic Systems	3	0	0	0	6	9
5		Professional Elective I	3	0	0	0	6	9
6		Professional Elective II	3	0	0	0	6	9
		Total Credits :						**49**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990*	Project Phase I	0	0	0	0	20	20*
		Total Credits						**20**

** Project (ME7990 *) grade assigned in 4th semester*

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990	Project Phase II	0	0	0	0	25	25*
2		Professional Elective III	3	0	0	0	6	9
3		Professional Elective IV	3	0	0	0	6	9
4		**Total Credits :**						**43**

** Project (ME7990+) grade assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7990#	Project Phase III	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	46	49	20	43	40	198

* Grade assigned in fourth semester

LIST OF ELECTIVES

Electives I and II – EVEN Semester

S.No	Course No	Course Name	L	T	E	P	O	C
1	ME7100	Production System Design & Control	3	0	0	0	6	9
2	ME7110	Handling Systems Design & Tooling for Automated Manufacturing and Assembly	3	0	0	0	6	9
3	ME7150	Artificial Intelligence in Manufacturing	3	0	0	0	6	9
4	ME7170	Flexible Manufacturing Systems	3	0	0	0	6	9
5	ME7180	Machine Vision and its Applications	3	0	0	0	6	9
6	HS 7410	Management of Finance, Marketing and Personnel	3	0	0	0	6	9
7	ME7400	Mechatronic Systems	3	0	0	0	6	9
8	ME7410	Control Engineering	3	0	0	0	6	9
9	ME7420	Manufacturing Methods in Precision Engineering	3	0	0	0	6	9
10	ME7470	Industrial Instrumentation	3	0	0	0	6	9
11	ME7480	Optical Instrumentation	3	0	0	0	6	9
12	ME7500	Measurement Systems	3	0	0	0	6	9
13	ME7540	Horological Instruments	3	0	0	0	6	9
14	ME7560	Precision Engineering Elements and Instruments	3	0	0	0	6	9
15	ME6014	Micro Manufacturing Technology	3	0	0	0	6	9
16	ME7020	Robotics and Robot Applications	3	0	0	0	6	9

Electives III and IV – ODD Semester

S.No	Course No	Course Name	L	T	E	P	O	C
1	MA6310	Operations Research I	3	0	0	0	6	9
2	ME7160	Computational Methods in Design and Manufacture	3	0	0	0	6	9
3	ME7200	Treatment of Materials	3	0	0	0	6	9
4	ME7210	Machine Tool Dynamics	3	0	0	0	6	9
5	ME7220	Metal Removal Processes	3	0	0	0	6	9
6	ME7300	Friction and Wear in Machinery	3	0	0	0	6	9
7	MT 5610	Metal Forming Processes	3	0	0	0	6	9
8	PH 6470	Applied Optics	3	0	0	0	6	9
9	ME7450	Precision Electric Drives and Actuators	3	0	0	0	6	9
10	ME7460	Inertial Instrumentation	3	0	0	0	6	9
11	ME7490	Design and Packaging of Electronic Equipment	3	0	0	0	6	9
12	ME7510	Precision Engineering Design	3	0	0	0	6	9
13	ME7520	Proportional and Servo Hydraulic Controls	3	0	0	0	6	9
14	ME7530	Design of Robotic Manipulators	3	0	0	0	6	9
15	ME7550	Control System Design: A Computer Aided Approach	3	0	0	0	6	9

Branch Code: MM1

M.Tech. in METALLURGICAL & MATERIALS ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	MM5024	Numerical methods for Metallurgists	3	0	0	0	6	9
2	MM5028	Advanced Materials Characterisation Laboratory	0	0	0	3	0	3
3	MM5050	Thermodynamics & Kinetics	3	0	0	0	6	9
4	MM5160	Mechanical Behaviour of Materials	3	0	0	0	6	9
5	DPE1	Department Elective 1	3	0	0	0	6	9
6	DPE2	Department Elective 2	3	0	0	0	6	9
		Total Credits :						**48**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	MM5020	Modern Techniques of Material Characterisation	3	0	0	0	6	9
2	MM5480	Advanced Phase Transformations	3	0	0	0	6	9
3	DEP4	Free Elective/Department Elective 3	3	0	0	0	6	9
4	DPE5	Department Elective 4	3	0	0	0	6	9
5	DPE6	Department Elective 5	3	0	0	0	6	9
7	DPL1	Department Elective Lab	0	0	0	3	0	3
		Total Credits :						**48**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	MM5090*	Project during Summer Break	0	0	0	0	20	20*
		Total Credits						**20**

