



**INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI 600 036**

**Curriculum for
Dual Degree Programme
2014 Batch**



INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Curriculum for Dual Degree Programme

2014 Batch

Sl.No.	Details	Page No.
1.0	Category & Branch-wise credit requirements	
2.0	Aerospace Engineering	
2.1	Dual Degree (B.Tech. & M.Tech.) in Aerospace Engineering	5
2.2	Dual Degree (B.Tech. in Aerospace Engineering & M.Tech. in Applied Mechanics)	8
3.0	Biotechnology	
3.1	Dual Degree (B.Tech. & M.Tech.) in Biological Engineering	10
3.2	Dual Degree (B.S. & M.S.) in Biological Sciences	13
4.0	Chemical Engineering	
4.1	Dual Degree (B.Tech. & M.Tech.) in Chemical Engineering	16
5.0	Civil Engineering	
5.1	Dual Degree (B.Tech. & M.Tech.) in Civil Engineering	19
	5.1.1 Infrastructural Civil Engineering	21
	5.1.2 Building Technology & Construction Management	23
	5.1.2 Environmental Engineering	25
	5.1.3 Geotechnical Engineering	27
	5.1.4 Hydraulic and Water Resources Engineering	29
	5.1.5 Structural Engineering	31
	5.1.6 Transportation Engineering	33
5.2	Dual Degree (B.Tech. in Civil Engineering & M.Tech. in Applied Mechanics)	35
6.0	Computer Science and Engineering	
6.1	Dual Degree (B.Tech. & M.Tech.) in Computer Science and Engineering	37
7.0	Engineering Design	
7.1	Automotive Engineering	40
7.2	Biomedical Engineering	43
8.0	Electrical Engineering	46
8.1	Dual Degree (B.Tech. & M.Tech.) in Electrical Engineering	48
8.2	Dual Degree (B.Tech. in Electrical Engineering & M.Tech. in Applied Mechanics)	50
9.0	Mechanical Engineering	51
9.1	Product Design	53
9.2	Intelligent Manufacturing	55
9.3	Thermal Engineering	57
10.0	Metallurgical and Materials Engineering	
10.1	Dual Degree (B.Tech. & M.Tech.) in Metallurgical and Materials Engineering	59
11.0	Naval Architecture and Ocean Engineering	62
11.1	Dual Degree (B.Tech. & M.Tech.) in Naval Architecture and Ocean Engineering	64
11.2	Dual Degree (B.Tech. in Naval Architecture and Ocean Engineering & M.Tech. in Applied Mechanics)	66
12.0	Physics	
12.1	Dual Degree (B.S. & M.S.) in Physics	68



Dual Degree Programme

Category and Branch-wise credit requirements

2014 Batch

Category	AE	AE & AM	BE	BS	CH	CE (Infra)	CE (BTCM)	CE (Enviro.)	CE (Geotec)	CE (HWRE)	CE (SE)	CE (TE)	CE & AM
BES	9	9	9	4	9	9	9	9	9	9	9	9	9
BET	17	17	17	13	17	17	17	17	17	17	17	17	17
HPF	4	4	4	4	4	4	4	4	4	4	4	4	4
HSS	9	9	9	9	9	9	9	9	9	9	9	9	9
MNS	9	9	9	9	9	9	9	9	9	9	9	9	9
PIL	1	1	1	1	1	1	1	1	1	1	1	1	1
PIT	2	2	2	2	2	2	2	2	2	2	2	2	2
PML	16	18	22	24	14	10	10	10	10	10	10	10	12
PMP	23	18	22	23	24	18	17	16	16	16	17	17	18
PMT	78	81	79	88	76	87	88	89	89	89	88	89	85
PPF	0	0	0	0	6	6	6	6	6	6	6	6	6
PSS	4	4	3	3	4	3	3	3	3	3	3	3	3
SCY	7	7	7	7	7	7	7	7	7	7	7	7	7
SMA	17	17	14	11	14	14	14	14	14	14	14	14	14
SPH	10	10	10	10	10	10	10	10	10	10	10	10	10
SLS	2	2	0	0	2	2	2	2	2	2	2	2	2
FRE	6	6	6	6	6	6	6	6	6	6	6	6	6
EXT	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	214	214	214	214	214	214	214	214	214	214	215	214



Dual Degree Programme

Category and Branch-wise credit requirements

2014 Batch

Category	CS	ED (Auto)	ED (Bio)	EE	EE & AM	ME (Design)	ME (Manuf.)	ME (Thermal)	MM	NA	NA& AM	PH
BES	9	15	15	9	9	9	9	9	9	9	9	9
BET	17	15	15	14	14	17	17	17	17	17	17	7
HPF	4	4	4	4	4	4	4	4	4	4	4	4
HSS	9	5	5	9	9	9	9	9	9	9	9	9
MNS	9	9	9	9	9	9	9	9	9	9	9	9
PIL	1	1	1	0	0	1	1	1	1	1	1	1
PIT	2	0	0	2	2	2	2	2	2	2	2	2
PML	18	14	14	12	14	15	15	13	16	19	21	26
PMP	20	21	25	20	19	15	15	15	20	18	19	15
PMT	74	94	91	86	91	85	85	87	79	85	81	84
PPF	8	0	0	0	0	6	6	6	6	0	0	6
PSS	4	3	3	0	3	3	3	3	3	3	3	3
SCY	7	3	3	7	7	7	7	7	7	7	7	7
SMA	14	12	12	14	14	14	14	14	14	14	14	14
SPH	10	8	8	10	10	10	10	10	10	10	10	10
SLS	2	2	2	2	2	2	2	2	2	2	2	2
FRE	6	6	6	9	6	6	6	6	6	6	6	6
EXT	0	0	0	0	0	0	0	0	0	0	0	0
Total	214	212	213	207	213	214	214	214	214	215	214	214

Branch Code: AE21

2014-Batch

Dual Degree (B.Tech. & M.Tech.) Aerospace Engineering

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	AS1010	Introduction to Aerospace Engineering	2	0	0	2	PMT
2	CY1002	Chemistry Lab I	1	0	3	3	SCY
3	ID1100	Concepts in Engineering Design	2	0	0	2	BET
4	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
5	ME1100	Thermodynamics	3	0	0	3	BET
6	ME1120	Engineering Drawing	1	0	3	3	BES
7	PH1010	Physics I	3	0	0	3	SPH
8	PH1030	Physics Laboratory I	0	0	2	2	SPH
9	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				24	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	CS1100	Computational Engineering	3	0	0	3	BET
3	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
4	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
5	PH1020	Physics II	3	0	0	3	SPH
6	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				20	
	WS1010	Workshop I	0	0	6	4	BES
	WS1020	Workshop II	0	0	3	2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	AS1020	Fluid Mechanics	4	0	0	4	PMT
2	AS2010	Basic Strength of Materials	4	0	0	4	PMT
3	AS2100	Introduction to Aerospace Lab	0	0	6	4	PML
4	BT1010	Life Sciences	2	0	0	2	SLS
5	EE1100	Basic Electrical Engineering	3	0	0	3	BET
6	ID1200	Ecology and Environment	2	0	0	2	BET
7	HSE1	Humanities Elective 1	3	0	0	3	HSS
8	MA2020	Differential Equations	3	0	0	3	SMA
		Total Credits :				25	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	AS2030	Gas Dynamics	4	0	0	4	PMT
2	AS2050	Aerodynamics	4	0	0	4	PMT
3	AS2070	Aerospace Structural Mechanics	4	0	0	4	PMT
4	AS2080	Vibrations	4	0	0	4	PMT
5	AS2510	Low Speed Lab	0	0	3	2	PML
6	HSE2	Humanities Elective 2	3	0	0	3	HSS
7	MA2010	Complex Variables & Transform Techniques	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	AS2040	Flight Dynamics I	4	0	0	4	PMT
2	AS2060	Experimental Aerodynamics	3	0	0	3	PMT
3	AS2520	Propulsion Lab	0	0	3	2	PML
4	AS3020	Aerospace Structures	4	0	0	4	PMT
5	AS3270	Propulsion	4	0	0	4	PMT
6	AS3510	Aero Lab I	0	0	3	2	PML
7	MAE3	Mathematics Elective 3	3	0	0	3	SMA
8	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				25	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	AS3010	Introduction to Space Technology	4	0	0	4	PMT
2	AS3050	Flight Dynamics II	3	0	0	3	PMT
3	AS3500	Industrial Training[Summer]	0	0	0	2	PIT
4	AS3520	Aero Lab II	0	0	3	2	PML
5	AS4020	Industrial Lecture	0	0	0	1	PIL
6	DPE1	Department Elective 1	3	0	0	3	PMT
7	DPE2	Department Elective 2	3	0	0	3	PMT
8	DPE3	Department Elective 3	3	0	0	3	PMT
9	MNS2	Minor Elective 2	3	0	0	3	MNS
10	SSE1	Self Study Elective 1	1	0	5	4	PSS
		Total Credits :				28	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	AS5220	Structural Design	1	0	5	4	PML
2	DPE4	Department Elective 4	3	0	0	3	PMT
3	DPE5	Department Elective 5	3	0	0	3	PMT
4	DPE6	Department Elective 6	3	0	0	3	PMT
5	FRE1	Free Elective 1	3	0	0	3	
6	HSE3	Humanities Elective 3	3	0	0	3	HSS
8	MNS3	Minor Elective 3	3	0	0	3	MNS
		Total Credits :				22	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	AS5190	Project I	0	0	0	3*	PMP
2	HS3050	Professional Ethics	2	0	0	2	HPF
3	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
4	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
7	FRE2	Free Elective 2	3	0	0	3	
		Total Credits :				11	

* Project (AS5190) grade will be assigned at the end of 10th semester

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	AS5190+	Project II	0	0	0	8*	PMP
2	DDE5	Dual Degree Elective 3	0	0	0	3	PMT
3	DDE6	Dual Degree Elective 4	0	0	0	3	PMT
		Total Credits :	0	0	0	6	

* Project (AS5190+) grade will be assigned at the end of 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	AS5200	Project III	0	0	0	23	PMP
		Total Credits :				23	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	20+6	25	24	25	28	22	11	6	23	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	16	23

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	78	0	4	7	17	10	2	6	0

NOTE

- Electives 1 – 6 should be AS Electives or equivalents from other departments.
- A minimum of two dual degree electives should be taken from AS electives or their equivalents.
- The other two dual degree electives may be AS electives or any other M.Tech. level courses with the consent of Faculty Advisor.
- Dual Degree (B.Tech. Honours & M.Tech.)**
(Total credit requirement: 214+12 = 226)

Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.

- Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
- Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
- Project work is a must for B.Tech (Honours) students in B.Tech programme.
- Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
- Extra credits earned by the students will be counted for prizes and awards.

Branch Code: AE22

2014-Batch

Dual Degree (B.Tech. in Aerospace Engineering and M.Tech. in Applied Mechanics)

(Curriculum for the first six semester is common – refer Page No. 5 & 6)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5010	Biomechanics	3	0	0	3	PMT
2	AS5220	Structural Design	1	0	5	4	PML
3	DDC1	Core I	3	0	0	3	PMT
4	DDC2	Core II	3	0	0	3	PMT
5	FRE1	Free Elective 1	3	0	0	3	
6	HSE4	Humanities Elective 4	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
		Total Credits :				22	

Core I & II for Dual Degree (B.Tech. in AE & M.tech. in AM) students

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5510	Biomedical Signals & Systems	3	0	0	3	PMT
2	AM5520	Medical Electronics	3	0	0	3	PMT
3	AM5600	Computational Techniques in Applied Mechanics	3	0	0	3	PMT
4	EE5400	Analog and Digital Circuits	4	0	0	4	PMT
5	EE5410	Introduction to DSP	4	0	0	4	PMT

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5110	Biomechanics Laboratory	0	0	3	2	PML
2	AM5130	Quantitative Physiology	3	0	0	3	PMT
3	AM5140	Biomedical Instrumentation	3	0	0	3	PMT
4	AM5160	Biomedical Imaging System	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	
6	HS3050	Professional Ethics	0	0	0	2	HPF
		Total Credits :				16	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5490*	Project I	0	0	0	5*	PMP
2	AM5480	Seminar	0	0	0	1	PMP
3	DDE1	M.Tech. Elective 1	3	0	0	3	PMT
4	DDE2	M.Tech. Elective 2	3	0	0	3	PMT
		Total Credits :				7	

* Project (AM5490*) grade will be assigned at the end of 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5490+	Project II	0	0	0	17	PMP
		Total Credits :				17	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	20+6	25	24	25	28	22	16	7	17	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	18	18

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	81	0	4	7	17	10	2	6	0

NOTE

- Electives 1 – 6 should be AS Electives or equivalents from other departments.
- M.Tech. electives may be M.Tech. level courses with the consent of Faculty Advisor.
- **Dual Degree (B.Tech. Honours & M.Tech.)**
(Total credit requirement: 214+12 = 226)

Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.

- Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
- Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
- Project work is a must for B.Tech (Honours) students in B.Tech programme.
- Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
- Extra credits earned by the students will be counted for prizes and awards.

Branch Code: BT22

2014-Batch

Dual Degree (B.Tech. & M.Tech.) in Biological Engineering

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	BT1000	Introduction to Biological Sciences & Engineering	2	0	0	2	PMT
2	CY1002	Chemistry Lab I	1	0	3	3	SCY
3	ID1100	Concepts in Engineering Design	2	0	0	2	BET
4	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
5	ME1100	Thermodynamics	3	0	0	3	BET
6	ME1120	Engineering Drawing	3	0	0	3	BES
7	PH1010	PHYSICS I	3	0	0	3	SPH
8	PH1030	PHYSICS LAB I	0	0	3	2	SPH
9	GN1100	Life Skills	2	0	0	2	HPF
		TOTAL				24	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	BT1020	Material and Energy Balances	4	0	0	4	PMT
3	CS1100	Computational Engineering	3	0	0	3	BET
4	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
6	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
5	PH1020	Physics II	3	0	0	3	SPH
7	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				24	
8	WS1010	Workshop I	0	0	6	4	BES
9	WS1020	Workshop II	0	0	3	2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	BT2010	Microbiology	3	0	0	3	PMT
2	BT2030	Biochemistry	3	0	0	3	PMT
3	BT2111	Microbiology and Biochemistry Lab	0	0	6	4	PML
4	EE1100	Basic Electrical Engineering	3	0	0	3	BET
5	ID1200	Ecology and Environment	2	0	0	2	BET
6	HSE1	Humanities Elective 1	3	0	0	3	HSS
7	MAE	Mathematics Elective (MA2020/MA2150)	3	0	0	3	SMA
		Total Credits :				21	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	BT2020	Computational Techniques in Biosystems	4	0	0	4	PMT
2	BT2021	Principles of Cell and Molecular Biology	3	0	0	3	PMT
3	BT2041	Biological Rate Processes	4	0	0	4	PMT
4	BT2061	Thermodynamics of Biological Systems	4	0	0	4	PMT
5	BT2121	Genetic Engineering Laboratory	0	0	6	4	PML
6	HSE2	Humanities Elective 2	3	0	0	3	HSS
7	MAE4	Mathematics Elective 4	3	0	0	3	SMA
		Total Credits :				25	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	BT3011	Transport Phenomena in Biological Systems	4	0	0	4	PMT
2	BT3031	Biosensors and Instrumentation	3	0	0	3	PMT
3	BT3051	Data Structures and Algorithms for Biology	4	0	0	4	PMT
4	BT3071	Bioreactor Design and Analysis	3	0	0	3	PMT
5	BT3110	Biomolecular Analysis Laboratory	0	0	6	4	PML
6	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				21	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	BT3020	Structural Biology	3	0	0	3	PMT
2	BT3021	Downstream Processing	3	0	0	3	PMT
3	BT3041	Analysis and Interpretation of Biological Data	3	0	0	3	PMT
4	BT3121	Bioprocess Engineering Laboratory	1	0	3	3	PML
5	BT3900	Industrial Training (Summer)	0	0	0	2	PIT
6	BT4010	Bioinformatics	3	1	0	4	PMT
	DPE1	Department Elective 1	3	0	0	3	PMT
	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				24	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	BT4110	Computational Biology Laboratory	0	0	6	4	PML
2	BT5011	Biomaterials Engineering	3	0	0	3	PMT
3	BT5021	Metabolic Engineering	3	0	0	3	PMT
4	DPE2	Department Elective 2	3	0	0	3	PMT
5	HSE3	Humanities Elective 3	3	0	0	3	HSS
6	MNS3	Minor Elective 3	3	0	0	3	MNS
7	FRE1	Free Elective 1	3	0	0	3	*
8	BT4911	Project	0	0	0	2	PMP
		Total Credits :				24	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	BT4020	Introduction to Research Methodology	1	0	0	1	PMT
2	BT4121	Biomaterials Laboratory	1	0	3	3	PML
3	BT4921	Project	0	0	0	2	PMP
4	HS3050	Professional Ethics	2	0	0	2	HPF
5	IL4920	Industrial Lecture (Pass/Fail)	0	0	0	1	PIL
6	DPE3	Department Elective 3	3	0	0	3	PMT
7	DPE4	Department Elective 4	3	0	0	3	PMT
8	SSE1	Self- Study Elective 1	3	0	0	3	PSS
9	FRE2	Free Elective 2	3	0	0	3	
		Total Credits :				21	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	BT5911	Project	0	0	0	6	PMP
2	DPE5	Department Elective 5	3	0	0	3	PMT
3	DPE6	Department Elective 6	3	0	0	3	PMT
		Total Credits :				12	

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	BT5921	Project	0	0	0	10	PMP
2	BT5941	Comprehensive Viva Voce	0	0	0	2	PMP
		Total Credits :				12	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	24+6	21	25	21	24	24	21	12	12	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	22	22

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	79	0	3	7	14	10	0	6	0

Remarks

- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)**
(Total credit requirement: 214+12 = 226)

Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.

- Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
- Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
- Project work is a must for B.Tech (Honours) students in B.Tech programme.
- Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
- Extra credits earned by the students will be counted for prizes and awards.

Branch Code: BT23**2014-Batch****Dual Degree (B.S. & M.S.) in Biological Sciences****SEMESTER 1**

S.No	Course No	Course Name	L	T	P	C	Category
1	BT1000	Introduction to Biological Sciences & Engineering	2	0	0	2	PMT
2	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
3	ID1100	Concepts in Engineering Design	2	0	0	2	BET
4	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
5	ME1100	Thermodynamics	3	0	0	3	BET
7	PH1010	PHYSICS I	3	0	0	3	SPH
8	PH1030	PHYSICS LAB I	0	0	3	2	SPH
9	GN1100	Life Skills	2	0	0	2	HPF
		TOTAL				22	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	BT1020	Material and Energy Balances	4	0	0	4	PMT
2	BT1022	Organic Chemistry in Biology	4	0	0	4	PMT
3	CS1100	Computational Engineering	3	0	0	3	BET
4	CY1002	Chemistry Lab I	1	0	3	3	SCY
5	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
6	PH1020	Physics II	3	0	0	3	SPH
7	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				23	
8	WS1010	Workshop I	0	0	6	4	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	BT2010	Microbiology	3	0	0	3	PMT
2	BT2012	Genetics	3	0	0	3	PMT
3	BT2030	Biochemistry	3	0	0	3	PMT
4	BT2112	Microbiology Lab	0	0	6	4	PML
5	EE1100	Basic Electrical Engineering	3	0	0	3	BET
6	ID1200	Ecology and Environment	2	0	0	2	BET
7	HSE1	Humanities Elective 1	3	0	0	3	HSS
8	MAE1	Mathematics Elective (MA2020/MA2150)	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	BT2020	Computational Techniques in Biosystems	4	0	0	4	PMT
2	BT2022	Biostatistics	4	0	0	4	PMT
3	BT2042	Fundamentals of Biophysical Chemistry	3	0	0	3	PMT
4	BT2062	Analytical Techniques in Biotechnology	4	0	0	4	PMT
5	BT2082	Cell Biology	0	0	0	3	PMT
6	BT2122	Biochemistry Laboratory	0	0	6	4	PML
7	HSE2	Humanities Elective 2	3	0	0	3	HSS
		Total Credits :				25	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	BT3012	Molecular Biology	3	0	0	3	PMT
2	BT3032	Evolutionary Biology	3	0	0	3	PMT
3	BT3052	Membrane Biology & Signal Transduction	3	0	0	3	PMT
4	BT3072	Immunology	3	0	0	3	PMT
5	BT3110	Biomolecular Analysis Laboratory	0	0	6	4	PML
6	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				19	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	BT3020	Structural Biology	3	0	0	3	PMT
2	BT3022	Genomics and Proteomics	4	0	0	4	PMT
3	BT3122	Molecular Biology Laboratory	0	0	6	4	PML
5	BT3900	Industrial Training (Summer)	0	0	0	2	PIT
6	BT4010	Bioinformatics	3	1	0	4	PMT
7	DPE1	Department Elective 1	3	0	0	3	PMT
8	DPE2	Department Elective 2	3	0	0	3	PMT
9	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				26	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	BT5012	Enzyme Structure and Mechanisms	3	0	0	3	PMT
2	BT4110	Computational Biology Laboratory	0	0	6	4	PML
3	BT4912	Project	0	0	0	2	PMP
4	DPE3	Department Elective 3	3	0	0	3	PMT
5	HSE3	Humanities Elective 3	3	0	0	3	HSS
6	MNS3	Minor Elective 3	3	0	0	3	MNS
7	FRE1	Free Elective 1	3	0	0	3	*
		Total Credits :				21	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	BT4020	Introduction to Research Methodology	1	0	0	1	PMT
2	BT4122	Chemical Biology Laboratory	0	0	6	4	PML
3	BT4922	Project	0	0	0	3	PMP
4	HS3050	Professional Ethics	2	0	0	2	HPF
5	IL4920	Industrial Lecture (Pass/Fail)	0	0	0	1	PIL
6	DPE4	Department Elective 4	3	0	0	3	PMT
7	DPE5	Department Elective 5	3	0	0	3	PMT
8	SSE1	Self- Study Elective 1	3	0	0	3	PSS
9	FRE2	Free Elective 2	3	0	0	3	
		Total Credits :				23	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	BT5912	Project	0	0	0	6	PMP
2	DPE6	Department Elective 6	3	0	0	3	PMT
3	DPE7	Department Elective 7	3	0	0	3	PMT
4	DPE8	Department Elective 8	3	0	0	3	PMT
		Total Credits :				15	

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	BT5922	Project	0	0	0	10	PMP
2	BT5942	Comprehensive Viva Voce	0	0	0	2	PMP
		Total Credits :				12	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	22	23+4	24	25	19	26	21	23	15	12	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	4	13	4	9	9	1	2	24	23

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	88	0	3	7	11	10	0	6	0

Remarks

- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.S. Honours & M.S.)**
(Total credit requirement: $214+12 = 226$)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: CH21
2014-Batch
Dual Degree (B.Tech. & M.Tech.) in Chemical Engineering

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	CH1010	Introduction to Chemical Engineering	2	0	0	2	PMT
2	CS1100	Computational Engineering	3	0	0	3	BET
3	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
4	ID1100	Concepts in Engineering Design	2	0	0	2	BET
5	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
6	PH1010	Physics I	3	0	0	3	SPH
7	PH1030	Physics Laboratory I	0	0	3	2	SPH
8	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				22	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	CH1020	Process Calculations	4	0	0	4	PMT
2	CY1002	Chemistry Lab I	1	0	3	3	SCY
3	EE1100	Basic Electrical Engineering	3	0	0	3	BET
4	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
5	ME1100	Thermodynamics	3	0	0	3	BET
6	ME1120	Engineering Drawing	3	0	0	3	BES
7	PH1020	Physics II	3	0	0	3	SPH
8	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				25	
9	WS1010	Workshop I				4	BES
10	WS1020	Workshop II				2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	BT1010	Life Sciences	2	0	0	2	SLS
3	CH2010	Chemical Engineering Thermodynamics	4	0	0	4	PMT
4	CH2030	Momentum Transfer	4	0	0	4	PMT
5	ID1200	Ecology and Environment	2	0	0	2	BET
6	HSE1	Humanities Elective 1	3	0	0	3	HSS
7	MAE1	Mathematics Elective 1	3	0	0	3	SMA
		Total Credits :				22	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	CH2020	Principles of Mass Transfer	4	0	0	4	PMT
2	CH2040	Mechanical Operations	4	0	0	4	PMT
3	CH2061	Computational Techniques	4	0	0	4	PMT
4	CH2082	Computational Prog. & Process Simulation Lab	0	0	3	2	PML
5	CH2100	Chemical Technology	3	0	0	3	PMT
6	HSE2	Humanities Elective 2	3	0	0	3	HSS
7	MAE2	Mathematics Elective 2	3	0	0	3	SMA
		Total Credits :				23	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	CH3010	Chemical Reaction Engineering I	3	0	0	3	PMT
2	CH3030	Applications of Mass Transfer	4	0	0	4	PMT
3	CH3051	Process Heat Transfer	4	0	0	4	PMT
4	CH3510	Momentum Transfer & MO Lab	0	0	6	4	PML
5	DPE1	Department Elective 1	3	0	0	3	PMT
6	FRE1	Free Elective 1	3	0	0	3	
7	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				24	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	CH3020	Chemical Reaction Engg. II	4	0	0	4	PMT
2	CH3040	Instrumentation & Process Control	4	0	0	4	PMT
3	CH3060	Transport Phenomena	3	0	0	3	PMT
4	CH3080	Process Equipment Design	4	0	0	4	PSS
5	CH3500	Summer Training	0	0	0	2	PIT
6	CH3520	Heat & Mass Transfer Lab	0	0	6	4	PML
7	DPE2	Department Elective 2	3	0	0	3	PMT
8	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				27	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	CH4010	Chemical Process Des. & Economics	4	0	0	4	PMT
2	CH4510	CRE & TDC Lab	0	0	6	4	PML
3	DPE3	Department Elective 3	3	0	0	3	PMT
4	DPE4	Department Elective 4	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	
6	HSE4	Humanities Elective 4	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
		Total Credits :				23	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CH4620	Industrial Lecture	0	0	0	1	PIL
2	CH	Restricted Elective I	3	0	0	3	PMT
3	HS3050	Professional Ethics	2	0	0	2	HPF
4	DPE5	Department Elective 5	3	0	0	3	PMT
5	DPE6	Department Elective 6	3	0	0	3	PMT
6	DPE7	Department Elective 7	3	0	0	3	PMT
		Total Credits :				15	

Restricted Elective I: To be chosen from the following Basket of course in 8th semester subject to the courses being offered by the CH Dept.

- **CH5100** - Multiphase Systems
- **CH5140** - Process Analysis and Simulation
- **CH5160** - Chemical and Catalytic reaction engineering
- **CH5220** - Bioconversion and Fermentation Technology
- **CH6110** - Finite element analysis

SUMMER

S.No	Course No	Course Name	L	T	P	C	Category
1	CH5670	Project I *	0	0	0	3	PMP

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CH5680	Project II - DD *	0	0	0	6	PMP
2	CH	Restricted Elective II	3	0	0	3	PMT
3	CH5665	Seminar	0	0	0	2	PMP
		Total Credits :				11	

* Grading to be done for 9 credits (CH5670 and CH5680) of Dual Degree project will be based on single evaluation in December.

Restricted Elective II: To be chosen from the following Basket of course in 9th semester subject to the courses being offered by the CH Dept.

- **CH5020** - Experimental and statistical methods of analysis
- **CH5170** - Process Optimization
- **CH5190** - Introduction to Macromolecules
- **CH6170** - Advances in Biochemical Engineering & Biotechnology

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	CH5690	Project III - DD #	0	0	0	13	PMP
		Total Credits :				13	

Grading to be done for 13 credits (CH5690) of Dual Degree project will be based on 2nd evaluation.

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	22	25+6	22	23	24	27	23	15+3	11	13	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	14	24

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	76	6	4	7	14	10	2	6	0

Remarks

- Electives I to IV from Chemical Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- Any two PMT electives can be taken as Pass/Fail courses
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: 214+12 = 226)
 - **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.

- Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
- Project work is a must for B.Tech (Honours) students in B.Tech programme.
- Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
- Extra credits earned by the students will be counted for prizes and awards.

BRANCH CODE: CE23
Dual Degree (B.Tech. & M.Tech.) in Civil Engineering
2014-Batch

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	CE1010	Introduction to Civil Eng. Profession	2	0	0	2	PMT
2	CY1002	Chemistry Lab I	1	0	3	3	SCY
3	ID1100	Concepts in Engineering Design	2	0	0	2	BET
4	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
5	ME1100	Thermodynamics	3	0	0	3	BET
6	ME1120	Engineering Drawing	3	0	0	3	BES
7	PH1010	Physics I	3	0	0	3	SPH
8	PH1030	Physics Laboratory I	0	0	3	2	SPH
9	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				24	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	CE1020	Functional Design of Buildings	2	0	0	2	PMT
3	CS1100	Computational Engineering	3	0	0	3	BET
4	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
5	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
6	PH1020	Physics II	3	0	0	3	SPH
7	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				22	
	WS1010	Workshop I	0	0	6	4	BES
	WS1020	Workshop II	0	0	3	2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	BT1010	Life Sciences	2	0	0	2	SLS
2	CE2050	Building Drawing	0	0	3	2	PML
3	CE2310	Mechanics of Materials	4	0	0	4	PMT
4	CE2330	Civil Engg Materials & Construction	4	0	0	4	PMT
5	EE1100	Basic Electrical Engineering	3	0	0	3	BET
6	ID1200	Ecology and Environment	2	0	0	2	BET
7	HSE1	Humanities Elective 1	3	0	0	3	HSS
8	MAE1	Mathematics Elective 1	3	0	0	3	SMA
		Total Credits :				23	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	CE2020	Structural Analysis	4	0	0	4	PMT
2	CE2040	Hydraulic Engineering	4	0	0	4	PMT
3	CE2060	Geology and Soil Mechanics	4	0	0	4	PMT
4	CE2080	Surveying	4	0	0	4	PMT
5	CE2100	Surveying Practical	0	0	3	2	PML
6	HSE2	Humanities Elective 2	3	0	0	3	HSS
7	MAE2	Mathematics Elective 2	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3010	Transportation Engineering I	3	0	0	3	PMT
2	CE3030	Water Resources Engineering	4	0	0	4	PMT
3	CE3050	Basic Structural Steel Design	4	0	0	4	PMT
4	CE3350	Geotechnical Engineering	4	0	0	4	PMT
5	CE3410	Construction Materials Lab	0	0	3	2	PML
6	DPE1	Department Elective 1	3	0	0	3	PMT
7	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				23	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3020	Transportation Engg. II	3	0	0	3	PMT
2	CE3040	Environmental Engineering	4	0	0	4	PMT
3	CE3060	Basic Reinforced Concrete Design	4	0	0	4	PMT
4	CE4030	Hydraulic & Environmental Engg Lab	0	0	2	2	PML
5	CE4080	Infrastructure Project Summer Training	0	0	0	2	PIT
5	DPE2	Department Elective 2	3	0	0	3	PMT
6	FRE1	Free Elective 1	3	0	0	3	
7	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				24	

Semester	I	II	III	IV	V	VI	Total
Req. Cr.	24	22+6	23	24	23	24	144

Branch code: CE21**2014-Batch****Dual Degree (B.Tech. & M.Tech.) in Civil Engineering****Stream: Infrastructural Civil Engineering***(Curriculum for the first six semester is common – refer Page No.19 & 20)***SEMESTER 7**