** Project (MM5090*) grade will be assigned in 4th semester*

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	MM5090+	Project	0	0	0	0	40	40*
4		**Total Credits :**						**40**

** Project (MM5090+) grade will be assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	MM5090	Project	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	48	48	20	40	40	196

NOTE

- The elective lab course will be chosen from
    1. Metal Forming Laboratory (MM5660)
    2. Materials joining laboratory (MM5770),
    3. Non Destructive Testing Lab (MM5190)

LIST OF ELECTIVES

S.No	Course No	Course Name	L	T	E	P	O	C
1	MM5001	Composite materials	3	0	0	0	6	9
2	MM5010	Advanced engineering materials	3	0	0	0	6	9
3	MM5011	Modelling of Transport Phenomena in Multi-Phase Systems	3	0	0	0	6	9
4	MM5012	Welding Processes	3	0	0	0	6	9
5	MM5013	Textures in Materials	3	0	0	0	6	9
6	MM5015	Introduction to Multi-Scale Modeling of Materials	3	0	0	0	6	9
7	MM5017	Electronic materials, devices, and fabrication	3	0	0	0	6	9
8	MM5018	Thin and thick film metallization in electronics	3	0	0	0	6	9
9	MM5021	Deformation and Failure of Materials at Elevated Temperatures	3	0	0	0	6	9
10	MM5023	Iron and Steel Making Technology	3	0	0	0	6	9
11	MM5025	Physical Metallurgy of Ferrous Alloys	3	0	0	0	6	9
12	MM5026	Special Topics in Iron and Steel Technology	3	0	0	0	6	9
13	MM5030	Materials in renewable energy technologies	3	0	0	0	6	9
14	MM5040	Defects in materials	3	0	0	0	6	9
15	MM5120	Heat Treatment Technology	3	0	0	0	6	9
16	MM5130	Materials for Extreme Environment	3	0	0	0	6	9
17	MM5140	Metallurgical Failure Analysis	3	0	0	0	6	9
18	MM5180	Non Destructive Evaluation	3	0	0	0	6	9
19	MM5190	Non Destructive Testing Lab	0	0	0	3	0	3
20	MM5210	X-ray Diffraction Techniques	3	0	0	0	6	9
21	MM5240	Electron Diffraction and Microscopy	3	0	0	0	6	9
22	MM5250	Additive Manufacturing	3	0	0	0	6	9
23	ID6103	Practical Transmission Electron Microscopy	1	0	0	6	2	9
24	MM5290	Stability of Microstructures	3	0	0	0	6	9
25	MM5320	Corrosion Engineering	3	0	0	0	6	9
26	MM5330	Surface Degradation Processes	3	0	0	0	6	9
27	MM5340	Surface Engineering	3	0	0	0	6	9
28	MM5380	Transport Phenomena in Metallurgical Processes	3	0	0	0	6	9
29	MM5410	Ceramic Science & Technology	3	0	0	0	6	9
30	MM5420	Advanced Ceramics	3	0	0	0	6	9
31	MM5430	Advanced Powder Processing	3	0	0	0	6	9
32	MM5460	Physical Ceramics	3	0	0	0	6	9
33	MM5520	Solidification Phenomena	3	0	0	0	6	9
34	MM5610	Metal Forming Processes	3	0	0	0	6	9
35	MM5630	Plasticity & Plastic Deformation	3	0	0	0	6	9
36	MM5640	Sheet Metal Forming	3	0	0	0	6	9
37	MM5650	Press Tools for Metal Forming	3	0	0	0	6	9
38	MM5660	Metal Forming Laboratory	0	0	0	3	0	3
39	MM5680	Smart Materials	3	0	0	0	6	9
40	MM5700	Topics in Nanomaterials	3	0	0	0	6	9
41	MM5740	Welding Metallurgy	3	0	0	0	6	9
42	MM5750	Welding Application Technology	3	0	0	0	6	9
43	MM5760	Advanced Topics in Joining of Materials	3	0	0	0	6	9
44	MM5770	Materials joining laboratory	0	0	0	3	0	3
45	MM6010	Computational Materials Thermodynamics	3	0	0	0	6	9
46	MM5041	Medical Materials	3	0	0	0	6	9
47	MM6001	Brittle Fracture and Indentation Mechanics	3	0	0	0	6	9

Any other course permitted by the Department can be added to this list of electives.

Branch Code: OE1

M.Tech. in OCEAN ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE5010	Oceanography	3	0	0	1	6	10
2	OE5030	Wave Hydrodynamics	3	0	0	1	6	10
3	OE5070	Statics and Dynamics of Marine Vehicle	3	0	0	1	6	10
4	OE6200	Design of Offshore Structures	3	1	0	0	6	10
5	OE5110	Experimental Methods & Measurements	3	0	0	2	6	11
6	DPE1	Departmental Elective 1	3	0	0	0	6	9
7		**Total Credits :**						**60**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE5230	Foundations of Offshore structures	3	1	0	0	6	10
2	OE5600	Advanced Wave Dynamics	2	1	2	0	4	9
3	DPE2	Department Elective 2	3	0	0	0	6	9
4	DPE3	Department Elective 3	3	0	0	0	6	9
5	DPE4	Department Elective 4	3	0	0	0	6	9
6	OE5020	Design Project	0	0	0	0	4	4
7		**Total Credits :**						**50**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6900$	Project during Summer Break	0	0	0	0	25	25*
		Total Credits						**25**

** Project (*OE6900$*) grade will be assigned in 4th semester*

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6900+	Project	0	0	0	0	20	20*
2	DPE5	Department Elective 5	3	0	0	0	6	9
		Total Credits :						**29**

** Project (OE6900+) grade will be assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6900	Project	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	60	50	25	29	40	204

LIST OF ELECTIVES

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE5011	Marine Robotics	3	1	1	0	6	11
2	OE5080	Marine Instrumentation	3	0	0	0	6	9
3	OE5170	Ocean Acoustics	3	0	0	0	6	9
4	OE5200	Dynamics of Ocean Structures	3	0	0	0	6	9
5	OE5210	Port Planning and Development	3	0	0	0	6	9
6	OE5300	Dynamics of Floating Bodies	3	0	0	0	6	9
7	OE5310	Guidance & Control of Marine Vehicles	3	0	0	0	6	9
8	OE5320	Nonlinear Problem in Ocean Engineering	3	0	0	0	6	9
9	OE5330	Advanced Marine Structures	3	0	0	0	6	9
10	OE5340	Ocean Environmental Policy & Coastal Zone Mgmt	3	0	0	0	6	9
11	OE5400	Port and Harbour Structures	3	0	0	0	6	9
12	OE5450	Numerical Techniques in Ocean Hydrodynamics	3	0	3	0	6	12
13	OE5500	FEM applied to Ocean Engineering	3	0	0	0	6	9
14	OE5800	Coastal Engineering	3	0	0	0	6	9
15	OE6100	Ocean Mining and Dredging	3	0	0	0	6	9
16	OE6300	Plated Structures and Shells	3	0	0	0	6	9
17	OE6930	Modelling of Offshore and Coastal Processes	1	0	2	4	2	9
18	OE6980	Comp. Aid. Surface Dev. For Marine Vehicles	3	1	1	0	6	11
19	OE6020	Meshfree methods applied to hydrodynamics	3	0	3	0	6	12
20	PE6020	Drilling Technology	3	0	0	1	6	10
21	PE6090	HSE Management in Petroleum and Offshore Engg	3	1	0	0	6	10
22	OE 5050	Ocean Structures and Materials	3	0	0	0	6	9
23	OE 6002	Installation of Offshore Structures	3	0	0	0	6	9
24	OE 6004	Numerical Modeling of Offshore Structures	2	0	0	3	4	9
25	OE 6001	Materials and Fabrication of Offshore Structures	3	1	0	0	6	10
26	OE6005	Reliability of Offshore Structures	3	0	0	0	6	9
		ELECTIVES - OTHER DEPARTMENTS						
27	AM6570	Flow Induced Vibration	3	0	0	0	6	9
28	ME7910	Acoustics & Noise Control	3	0	0	0	6	9
29	ME7360	Theory of Vibration	3	0	0	0	6	9
30	CH6020	Computational Fluid Dynamics	3	0	0	0	6	9
31	CE5230	Applied Fluid Mechanics	3	0	0	0	6	9
32	CE5720	Stability of Structures	3	0	0	0	6	9
33	MM5180	Non-Destructive Evaluation	3	0	0	0	6	9
34	MM5320	Corrosion Engineering	3	0	0	0	6	9
35	ID5020	Multibody dynamics and applications	3	0	0	0	6	9
36	AS 5820	Analysis of Plates and Shells	3	0	0	0	6	9
37	AS 5850	Finite Element Analysis	3	0	0	0	6	9
38	AS 5860	Composite Structures	3	0	0	0	6	9
39	AS5870	Energy Methods in Structural Analysis	3	0	0	0	6	9
40	AS5920	Dynamics of Elastic Systems	3	0	0	0	6	9
41	AS5960	Advanced Strength of Materials	3	0	0	0	6	9
42	AS5970	Structural Dynamics and Aeroelasticity	3	0	0	0	6	9
43	AM5116	Structural Control	3	0	0	0	6	9
44	AM5650	Nonlinear Vibrations	3	0	0	0	6	9
45	AM5570	Introduction to Turbulence	3	0	0	0	6	9
46	AM5340	Stochastic Processes in Structural Mechanics	3	0	0	0	6	9
47	AM5290	Dynamics of Structures	3	0	0	0	6	9
48	AM5600	Computational Techniques in Applied Mechanics	3	0	0	0	6	9
49	AM5610	Measurements in Mechanics	3	0	0	0	6	9
50	AM5390	Advanced Structural Mechanics	3	0	0	0	6	9