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3100	Structural Engg Lab	0	0	3	2	PML
2	CE4010	Estimation & Construction Management	4	0	0	4	PMT
3	CE5870	Infrastructure Planning and Management	3	0	0	3	PMT
4	DPE3	Department Elective 3	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	
6	HSE4	Humanities Elective 4	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
	SSE1	Self- Study Elective 1	3	0	0	3	PSS
		Total Credits :				24	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4020	Industrial Lecture	0	0	0	1	PIL
2	CE6180	Environmental Impact Assessment	3	0	0	3	PMT
3	HS3050	Professional Ethics	2	0	0	2	HPF
4	MS6620	Infrastructure Finance	2	0	0	2	PMT
5	DPE4	Department Elective 4	3	0	0	3	PMT
6	DPE5	Department Elective 5	3	0	0	3	PMT
7	DPE6	Department Elective 6	3	0	0	3	PMT
		Total Credits :				17	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4940	Project I	0	0	0	4*	PMP
2	CE4950	VIVA VOCE	0	0	0	2	PMP
3	CE6010	Construction Contracts & Specifications	3	0	0	3	PMT
4	DPE7	Department Elective 7	3	0	0	3	PMT
5	DPE8	Department Elective 8	3	0	0	3	PMT
		Total Credits :				11	

** Project (CE4940) grade will be assigned at the end of 10th semester***SEMESTER 10**

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4960	Project II	0	0	0	16	PMP
		Total Credits :				16	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	22+6	23	24	23	24	24	17	11	16	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	10	18

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	87	6	3	7	14	10	2	6	0

Remarks

- Total number of professional major elective courses should be at least eight (other than self-study)
- Electives from Civil Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- At the UG level maximum of two elective courses
- Any two of the elective courses can be taken as Pass/Fail courses
- The project training at the end of 8th semester should be in infrastructure project industry / site.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: 214+12 = 226)
 - **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: CE24**2014-Batch**

Dual Degree (B.Tech. & M.Tech.) in Civil Engineering
Stream: Building Technology & Construction Management
(Curriculum for the first six semester is common – refer Page No.19 & 20)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3100	Structural Engg Lab	0	0	3	2	PML
2	CE4010	Estimation & Construction Management	3	1	0	4	PMT
3	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
4	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	
6	HSE4	Humanities Elective 4	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self- Study Elective 1	3	0	0	3	PSS
		Total Credits :				24	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4020	Industrial Lecture	0	0	0	1	PIL
3	HS3050	Professional Ethics	2	0	0	2	HPF
2	DDE3	Dual Degree Elective 3	3	0	0	3	PMT
4	DDE4	Dual Degree Elective 4	3	0	0	3	PMT
5	DDE5	Dual Degree Elective 5	3	0	0	3	PMT
6	DDE6	Dual Degree Elective 6	3	0	0	3	PMT
7	DDE7	Dual Degree Elective 7	3	0	0	3	PMT
		Total Credits :				18	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4941	Project I	0	0	0	3*	PMP
2	CE4950	VIVA VOCE	0	0	0	2	PMP
3	DDE8	Dual Degree Elective 8	3	0	0	3	PMT
4	DDE9	Dual Degree Elective 9	3	0	0	3	PMT
5	DDE10	Dual Degree Elective 10	3	0	0	3	PMT
		Total Credits :				11	

* Project (CE4941) grade will be assigned at the end of 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4961	Project II	0	0	0	15	PMP
		Total Credits :				15	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	22+6	23	24	23	24	24	18	11	15	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	10	17

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	88	6	3	7	14	10	2	6	0

Remarks

- Total number of professional major elective courses should be at least eight (other than self-study)
- Electives from Civil Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- At the UG level maximum of two elective courses
- Any two of the elective courses can be taken as Pass/Fail courses
- The project training at the end of 8th semester should be in infrastructure project industry / site.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: 214+12 = 226)
 - **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: CE25**2014-Batch****Dual Degree (B.Tech. & M.Tech.) in Civil Engineering****Stream: Environmental Engineering***(Curriculum for the first six semester is common – refer Page No.19 & 20)***SEMESTER 7**

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3100	Structural Engg Lab	0	0	3	2	PML
2	CE4010	Estimation & Construction Management	4	0	0	4	PMT
3	CE5150	Environmental Chemistry & Microbiology	4	0	0	4	PMT
4	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	
6	HSE4	Humanities Elective 4	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
	SSE1	Self- Study Elective 1	3	0	0	3	PSS
		Total Credits :				25	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4020	Industrial Lecture	0	0	0	1	PIL
2	CE5160	Biological Process Design for Wastewater Treatment	4	0	0	4	PMT
3	CE5180	Air Pollution and Control Engineering	4	0	0	4	PMT
4	HS3050	Professional Ethics	2	0	0	2	HPF
5	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
6	DDE3	Dual Degree Elective 3	3	0	0	3	PMT
		Total Credits :				17	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4942	Project I	0	0	0	3*	PMP
2	CE4950	VIVA VOCE	0	0	0	2	PMP
3	CE5170	Physico-Chemical process for water and wastewater treatment	4	0	0	4	PMT
4	DDE4	Dual Degree Elective 4	3	0	0	3	PMT
5	DDE5	Dual Degree Elective 5	3	0	0	3	PMT
		Total Credits :				12	

** Project (CE4941) grade will be assigned at the end of 10th semester***SEMESTER 10**

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4962	Project II	0	0	0	14	PMP
		Total Credits :				14	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	23	22+6	23	24	23	24	25	17	12	14	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	10	16

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	89	6	3	7	14	10	2	6	0

Remarks

- Total number of professional major elective courses should be at least eight (other than self-study)
- Electives from Civil Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- At the UG level maximum of two elective courses
- Any two of the elective courses can be taken as Pass/Fail courses
- The project training at the end of 8th semester should be in infrastructure project industry / site.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: 214+12 = 226)
 - **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: CE26
2014-Batch
Dual Degree (B.Tech. & M.Tech.) in Civil Engineering
Stream: Geotechnical Engineering
(Curriculum for the first six semester is common – refer Page No.19 & 20)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3100	Structural Engg. Lab	0	0	3	2	PML
2	CE4010	Estimation & Construction Management	3	1	0	4	PMT
3	CE5310	Advanced Soil Mechanics	3	1	0	4	PMT
4	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	*
6	HSE3	Humanities Elective 3	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self-Study Elective 1	3	0	0	3	PSS
		Total Credits :				25	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4020	Industrial Lecture	0	0	0	1	PIL
2	CE5300	Applied Soil Mechanics	3	1	0	4	PMT
3	CE5340	FEM & Constitutive Modelling in Geomech.	3	1	0	4	PMT
4	HS3050	Professional Ethics	2	0	0	2	HPF
5	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
6	DDE3	Dual Degree Elective 3	3	0	0	3	PMT
		Total Credits :				17	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4943	Project I	0	0	0	3*	PMP
2	CE4950	VIVA VOCE	0	0	0	2	PMP
3	CE5330	Advanced Foundation Engg.	3	1	0	4	PMT
4	DDE4	Dual Degree Elective 4	3	0	0	3	PMT
5	DDE5	Dual Degree Elective 5	3	0	0	3	PMT
		Total Credits :				12	

* Project (CE4941) grade will be assigned at the end of 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4963	Project II	0	0	0	14	PMP
		Total Credits :				14	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	22+6	23	24	23	24	25	17	12	14	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	10	16

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	89	6	3	7	14	10	2	6	0

Remarks

- Total number of professional major elective courses should be at least eight (other than self-study)
- Electives from Civil Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- At the UG level maximum of two elective courses
- Any two of the elective courses can be taken as Pass/Fail courses
- The project training at the end of 8th semester should be in infrastructure project industry / site.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: $214+12 = 226$)
 - **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: CE27**2014-Batch****Dual Degree (B.Tech. & M.Tech.) in Civil Engineering****Stream: Hydraulic & Water Resources Engineering***(Curriculum for the first six semester is common – refer Page No.19 & 20)***SEMESTER 7**

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3100	Structural Engg. Lab	0	0	3	2	PML
2	CE4010	Estimation & Construction Management	3	1	0	4	PMT
3	CE5470	Surface Water Hydrology	3	1	0	4	PMT
4	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	*
6	HSE3	Humanities Elective 3	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self-Study Elective 1	3	0	0	3	PSS
		Total Credits :				25	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4020	Industrial Lecture	0	0	0	1	PIL
2	CE5480	Water Resources Planning & Mgmt	3	1	0	4	PMT
3	HS3050	Professional Ethics	2	0	0	2	HPF
4	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
5	DDE3	Dual Degree Elective 3	3	0	0	3	PMT
		Total Credits :				13	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4944	Project I	0	0	0	3*	PMP
2	CE4950	VIVA VOCE	0	0	0	2	PMP
3	CE5450	Applied Hydraulic Engg	3	1	0	4	PMT
4	CE5460	Ground Water Engg	3	1	0	4	PMT
5	DDE4	Dual Degree Elective 4	3	0	0	3	PMT
6	DDE5	Dual Degree Elective 5	3	0	0	3	PMT
		Total Credits :				16	

** Project (CE4941) grade will be assigned at the end of 10th semester***SEMESTER 10**

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4964	Project II	0	0	0	14	PMP
		Total Credits :				14	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	22+6	23	24	23	24	25	13	16	14	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	10	16

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	89	6	3	7	14	10	2	6	0

Remarks

- Total number of professional major elective courses should be at least eight (other than self-study)
- Electives from Civil Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- At the UG level maximum of two elective courses
- Any two of the elective courses can be taken as Pass/Fail courses
- The project training at the end of 8th semester should be in infrastructure project industry / site.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: $214+12 = 226$)
 - **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: CE28
2014-Batch
Dual Degree (B.Tech. & M.Tech.) in Civil Engineering
Stream: Structural Engineering
(Curriculum for the first six semester is common – refer Page No.19 & 20)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3100	Structural Engg Lab	0	0	3	2	PML
2	CE4010	Estimation & Construction Management	3	1	0	4	PMT
3	CE6780	Advanced Mechanics for structures	3	1	0	4	PMT
4	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	
6	HSE4	Humanities Elective 4	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self- Study Elective 1	3	0	0	3	PSS
		Total Credits :				25	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4020	Industrial Lecture	0	0	0	1	PIL
2	CE5610	Finite Element Analysis	4	0	0	4	PMT
3	CE5660	Advanced Design of Metal Structures	3	0	0	3	PMT
4	HS3050	Professional Ethics	2	0	0	2	HPF
5	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
6	DDE3	Dual Degree Elective 3	3	0	0	3	PMT
		Total Credits :				16	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4945	Project I	0	0	0	4*	PMP
2	CE4950	VIVA VOCE	0	0	0	2	PMP
3	CE5620	Structural Dynamics	4	0	0	4	PMT
4	DDE4	Dual Degree Elective 4	3	0	0	3	PMT
5	DDE5	Dual Degree Elective 5	3	0	0	3	PMT
		Total Credits :				12	