S.No	Course No	Course Name	L	T	E	P	O	C
51	AM5530	Advanced Fluid Mechanics	3	0	0	0	6	9
52	AM5117	Analytical Methods in Mechanics	3	0	0	0	6	9
53	AM 5620	Theory of Plates and Shells	3	0	0	0	6	9
54	AM5630	Foundation of Computational Fluid Dynamic	3	0	0	0	6	9
55	ME 6800	Finite Element Analysis	3	0	0	0	6	9
56	ME 7360	Theory of Vibration	3	0	0	0	6	9
57	ME6000	Computational Methods in Engineering	3	0	0	0	6	9
58	CE5620	Structural Dynamics	3	1	0	0	6	10
59	CE6780	Advanced Mechanics of Structures	3	1	0	0	6	10
60	CE5610	Finite Element Analysis	3	1	0	0	8	12

Branch Code: OE2

M.Tech. in OCEAN TECHNOLOGY

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE5010	Oceanography	3	0	0	1	6	10
2	OE5030	Wave Hydrodynamics	3	0	0	1	6	10
3	OE6200	Design of Offshore Structures	3	1	0	0	6	10
4	OE5070	Statistics and Dynamics of Marine Vehicle	3	0	0	1	6	10
5	OE5110	Experimental Methods & Measurements	3	0	0	2	6	11
6	DPE1	Department Elective 1	3	0	0	0	6	9
		Total Credits :						**60**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE5080	Marine Instrumentation	3	0	0	0	6	9
2	OE5340	Ocean Env. Policy & Coastal Zone Mgmt.	3	0	0	0	6	9
3	OE5341	Marine Survey and Informatics	3	0	0	0	6	9
4	OE5170	Ocean Acoustics	3	0	0	0	6	9
5	DPE2	Department Elective 2	3	0	0	0	6	9
6	DPE3	Department Elective 3	3	0	0	0	6	9
		Total Credits :						**54**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE5190	Practical training	0	0	0	0	16	**16**
		Total Credits						**16**

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6901*	Project	0	0	0	0	16	16*
2	DPE4	Department Elective 4	3	0	0	0	6	9
3	DPE5	Department Elective 5	3	0	0	0	6	9
		Total Credits :						**34**

** Project (OE6901*) grade will be assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6901	Project	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	60	54	16	34	40	204

LIST OF DEPARTMENT ELECTIVES

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE5200	Dynamics of Ocean Structures	3	0	0	0	6	9
2	OE5210	Port Planning and Development	3	0	0	0	6	9
3	OE5300	Dynamics of Floating Bodies	3	0	0	0	6	9
4	OE5310	Guidance & Control of Marine Vehicles	3	0	0	0	6	9
5	OE5320	Nonlinear Problem in Ocean Engineering	3	0	0	0	6	9
6	OE5330	Advanced Marine Structures	3	0	0	0	6	9
7	OE5340	Ocean Environmental Policy & Coastal Zone Mgmt	3	0	0	0	6	9
8	OE5400	Port and Harbour Structures	3	0	0	0	6	9
9	OE5450	Numerical Techniques in Ocean Hydrodynamics	3	0	3	0	6	12
10	OE5500	FEM applied to Ocean Engineering	3	0	0	0	6	9
11	OE5600	Advanced Wave Dynamics	3	0	0	0	6	9
12	OE5800	Coastal Engineering	3	0	0	0	6	9
13	OE6200	Design of Offshore Structures	3	1	0	0	6	10
14	OE6300	Plated Structures and Shells	3	0	0	0	6	9
15	OE6980	Comp. Aid. Surface Dev. for Marine Vehicles	3	1	1	0	6	11
16	OE6990	Advanced Marine Vehicles	3	0	0	0	6	9
17	OE6020	Meshfree methods applied to hydrodynamics	3	0	3	0	6	12
18	PE6020	Drilling Technology	3	0	0	1	6	10
19	PE6090	HSE Management in Petroleum and Offshore Engg	3	1	0	0	6	10
20	PE6320	Subsea Engineering for oil and gas fields	3	0	0	0	6	9
21	OE 5050	Ocean Structures and Materials	3	0	0	0	6	9
22	OE 6002	Installation of Offshore Structures	3	0	0	0	6	9
23	OE 6004	Numerical Modeling of Offshore Structures	2	0	0	3	4	9
24	OE 6001	Materials and Fabrication of Offshore Structures	3	1	0	0	6	10
	ELECTIVES - OTHER DEPARTMENTS							
25	AM6570	Flow Induced Vibration	3	0	0	0	6	9
26	ME7910	Acoustics & Noise Control	3	0	0	0	6	9
27	ME7360	Theory of Vibration	3	0	0	0	6	9
28	CH6020	Computational Fluid Dynamics	3	0	0	0	6	9
29	CE5230	Applied Fluid Mechanics	3	0	0	0	6	9
30	CE5720	Stability of Structures	3	0	0	0	6	9
31	MM5180	Non-Destructive Evaluation	3	0	0	0	6	9
32	MM5320	Corrosion Engineering	3	0	0	0	6	9
33	ID5020	Multibody dynamics and applications	3	0	0	0	6	9
34	AS 5820	Analysis of Plates and Shells	3	0	0	0	6	9
35	AS 5850	Finite Element Analysis	3	0	0	0	6	9
36	AS 5860	Composite Structures	3	0	0	0	6	9
37	AS5870	Energy Methods in Structural Analysis	3	0	0	0	6	9
38	AS5920	Dynamics of Elastic Systems	3	0	0	0	6	9
39	AS5960	Advanced Strength of Materials	3	0	0	0	6	9
40	AS5970	Structural Dynamics and Aeroelasticity	3	0	0	0	6	9
41	AM5116	Structural Control	3	0	0	0	6	9
42	AM5650	Nonlinear Vibrations	3	0	0	0	6	9
43	AM5570	Introduction to Turbulence	3	0	0	0	6	9
44	AM5340	Stochastic Processes in Structural Mechanics	3	0	0	0	6	9
45	AM5290	Dynamics of Structures	3	0	0	0	6	9
46	AM5600	Computational Techniques in Applied Mechanics	3	0	0	0	6	9
47	AM5610	Measurements in Mechanics	3	0	0	0	6	9
48	AM5390	Advanced Structural Mechanics	3	0	0	0	6	9
49	AM5530	Advanced Fluid Mechanics	3	0	0	0	6	9
50	AM5117	Analytical Methods in Mechanics	3	0	0	0	6	9
51	AM 5620	Theory of Plates and Shells	3	0	0	0	6	9