* Project (CE4943) grade will be assigned at the end of 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4965	Project II	0	0	0	15	PMP
		Total Credits :				15	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	22+6	23	24	23	24	25	16	12	15	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	10	17

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	88	6	3	7	14	10	2	6	0

Remarks

- Total number of professional major elective courses should be at least eight (other than self-study)
- Electives from Civil Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- At the UG level maximum of two elective courses
- Any two of the elective courses can be taken as Pass/Fail courses
- The project training at the end of 8th semester should be in infrastructure project industry / site.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: $214+12 = 226$)
 - **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: CE29
2014-Batch
Dual Degree (B.Tech. & M.Tech.) in Civil Engineering
Stream: Transportation Engineering
(Curriculum for the first six semester is common – refer Page No.19 & 20)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	CE3100	Structural Engg Lab	0	0	3	2	PML
2	CE5530	Pavement Materials	3	0	0	3	PMT
3	CE4010	Estimation & Construction Management	4	0	0	4	PMT
4	CE5810	Urban Transportation Planning	3	0	0	3	PMT
5	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
6	FRE2	Free Elective 2	3	0	0	3	
7	HSE3	Humanities Elective 3	3	0	0	3	HSS
8	MNS3	Minor Elective 3	3	0	0	3	MNS
9	SSE1	Self- Study Elective 1	3	0	0	3	PSS
		Total Credits :				27	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4020	Industrial Lecture	0	0	0	1	PIL
2	CE5800	Pavement Analysis and Design	3	0	0	3	PMT
3	HS3050	Professional Ethics	2	0	0	2	HPF
4	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
5	DDE3	Dual Degree Elective 3	3	0	0	3	PMT
6	DDE4	Dual Degree Elective 4	3	0	0	3	PMT
		Total Credits :				15	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4946	Project I	0	0	0	3*	PMP
2	CE4950	VIVA VOCE	0	0	0	2	PMP
3	CE5831	Transportation Engineering Studio	4	0	0	4	PMT
4	DDE5	Dual Degree Elective 5	3	0	0	3	PMT
5	DDE6	Dual Degree Elective 6	3	0	0	3	PMT
		Total Credits :				12	

* Project (CE4941) grade will be assigned at the end of 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	CE4966	Project II	0	0	0	15	PMP
		Total Credits :				15	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	22+6	23	24	23	24	27	15	12	15	215

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	10	17

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	89	6	3	7	14	10	2	6	0

Remarks

- Total number of professional major elective courses should be at least eight (other than self-study)
- Electives from Civil Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- At the UG level maximum of two elective courses
- Any two of the elective courses can be taken as Pass/Fail courses
- The project training at the end of 8th semester should be in infrastructure project industry / site.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: $215+12 = 227$)
 - **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: CE22

2014-Batch

Dual Degree (B.Tech. in Civil Engineering and M.Tech. in Applied Mechanics)

(Curriculum for the first six semester is common – refer Page No.19 & 20)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5010	Biomechanics	3	0	0	3	PMT
2	AM5390	Advanced Structural Mechanics	3	0	0	3	PMT
3	AM5530	Advanced Fluid Mechanics	3	0	0	3	PMT
4	CE3100	Structural Engg Lab	0	0	3	2	PML
5	CE4010	Estimation & Construction Management	3	1	0	4	PMT
6	HS	HS Elective III	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self-Study Elective 1	3	0	0	3	PSS
		Total Credits :				24	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	FRE2	Free Elective II	3	0	0	3	
2	CE4020	Industrial Lecture (Pass / Fail)	0	0	3	1	PIL
3	AM	Specialization Core I#	3	0	0	3	PMT
4	AM	Specialization Core II#	3	0	0	3	PMT
5	AM	Specialization Core Lab#	0	0	3	2	PML
6	HS3050	Professional Ethics	2	0	0	2	HPF
7		MTech Elective I	3	0	0	3	PMT
8		MTech Elective II	3	0	0	3	PMT
		Total Credits	18	0	6	20	

#- Students opting Fluid Mechanics group will credit two courses from Fluid Mechanics specialization courses and respective Laboratory. Students opting for solid mechanics will credit two solid Mechanics courses and respective Laboratory.

SPECIALIZATION CORE / LABORATORY

S.No	Course No	Course Name	L	T	P	C	Category
Fluid Mechanics							
1	AM 5570	Introduction to Turbulence	3	0	0	3	PMT
2	AM 5540	Hydrodynamics	3	0	0	3	PMT
3	AM 5630	Foundations of CFD	3	0	0	3	PMT
4	AM 5820	Wind Tunnel and Numerical Experiments	0	0	3	2	PML
Solid Mechanics							
1	AM 5240	Experimental Stress Analysis	3	0	0	3	PMT
2	AM 5450	Discrete Element Methods in Engineering Analysis	3	0	0	3	PMT
3	AM 5620	Theory of Plates and Shells	3	0	0	3	PMT
4	AM 5400	Experimental Stress Analysis Laboratory	0	0	3	2	PML

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1		M.Tech Elective III	3	0	0	3	PMT
2		M.Tech Elective IV	3	0	0	3	PMT
3	AM5490*	Project I	0	0	0	5*	PMP
		Total Credits				6	

* Project (AM5490*) grade will be assigned in 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5490	PROJECT II	0	0	0	18	PMP
		Total Credits	0	0	0	18	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	22+6	23	24	23	22	24	20	6	18	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	12	18

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	85	6	3	7	14	10	2	6	0

Remarks

- At the UG level maximum of two elective courses
- Any two of the elective courses can be taken as Pass/Fail courses
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)

(Total credit requirement: 214+12 = 226)

- **Students** having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
- Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
- Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
- Project work is a must for B.Tech (Honours) students in B.Tech programme.
- Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
- Extra credits earned by the students will be counted for prizes and awards.

BRANCH CODE: CS21**2014-Batch****Dual Degree (B.Tech. & M.Tech.) in Computer Science & Engineering****SEMESTER 1**

S.No	Course No	Course Name	L	T	P	C	Category
1	CS1100	Computational Engineering	3	0	0	3	BET
2	CS1300	Introduction to Computer Science & Engineering	2	0	0	2	PMT
3	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
4	ID1100	Concepts in Engineering Design	2	0	0	2	BET
5	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
6	PH1010	Physics I	3	0	0	3	SPH
7	PH1030	Physics Laboratory I	0	0	3	2	SPH
8	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				22	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	CY1002	Chemistry Lab I	1	0	3	3	SCY
2	EE1100	Basic Electrical Engineering	3	0	0	3	BES
3	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
4	ME1100	Thermodynamics	3	0	0	3	BET
5	ME1120	Engineering Drawing	3	0	0	3	BES
6	PH1020	Physics II	3	0	0	3	SPH
7	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				21	
8	WS1010	Workshop I				4	BES
9	WS1020	Workshop II				2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	BT1010	Life Sciences	2	0	0	2	SLS
3	CS2100	Discrete Mathematics for Computer Science	3	0	0	3	PMT
4	CS2110	Computer Programming Lab	0	0	3	2	PML
5	CS2300	Switching Theory & Digital Design	3	0	0	3	PMT
6	CS2310	Digital Logic and Design Lab	0	0	3	2	PML
7	ID1200	Ecology and Environment	2	0	0	2	BET
8	HSE1	Humanities Elective 1	3	0	0	3	HSS
9	MAE1	Mathematics Elective 1	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	CS2200	Language Machines and Computations	3	0	0	3	PMT
2	CS2400	Principles of Communication	3	0	0	3	PMT
3	CS2600	Computer Organisation	3	0	0	3	PMT
4	CS2610	Assembly Language Programming Lab	0	0	3	2	PML
5	CS2800	Data Structures and Algorithms	4	0	0	4	PMT
6	CS2810	Advanced Programming Lab	0	0	3	2	PML
7	HSE2	Humanities Elective 2	3	0	0	3	HSS
8	MAE2	Mathematics Elective 2	3	0	0	3	SMA
		Total Credits :				23	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	CS3100	Paradigms of Programming	4	0	0	4	PMT
2	CS3300	Compiler Design	3	0	0	3	PMT
3	CS3310	Compiler Design Lab	0	0	3	2	PML
4	CS3500	Operating Systems	3	0	0	3	PMT
5	CS3510	Operating Systems Lab	0	0	2	2	PML
6	CS3700	Introduction to Database Systems	4	0	0	4	PMT
7	DPE1	Department Elective 1	4	0	0	4	PMT
8	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				25	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	CS3200	Computer Networks	3	0	0	3	PMT
2	CS3210	Computer Networks Lab	0	0	3	2	PML
3	CS3400	Principles of Software Engg.	3	0	0	3	PMT
4	CS3410	Software Engg Lab	0	0	3	2	PML
5	CS3660	Industrial Training	0	0	0	2	PIT
6	DPE2	Department Elective 2	4	0	0	4	PMT
7	FRE1	Free Elective 1	3	0	0	3	
8	MNS2	Minor Elective 2	3	0	0	3	MNS
9	SSE1	Self- Study Elective 1	4	0	0	4	PSS
		Total Credits :				26	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	CS4100	Computer System Design	3	0	0	3	PMT
2	CS4110	Computer System Design Lab	0	0	3	2	PML
3	DPE4	Department Elective 4	4	0	0	4	PMT
4	DPE5	Department Elective 5	4	0	0	4	PMT
5	FRE2	Free Elective 2	3	0	0	3	
6	HSE3	Humanities Elective 3	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
		Total Credits :				22	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	CS4880	Industrial Lecture (Pass/Fail)	0	0	0	1	PIL
2	HS3050	Professional Ethics	2	0	0	2	HPF
3	DPE6	Department Elective 6	4	0	0	4	PMT
4	DPE7	Department Elective 7	4	0	0	4	PMT
5	DPE8	Department Elective 8	4	0	0	4	PMT
6	DPE9	Department Elective 9	4	0	0	4	PMT
		Total Credits :				19	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	CS5710	Project I	0	0	0	6*	PMP
2	CS5806	Seminar	0	0	0	2	PMT
3	DPE10	Dept. Elective 10	4	0	0	4	PMT
		Total Credits :				6	