S.No	Course No	Course Name	L	T	E	P	O	C
52	AM5630	Foundation of Computational Fluid Dynamic	3	0	0	0	6	9
53	ME 6800	Finite Element Analysis	3	0	0	0	6	9
54	ME 7360	Theory of Vibration	3	0	0	0	6	9
55	ME6000	Computational Methods in Engineering	3	0	0	0	6	9
56	CE5620	Structural Dynamics	3	1	0	0	6	10
57	CE6780	Advanced Mechanics of Structures	3	1	0	0	6	10
58	CE5610	Finite Element Analysis	3	1	0	0	8	12

Branch Code: OE3

M.Tech. in OFFSHORE TECHNOLOGY (UoP)

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6320	Marine Hydrodynamics	3	1	0	0	6	10
2	OE5070	Statics and Dynamics of Marine Vehicles	3	0	0	1	6	10
3	OE5200	Dynamics of Ocean Structures	3	0	0	0	6	9
4	OE6003	Analysis of Ships and Offshore Structures	3	0	0	0	6	9
5	OE6360	Ships and Offshore Technology Lab	0	0	0	4	0	4
6	DPE1	Department Elective I	3	0	0	0	6	9
		TOTAL						**51**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE5500	FEM applied to Ocean Engineering	3	0	0	0	6	9
2	OE6001	Materials and Fabrication of Ships & Offshore Structures	3	0	0	0	6	9
3	OE6004	Modelling of Ships & Offshore Structures	2	0	0	3	4	9
4	DPE2	Department Elective II	3	0	0	0	6	9
5	DPE3	Department Elective III	3	0	0	0	6	9
		Total Credits :						**45**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6009	Practical training	0	0	0	0	3	**3**

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6006	Design of Ships & Floating Offshore Systems	3	0	0	0	6	9
2	DPE4	Department Elective IV	3	0	0	0	6	9
3	DPE5	Department Elective V	3	0	0	0	6	9
4	OE6902$	Thesis Project (Part I)	0	0	0	0	25	25
		TOTAL						**52**

** Project (OE6902*) grade will be assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	OE6902	Project	0	0	0	0	52	**52**
		Total Credits :						**52**

Semester	I	II	Summer	III	IV	Total
Credits	51	45	3	52	52	203

List of Electives

S.No	Course No.	Subject	L	T	E	P	O	C
1.	OE6200	Design of Offshore Structures	3	1	0	0	6	10
2.	OE5300	Dynamics of Floating Bodies	3	0	0	0	6	9
3.	OE5230	Foundations for Offshore Structures	3	1	0	0	6	10
4.	OE6002	Installation of offshore Structures	3	0	0	0	6	9
5.	OE6201	Structural Integrity Assessment of Offshore structures	3	0	0	0	6	9
6.	OE5110	Experimental Methods & Measurements	3	0	0	2	6	11
7.	OE5320	Nonlinear Problems in Ocean Engineering	3	0	0	0	6	9
8.	OE6007	Pipeline and Riser Engineering	3	0	0	0	6	9
9.	OE5400	Port and Harbour Structures	3	0	0	0	6	9
10.	OE6310	Powering and Propulsion of Marine Vehicles	3	1	0	0	6	10
11.	OE6330	Seakeeping and Maneuvering of Marine Vehicles	3	0	0	0	6	9
12.	OE6340	Ship and Undersea Vehicle Design	3	1	0	0	6	10
13.	OE6990	Advanced Marine Vehicles	3	0	0	0	6	9
14.	OE5999	Special Topics in Ship Design and Construction	3	0	0	0	6	9
15.	OE6980	Comp. Aid. Surface Dev. For Marine Vehicles	3	1	1	0	6	11
16.	OE5300	Dynamics of Floating Bodies	3	0	0	0	6	9
17.	OE5320	Nonlinear Problems in Ocean Engineering	3	0	0	0	6	9

Any other elective approved by Faculty Advisor - IIT Madras.