* Project (CS5710) grade will be assigned in 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	CS5810+	Project II	0	0	0	20	PMP
		Total Credits :				20	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	22	21+6	24	23	25	26	22	19	6	20	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	18	20

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	74	8	4	7	14	10	2	6	0

Remarks

- Electives I to X from Computer Science and Engineering Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- Any two PMT course from electives I to V can be taken as Pass/Fail courses
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: 214+12 = 226)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: ED21
Dual Degree (B.Tech. & M.Tech.) in Engineering Design

Stream: Automotive Engineering
2014-Batch

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	CY1050	Macromolecules as Engineering Materials	3	0	0	3	SCY
3	ED1300	Graphic Art I	0	0	3	2	BES
4	MS1100	Technology, Invention and Innovation	2	0	0	2	PMT
5	MA1050	Calculus	3	0	0	3	SMA
6	ME1120	Engineering Drawing	3	0	0	3	BES
7	PH1010	Physics I	3	0	0	3	SPH
8	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				22	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	ED1100	Functional and Conceptual Design	3	0	0	3	PMT
2	ED1200	Introduction to Computation and Visualization	3	0	0	3	BET
3	ED1400	Graphic Art II	0	0	3	2	BES
4	EE1100	Basic Electrical Engineering	3	0	0	3	BET
5	MA1060	Solutions of Ordinary Differential Equations	3	0	0	3	SMA
6	ME1100	Thermodynamics	3	0	0	3	BET
7	PH1020	Physics II	3	0	0	3	SPH
8	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				22	
	WS1010	Workshop I	0	0	6	2	BES
	WS1030	Workshop II	0	0	3	2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	BT1010	Life Sciences	2	0	0	2	SLS
2	ED2030	Fluid Mech & Heat Transfer	3	0	0	3	PMT
3	ED2050	Analog and Digital Circuits	3	0	0	3	PMT
4	ED2051	Computer Modelling of Machine Elements	4	0	0	4	BES
5	ED2052	Electronics Laboratory	0	0	3	2	PML
6	ED2090	Geometric Modelling and CAD	3	0	0	3	PMT
7	ED2120	Mechanics of Deformable Solids	4	0	0	4	PMT
	ID1200	Ecology and Environment	2	0	0	2	BET
	MA2150	Linear Algebra and Optimization	3	0	0	3	SMA
		Total Credits :				26	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	ED2010	History of Art and Art Appreciation	2	0	0	2	HSS
2	ED2020	Appl of Microprocessors & Microcontrollers	4	0	0	4	PMT
3	ED2040	Control Systems	3	0	0	3	PMT
4	ED2060	Product Design Lab I	0	0	3	2	PML
5	ED2070	Manufacturing Science	3	0	0	3	PMT
6	ED3160	Deformation & Failure of Engineering Materials	4	0	0	4	PMT
7	EE2100	Electrical Sciences	3	0	0	3	PMT
8	MA2160	PDE and Numerical Methods	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	ED2220	Mechanics and Design of Mechanisms	4	0	0	4	PMT
2	ED3010	Human Factors in Design (L&P)	4	0	0	4	PMT
3	ED3030	Detail Design	4	0	0	4	PMT
4	ED3130	Controls Lab	0	0	3	2	PML
5	ED5160	Automotive Engines & Systems	4	0	0	4	PMT
6	DPE1	Department Elective 1	3	0	0	3	PMT
7	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				24	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	ED3020	Design for X	3	0	0	3	PMT
2	ED3060	Structural Dynamics and Vibration	3	0	0	3	PMT
3	ED3110	PD Lab II	0	0	3	2	PML
4	ED3150	Automotive Engines & Systems Lab	0	0	3	2	PML
5	ED5080	Mechatronics System Design	4	0	0	4	PMT
6	ED5220	Vehicle Dynamics	3	0	0	3	PMT
7	DPE2	Department Elective 2	3	0	0	3	PMT
8	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				23	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	ED4030	Finite Element Methods for Design	4	0	0	4	PMT
2	ED4110	Vehicle Dynamics Lab	0	0	3	2	PML
3	ED5050	Structural & Component Design of Vehicles	4	0	0	4	PMT
4	ED1050	Principles of Economics	4	0	0	4	PMT
5	DPE3	Department Elective 3	3	0	0	3	PMT
6	FRE1	Free Elective 1	3	0	0	3	
7	MNS3	Minor Elective 3	3	0	0	3	MNS
		Total Credits :				23	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	ED4502	Design Project in Industry	0	0	0	8	PMP
2	ED4510	Advances in Engineering Design	3	0	0	3	PSS
		Total Credits :				11	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	ED5500	Industrial Lecture	0	0	0	1	PIL
2	ED5800	Viva Voce	0	0	0	2	PMP
3	ED5900*	Project I	0	0	0	3	PMP
	ED1090	German I	3	0	0	3	HSS
	HS3050	Professional Ethics	2	0	0	2	HPF
	DPE4	Department Elective 4	3	0	0	3	PMT
	DPE5	Department Elective 5	3	0	0	3	PMT
	FRE2	Free Elective 2	3	0	0	3	
		Total Credits :				20	

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	ED5510	Design of Automotive Systems Lab	0	0	3	2	PML
2	ED5900+	Project II	0	0	0	8	PMP
3	DPE6	Department Elective 6	3	0	0	3	PMT
		Total Credits :				13	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	20	24+4	26	24	24	23	23	11	20	13	212

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	15	15	4	5	9	1	0	14	21

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	94	0	3	3	12	8	2	6	0

Remarks

- Electives I to IV from Elective List or other equivalents from other departments with the consent of the Faculty Adviser.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.)
(Total credit requirement: 212+12 = 224)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: ED22
Dual Degree (B.Tech. & M.Tech.) in Engineering Design

Stream: Biomedical Engineering
2014-Batch

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	CY1050	Macromolecules as Engineering Materials	3	0	0	3	SCY
3	ED1300	Graphic Art I	0	0	3	2	BES
4	ED1500	Technology, Invention and Innovation	2	0	0	2	PMT
5	MA1050	Calculus	3	0	0	3	SMA
6	ME1120	Engineering Drawing	3	0	0	3	BES
7	PH1010	Physics I	3	0	0	3	SPH
8	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				22	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	ED1100	Functional and Conceptual Design	3	0	0	3	PMT
2	ED1200	Introduction to Computation and Visualization	3	0	0	3	BET
3	ED1400	Graphic Art II	0	0	3	2	BES
4	EE1100	Basic Electrical Engineering	3	0	0	3	BET
5	MA1060	Solutions of Ordinary Differential Equations	3	0	0	3	SMA
6	ME1100	Thermodynamics	3	0	0	3	BET
7	PH1020	Physics II	3	0	0	3	SPH
8	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				22	
	WS1010	Workshop I	0	0	6	2	BES
	WS1030	Workshop II	0	0	3	2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	BT1010	Life Sciences	2	0	0	2	SLS
2	ED2030	Fluid Mech & Heat Transfer	3	0	0	3	PMT
3	ED2050	Analog and Digital Circuits	3	0	0	3	PMT
4	ED2051	Computer Modelling of Machine Elements	4	0	0	4	BES
5	ED2052	Electronics Laboratory	0	0	3	2	PML
6	ED2090	Geometric Modelling and CAD	3	0	0	3	PMT
7	ED2120	Mechanics of Deformable Solids	4	0	0	4	PMT
	ID1200	Ecology and Environment	2	0	0	2	BET
	MA2150	Linear Algebra and Optimization	3	0	0	3	SMA
		Total Credits :				26	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	ED2010	History of Art and Art Appreciation	2	0	0	2	HSS
2	ED2020	Appl of Microprocessors & Microcontrollers	4	0	0	4	PMT
3	ED2040	Control Systems	3	0	0	3	PMT
4	ED2060	Product Design Lab I	0	0	3	2	PML
5	ED2070	Manufacturing Science	3	0	0	3	PMT
6	ED3160	Deformation & Failure of Engineering Materials	4	0	0	4	PMT
7	EE2100	Electrical Sciences	3	0	0	3	PMT
8	MA2160	PDE and Numerical Methods	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	ED2220	Mechanics and Design of Mechanisms	4	0	0	4	PMT
2	ED3010	Human Factors in Design (L&P)	4	0	0	4	PMT
3	ED3030	Detail Design	4	0	0	4	PMT
4	ED3130	Controls Lab	0	0	3	2	PML
5	ED5040	Human Anatomy, Physiology & Biomechanics	4	0	0	4	PMT
6	DPE1	Department Elective 1	3	0	0	3	PMT
7	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				24	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	ED3020	Design for X	3	0	0	3	PMT
2	ED3060	Structural Dynamics and Vibration	3	0	0	3	PMT
3	ED3110	PD Lab II	0	0	3	2	PML
4	ED5020	Design of Surgical Devices	4	0	0	4	PMT
5	ED5030	Comp. Methods for Biomedical Design	3	0	0	3	PMT
6	ED5060	Medical Equipment Dissection Lab	0	0	3	2	PML
7	ED5080	Mechatronics System Design	4	0	0	4	PMT
8	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				24	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	BT5011	Biomaterials Engineering	3	0	0	3	PMT
2	ED5070	Design of Monitoring and Diagnostic System (L&P)	4	0	0	4	PMT
3	ED5090	Biomechanics Lab - Solid and Fluid Mechanics	0	0	3	2	PML
4	ED5110	Product Design Lab III	0	0	3	2	PML
5	DPE2	Department Elective 2	3	0	0	3	PMT
6	ED1050	Principles of Economics	4	0	0	4	PMT
7	FRE1	Free Elective 1	3	0	0	3	*
8	MNS3	Minor Elective 3	3	0	0	3	MNS
		Total Credits :				24	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	ED4501	Design Project in Industry	0	0	0	9	PMP
2	ED4510	Advances in Engineering Design	3	0	0	3	PSS
		Total Credits :				12	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	ED5500	Industrial Lecture	0	0	0	1	PIL
2	ED5800	Viva Voce	0	0	0	2	PMP
3	ED5900*	Project I	0	0	0	3	PMP
4	ED1090 / ED1091	German I / Japanese Languages	3	0	0	3	HSS
5	HS3050	Professional Ethics	2	0	0	2	HPF
6	DPE3	Department Elective 3	3	0	0	3	PMT
7	FRE2	Free Elective 2	3	0	0	3	*
Total Credits :						17	

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	ED5900	Project II	0	0	0	11	PMP
2	DPE4	Department Elective 6	3	0	0	3	PMT
Total Credits :						14	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	22	22+4	26	24	24	24	24	12	17	14	213