Branch Code: PE1

M.Tech. in PETROLEUM ENGINEERING

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	PE6030	Reservoir Engineering	3	0	0	1	6	10
2	PE6050	Oil and Gas Exploration	3	0	0	1	6	10
3	PE6020	Drilling Technology	3	0	0	1	6	10
4	PE6090	HSE Management in Petroleum & Offshore Engg	3	0	0	1	6	10
5	DPE1	Department Elective 1	3	0	0	0	6	9
6		**Total Credits :**						**49**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	PE6180	Natural Gas Engineering	3	0	0	1	6	10
2	PE6040	Seismic data acquisition, Processing and Interpretation	3	0	0	1	6	10
3	PE6031	Reservoir Simulation	3	0	0	1	6	10
4	DPE2	Department Elective 2	3	0	0	0	6	9
5	DPE3	Department Elective 3	3	0	0	0	6	9
6		**Total Credits :**						**48**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	PE6200*	Project I	0	0	0	0	25	**25***
		Total Credits						**25**

** Project (PE6200*) grade will be assigned in 4th semester*

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1		Department Elective 4	3	0	0	0	6	9
2		Department Elective 5	3	0	0	0	6	9
3	PE6200+	Project II	0	0	0	0	24	24*
		Total Credits :						**42**

** Project (PE6200+) grade will be assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	PE6200#	Project III	0	0	0	0	40	40
		Total Credits :						**40**

Semester	I	II	Summer	III	IV	Total
Credits	49	48	25	42	40	204

LIST OF DEPARTMENT ELECTIVES

S.No	Course No	Course Name	L	T	E	P	O	C
1	PE6060	Offshore Oil and Gas Production Systems	3	0	0	0	6	9
2	PE6310	Well-completion, Testing and Analysis	3	0	0	0	6	9
3	PE6320	Sub Sea Engineering for Oil and Gas Fields	3	0	0	0	6	9
4	PE6311	Well logging and formation evaluation	3	0	0	0	6	9
5	PE6312	Enhanced oil recovery	3	0	0	0	6	9
6	PE6313	Applied Scientific Computing in Ocean and Petroleum Engineering	3	1	1	0	6	11
7	PE6314	Drilling Fluid Design and Analysis	3	1	0	2	6	12
8	PE6317	Appd. Hydrodynamics in Petroleum Exploration and Production	3	0	0	0	6	9
9	PE6010	Petroleum Geology	3	0	0	1	6	10
10	OE5002	Phased array systems	3	0	0	0	6	9

Branch Code: PH1

M.Tech. in FUNCTIONAL MATERIALS AND NANOTECHNOLOGY

2016 Batch

Semester 1

S.No	Course No	Course Name	L	T	E	P	O	C
1	PH5011	Science and Technology of Solid State	3	1	0	0	6	10
2	PH6022	Introduction to nanoscience	3	0	0	0	6	9
3	PH5310	Synthesis and Characterization of Functional Materials	3	0	0	0	6	9
4	PH5320	Techniques of Characterization of Materials and Physical Measurements	3	0	0	0	6	9
5	PH5330	Laboratory for Synthesis and characterization of Functional Materials	0	0	0	6	2	8
		Total Credits :	12	1	0	6	26	**45**

Semester 2

S.No	Course No	Course Name	L	T	E	P	O	C
1	PH6011	Nanomaterials and nanotechnology	3	0	0	0	6	9
2	PH6012	Fundamentals of Semiconductor Physics and Devices	3	0	0	0	6	9
3	PH6013	Functional Materials, Sensors and Transducers	3	0	0	0	6	9
4		Elective 1	3	0	0	0	6	9
5	PH5350	Laboratory for Physical Property Measurement and Transducer / Sensor Element Characteristics of Functional Materials	0	0	0	9	3	12
		Total Credits :	12	0	0	9	27	**48**

SUMMER

S.No	Course No	Course Name	L	T	E	P	O	C
1	PH5360*	Project	0	0	0	0	25	25
		Total Credits						**25**

** Project (PH5360*) grade will be assigned in 4th semester*

Semester 3

S.No	Course No	Course Name	L	T	E	P	O	C
1	PH5360+	Project	0	0	0	0	20	20
2		Elective 2	3	0	0	0	6	9
3		Elective 3	3	0	0	0	6	9
		Total						**38**

** Project (PH5360+) grade will be assigned in 4th semester*

Semester 4

S.No	Course No	Course Name	L	T	E	P	O	C
1	PH5360	Project	0	0	0	0	40	40
2	PH5380	Seminar	0	0	0	3	0	3
		Total						**43**

Semester	I	II	Summer	III	IV	Total
Credits	45	48	25	38	43	199