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	15	15	4	5	9	1	0	14	25

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	91	0	3	3	12	8	2	6	0

Remarks

- Electives I to IV from Elective List or other equivalents from other departments with the consent of the Faculty Adviser.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: 213+12 = 225)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Dual Degree (B.Tech. & M.Tech.) in Electrical Engineering 2014-Batch

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	CS1100	Computational Engineering	3	0	0	3	BET
2	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
3	EC1000	Introduction to Electrical Engineering	2	0	0	2	PMT
4	ID1100	Concepts in Engineering Design	2	0	0	2	BET
5	MA1010	Calculus I Functions of One Variable	1	0	0	4	SMA
7	PH1010	Physics I	3	0	0	3	SPH
8	PH1030	Physics Laboratory I	0	0	3	2	SPH
9	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				22	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	CY1002	Chemistry Lab I	1	0	3	3	SCY
2	EC1010	Electrical and Magnetic Circuits	4	0	0	4	PMT
3	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
4	ME1100	Thermodynamics	3	0	0	3	BET
6	ME1120	Engineering Drawing	3	0	0	3	BES
5	PH1020	Physics II	3	0	0	3	SPH
6	PH1040	Physics Laboratory II	3	0	0	3	SPH
		Total Credits :				22	
	WS1010	Workshop I	0	0	6	4	BES
	WS1020	Workshop II	0	0	3	2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	BT1010	Life Sciences	2	0	0	2	SLS
3	EE2001	Digital Systems	4	0	0	4	PMT
4	EE2002	Networks & Systems	4	0	0	4	PMT
5	EE2701	CAD Laboratory	0	0	3	2	PML
6	ID1200	Ecology and Environment	2	0	0	2	BET
7	HSE1	Humanities Elective 1	3	0	0	3	HSS
8	MAE1	Mathematics Elective 1	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	EE2003	Computer Organisation and Microprocessors	4	0	0	4	PMT
2	EE2004	Digital Signal Processing	4	0	0	4	PMT
3	EE2005	Electrical Machines	4	0	0	4	PMT
4	EE2006	Electromagnetic Fields	4	0	0	4	PMT
5	EE2702	Digital Circuits Laboratory	0	0	3	2	PML
6	HSE2	Humanities Elective 2	3	0	0	3	HSS
7	MAE2	Mathematics Elective 2	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	EE3001	Solid State Devices	4	0	0	4	PMT
2	EE3002	Analog Circuits	4	0	0	4	PMT
3	EE3003	Power Systems	4	0	0	4	PMT
4	EE3004	Control Engineering	4	0	0	4	PMT
5	EE3701	Microprocessor Laboratory	0	0	3	2	PML
6	EE3702	Electrical Machines Laboratory	0	0	3	2	PML
7	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				23	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	EE3005	Communication Systems	4	0	0	4	PMT
2	EE3006	Principles of Measurement	4	0	0	4	PMT
3	EE3020	Industrial Training	0	0	0	2	PIT
4	EE3703	Analog Circuits Laboratory	0	0	3	2	PML
5	DPE1	Department Elective 1	3	0	0	3	PMT
6	DPE2	Department Elective 2	3	0	0	3	PMT
7	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				21	

Branch Code: EE25

2014-Batch

Dual Degree (B.Tech. & M.Tech.) in Electrical Engineering

(Curriculum for the first six semester is common – refer Page No. 46 & 47)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	EE4701	Advanced EE Laboratory	0	0	3	2	PML
5	EE	Restricted Elective I	3	1	0	4	PMT
7	HSE3	Humanities Elective 3	3	0	0	3	HSS
8	EE	M.Tech Elective I / Self-study elective	3	0	0	3	PMT/PSS
9		Minor Elective III	3	0	0	3	MNS
10		Free Elective I	3	0	0	3	FRE
		Total				18	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	HS3050	Professional Ethics	2	0	0	2	HPF
2		Free Elective II	3	0	0	3	
3	EE	M.Tech Elective II	3	0	0	3	PMT
4	EE	M.Tech Elective III	3	1	0	4	PMT
5	EE	Restricted Elective II	3	1	0	4	PMT
6	EE	M.Tech Elective IV	3	1	0	4	PMT
		Total				20	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1		Free Elective III	3	0	0	3	
2	EE	Restricted Elective III	3	1	0	4	PMT
3	EE6900*	Dual Degree Project	0	0	0	20*	PMP
		Total				7	

* Project (EE6900) grade will be assigned in 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	EE6900	Dual Degree Project	0	0	0	20	PMP
		Total				20	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	22	22+6	24	24	23	21	18	20	7	20	207

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	14	4	9	9	0	2	12	20

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	86	0	0	7	14	10	2	9	0

Remarks

- **Electives I to IV:** Any EE course with number EE 3xxx or above.
- Self-study elective is optional for Dual Degree students in EE
- **MTech Electives I to V:** Any EE course with number EE 5xxx or above.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: 207+12 = 219)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

The following lab courses will be classified as “PMT” (instead of “PML”)

No	Subject	L	T	P	C	Cat
EE4702	Advanced Comm. Lab I	0	0	3	2	PML
EE4704	Microelectronics Lab I	0	0	3	2	PML
EE4706	Advanced Power Systems Lab	1	0	3	3	PML
EE5700	DSP Applications Lab	1	0	3	3	PML
EE5703	VLSI Design Lab	0	0	3	2	PML

List of courses for Restricted Electives I to III

No	Subject	L	T	P	C	Cat
EE3110/ EE5110	Probability Foundations for Electrical Engineers	3	1	0	4	PMT
EE3313	Device Modeling	3	1	0	4	PMT
EE4140/ EE5140	Digital Communication Systems Digital Modulation and Coding	3	1	0	4	PMT
EE5150	Communication Networks	4	0	0	4	PMT
EE5153	Foundations of Optical Networking	4	0	0	4	PMT
EE5200	Power Converter Analysis and Design	4	0	0	4	PMT
EE5253	Computer Methods in Power System Analysis	4	0	0	4	PMT
EE5254	High Voltage Technology	4	0	0	4	PMT
EE5311	Digital IC Design	4	0	0	4	PMT
EE5312	VLSI Technology	4	0	0	4	PMT
EE5320	Analog IC Design	4	0	0	4	PMT
EE5411	Synthesis of Control Systems	4	0	0	4	PMT
EE5500	Introduction to Photonics	4	0	0	4	PMT
EE5502	Optical Engineering	2	0	3	4	PMT
EE5504	Fibre Optic Communication Technology	2	0	3	4	PMT
EE6253	Power System Control and Stability	4	0	0	4	PMT

Branch Code: EE24

2014-Batch

Dual Degree (B.Tech. in Electrical Engineering & M.Tech in Applied Mechanics)

(Curriculum for the first six semester is common – refer Page No. 46 & 47)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	AM 5010	Biomechanics	3	0	0	3	PMT
2	EE4701	Advanced EE Laboratory	0	0	3	2	PML
3	EE5311	Digital IC Design	3	1	0	4	PMT
4	DPE4/SSE1	Department Elective 4 / Self-Study Elective	3	0	0	3	PSS
5	DPE5	Department Elective 5	3	0	0	3	PMT
6	HSE	Humanities Elective III	3	0	0	3	HSS
7		Minor Elective III	3	0	0	3	MNS
		Total				21	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5110	Biomechanics Laboratory	0	0	3	2	PML
2	AM5130	Quantitative Physiology	3	0	0	3	PMT
3	AM5140	Biomedical Instrumentation	3	0	0	3	PMT
4	AM5160	Biomedical Imaging system	3	0	0	3	PMT
5	HS3050	Professional Ethics	2	0	0	2	HPF
6	FRE1	Free Elective I	3	0	0	3	*
7	AM	M.Tech Elective I	3	0	0	3	PMT
		Total				19	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	AM	M.Tech Elective II	3	0	0	3	PMT
2	AM	M.Tech Elective III	3	0	0	3	PMT
3	FRE2	Free Elective II	3	0	0	3	*
4	AM5480	Seminar	0	0	1	1	PMP
5	AM5490*	Project I	0	0	0	5*	PMP
		Total				10	

* Project (AM5490*) grade will be assigned in 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5490	Project II	0	0	0	18	PMP
		Total	0	0	0	18	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	22	22+6	24	24	23	24	21	19	10	18	213

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	14	4	9	9	0	2	14	19

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	91	0	3	7	14	10	2	6	0

Remarks

- **Electives I to V:** Any EE course with number EE 3xxx or above.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: $213+12 = 225$)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

BRANCH CODE: ME25

Dual Degree (B.Tech. & M.Tech.) in Mechanical Engineering

2014-Batch

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	CY1002	Chemistry Lab I	1	0	3	3	SCY
2	ID1100	Concepts in Engineering Design	2	0	0	2	BET
3	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
4	ME1100	Thermodynamics	3	0	0	3	BET
5	ME1110	Introduction to Mechanical Engineering	2	0	0	2	PMT
6	ME1120	Engineering Drawing	3	0	0	3	BES
7	PH1010	Physics I	3	0	0	3	SPH
8	PH1030	Physics Laboratory I	0	0	3	2	SPH
9	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				24	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	CS1100	Computational Engineering	3	0	0	3	BET
3	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
4	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
5	PH1020	Physics II	3	0	0	3	SPH
6	PH1040	Physics Laboratory II				2	SPH
		Total Credits :				20	
	WS1010	Workshop I	0	0	6	4	BES
	WS1020	Workshop II	0	0	3	2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	AM2200	Strength of Materials	4	0	0	4	PMT
2	BT1010	Life Sciences	2	0	0	2	SLS
3	EE1100	Basic Electrical Engineering	3	0	0	3	BET
4	ID1200	Ecology and Environment	2	0	0	2	BET
5	ME2050	Machine Drawing Practice	1	0	6	5	PML
6	HSE1	Humanities Elective 1	3	0	0	3	HSS
7	MAE1	Mathematics Elective 1	3	0	0	3	SMA
		Total Credits :				22	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	AM2530	Foundations of Fluid Mechanics	3	1	0	4	PMT
2	AM2540	Applied Mechanics Lab	0	0	3	2	PML
3	EN2100	Electrical Sciences	3	0	0	3	PMT
4	ME2220	Kinematics and Dynamics of Machinery	4	0	0	4	PMT
5	ME2240	Instrumentation and Control	4	0	0	4	PMT
6	ME2260	Materials and Design	4	0	0	4	PMT
7	ME2280	Manufacturing Technology	4	0	0	4	PMT
8	MAE4	Mathematics Elective 4	3	0	0	3	SMA
		Total Credits :				28	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	ME3170	Heat Transfer	4	0	0	4	PMT
2	ME3190	Machine Tools & Metrology	4	0	0	4	PMT
3	ME3270	Mechanical Engg Lab I	0	0	3	2	PML
4	ME3310	Turbomachines	4	0	0	4	PMT
5	ME3330	Internal Combustion Engines	3	0	0	3	PMT
6	ME3350	Design of Machine Elements	4	0	0	4	PMT
7	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				24	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	ME3250	Refrigeration & Airconditioning	3	0	0	3	PMT
2	ME3260	Thermal Power Engineering	4	0	0	4	PMT
3	ME3280	Mechanical Engineering Lab II	0	0	3	2	PML
4	ME3300	Mechanical Engg. Lab III	0	0	3	2	PML
5	ME3500	Summer Training	0	0	0	2	PIT
6	DPE1	Department Elective 1	3	0	0	3	PMT
7	FRE1	Free Elective 1	3	0	0	3	
8	HSE2	Humanities Elective 2	3	0	0	3	HSS
9	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				25	

Branch Code: ME22
Dual Degree (B.Tech. & M.Tech.) in Mechanical Engineering
(Curriculum for the first six semester is common – refer Page No. 52 & 53)

STREAM: Product Design
2014-Batch

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	HS3050	Professional Ethics	2	0	0	2	HPF
2	ME6800	Finite Element Analysis	3	0	0	3	PMT
3	ME6820	Fundamentals of Engineering Design	3	0	0	3	PMT
4	ME6830	Principles of Product Design	3	0	0	3	PMT
5	ME6840	Design for Manufacture and Assembly	3	0	0	3	PMT
6	FRE2	Free Elective 2	3	0	0	3	
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self-Study Elective	3	0	0	3	PSS
		Total Credits :				23	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	IL4040	Industrial Lecture	0	0	0	1	PIL
2	ME6224	Design Synthesis	3	0	0	3	PMT
3	ME6226	Product Reliability	3	0	0	3	PMT
4	ME6228	CAD/CAM for Product Design	3	0	0	3	PMT
5	ME6880	Product Design Lab	0	0	3	2	PML
6	ME6332	Mechatronic Systems	3	0	0	3	PMT
7	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
8	HSE4	Humanities Elective 4	3	0	0	3	HSS
		Total Credits :				21	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	ME7980*	Project I - DD	0	0	0	6*	PMP
2	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
3	DDE2	Dual Degree Elective 3	3	0	0	3	PMT
		Total Credits :				6	

**Project (ME7980*) grade will be awarded in 10th semester*

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	ME7980	Project II	0	0	0	15	PMP
		Total Credits :				15	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	20+6	22	28	24	25	23	21	6	15	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	15	15

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	85	6	3	7	14	10	2	6	0

Remarks

- Electives I to IV from Mechanical Elective List or other equivalents from other departments with the consent of the Faculty Adviser.
- Any two PMT electives can be taken as Pass/Fail courses
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: 214+12 = 226)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: ME23
Dual Degree (B.Tech. & M.Tech.) in Mechanical Engineering
(Curriculum for the first six semester is common – refer Page No. 52 & 53)

STREAM: Intelligent Manufacturing
2014-Batch

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	HS3050	Professional Ethics	2	0	0	2	HPF
2	ME7010	Microprocessors in Automation	3	0	0	3	PMT
3	ME7020	Robotics and Robot Applications	3	0	0	3	PMT
4	ME7050	CNC and Adaptive Control	3	0	0	3	PMT
5	ME5307	Modelling and Simulation in Manufacturing	3	0	0	3	PMT
6	FRE2	Free Elective 2	3	0	0	3	
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self-Study Elective 1	3	0	0	3	PSS
		Total Credits :				23	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	IL4040	Industrial Lecture	0	0	0	1	PIL
2	ME5302	Sensors for Intelligent Manufacturing	3	0	0	3	PMT
3	ME7130	Computer Int. Manuf. Lab I	0	0	3	2	PML
4	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
5	ME7250	Rapid Response Manufacturing	3	0	0	3	PMT
6	ME7400	Mechatronic Systems	3	0	0	3	PMT
7	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
8	HSE3	Humanities Elective 3	3	0	0	3	HSS
		Total Credits :				21	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	ME7980*	Project I - DD	0	0	0	6*	PMP
2	DDE3	Dual Degree Elective 3	3	0	0	3	PMT
3	DDE4	Dual Degree Elective 4	3	0	0	3	PMT
		Total Credits :				6	

**Project (ME7980*) grade will be awarded in 10th semester*

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	ME7980	Project II	0	0	0	15	PMP
		Total Credits :				15	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	20+6	22	28	24	25	23	21	6	15	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	15	15

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	85	6	3	7	14	10	2	6	0

Remarks

- Electives I to IV from Mechanical Elective List or other equivalents from other departments with the consent of the Faculty Adviser.
- Any two PMT electives can be taken as Pass/Fail courses
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: 214+12 = 226)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: ME24

Dual Degree (B.Tech. & M.Tech.) in Mechanical Engineering

(Curriculum for the first six semester is common – refer Page No. 52 & 53)

STREAM: Thermal Engineering

2014-Batch

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	HS3050	Professional Ethics	2	0	0	2	HPF
2	ME6040	Incompressible Fluid Flow	3	0	0	3	PMT
3	ME5105	Applied Thermodynamics	3	0	0	3	PMT
4	ME6280	Design & Optimisation of Energy Systems	3	0	0	3	PMT
5	DDE1	Dual Degree Elective 1	3	0	0	3	PMT
6	FRE2	Free Elective 2	3	0	0	3	
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self-Study Elective	3	0	0	3	PSS
		Total Credits :				23	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	IL4040	Industrial Lecture	0	0	0	1	PIL
2	ME6080	Measurement in Thermal Engg	4	0	0	4	PMT
3	ME5107	Numerical Methods in Thermal Engg	4	0	0	4	PMT
4	ME6150	Advanced Energy Conversion	3	0	0	3	PMT
6	DDE2	Dual Degree Elective 2	3	0	0	3	PMT
7	DDE3	Dual Degree Elective 3	3	0	0	3	PMT
8	HSE3	Humanities Elective 3	3	0	0	3	HSS
		Total Credits :				21	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	ME7980*	Project I - DD	0	0	0	6*	PMP
2	DDE4	Dual Degree Elective 4	3	0	0	3	PMT
3	DDE5	Dual Degree Elective 5	3	0	0	3	PMT
		Total Credits :				6	

Project (ME7980) grade will be awarded in 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	ME7980	Project II	0	0	0	15	PMP
		Total Credits :				15	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	20+6	22	28	24	25	23	21	6	15	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	13	15

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	87	6	3	7	14	10	2	6	0

Remarks

- Electives I to IV from Mechanical Elective List or other equivalents from other departments with the consent of the Faculty Adviser.
- Any two PMT electives can be taken as Pass/Fail courses
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: $214+12 = 226$)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: MM21

Dual Degree (B.Tech. & M.Tech.) in Metallurgical and Materials Engineering 2014-Batch

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	CS1100	Computational Engineering	3	0	0	3	BET
2	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
3	ID1100	Concepts in Engineering Design	2	0	0	2	BET
4	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
5	MM1010	Introduction to Materials Engineering	2	0	0	2	PMT
6	PH1010	Physics I	3	0	0	3	SPH
7	PH1030	Physics Laboratory I	0	0	3	2	SPH
8	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				22	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	CY1002	Chemistry Lab I	1	0	3	3	SCY
2	EE1100	Basic Electrical Engineering	3	0	0	3	BET
3	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
4	ME1100	Thermodynamics	3	0	0	3	BET
5	ME1120	Engineering Drawing	3	0	0	3	BES
6	MM1020	Science and Engineering of Materials	3	0	0	3	PMT
7	PH1020	Physics II	3	0	0	3	SPH
	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				24	
8	WS1010	Workshop I				4	BES
9	WS1020	Workshop II				2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	BT1010	Life Sciences	2	0	0	2	SLS
3	ID1200	Ecology and Environment	2	0	0	2	BET
4	MM2010	Principles of Physical Metallurgy	4	0	0	4	PMT
5	MM2011	Optical Micrography Lab	0	0	3	2	PML
6	MM2030	Metallurgical Thermodynamics	4	0	0	4	PMT
7	HSE1	Humanities Elective 1	3	0	0	3	HSS
8	MAE1	Mathematics Elective 1	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	MM2012	Physical Metallurgy & Ceramics Lab	0	0	3	2	PML
2	MM2014	Materials Chemistry & Powder Metallurgy Lab	0	0	3	2	PML
3	MM2020	Mechanical Metallurgy	3	0	0	3	PMT
4	MM2040	Introduction to Transport Phenomena	3	0	0	3	PMT
5	MM2060	Phase Transformations	3	0	0	3	PMT
6	MM2080	Principles of Extractive Metallurgy	3	0	0	3	PMT
7	HSE2	Humanities Elective 2	3	0	0	3	HSS
8	MAE2	Mathematics Elective 2	3	0	0	3	SMA
		Total Credits :				22	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	MM3010	Physics of Materials	3	0	0	3	PMT
2	MM3011	Mechanical Metallurgy & Tribology Lab	0	0	3	2	PML
3	MM3012	Joining & NDT Lab	0	0	3	2	PML
4	MM3030	Materials Characterization	4	0	0	4	PMT
5	MM3050	Creep Fatigue and Fracture Mechanics	3	0	0	3	PMT
6	MM3060	Metal Joining Technology	3	0	0	3	PMT
7	MM3090	Environmental Degradation of Materials	3	0	0	3	PMT
8	MNS1	Minor Elective 1	3	0	0	3	MNS
		Total Credits :				23	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	MM3013	Forming & Casting Lab	0	0	3	2	PML
2	MM3020	Iron Making and Steel Making	4	0	0	4	PMT
3	MM3040	Metal Forming Technology	3	0	0	3	PMT
4	MM3070	Solidification Processing	3	0	0	3	PMT
5	MM3100	Materials Characterisation Lab	0	0	3	2	PML
6	DPE1	Department Elective 1	3	0	0	3	PMT
7	FRE1	Free Elective 1	3	0	0	3	
8	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				23	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	HS3050	Professional Ethics	2	0	0	2	HPF
2	MM4010	P/M Refractories and Ceramics	4	0	0	4	PMT
3	MM4020	Industrial Training	0	0	0	2	PIT
4	DPE2	Department Elective 2	3	0	0	3	PMT
5	DPL1	Department Elective Lab 1	0	0	3	2	PML
6	FRE2	Free Elective 2	3	0	0	3	
7	MNS3	Minor Elective 3	3	0	0	3	MNS
8	SSE1	Self Study Elective 1	3	0	0	3	PSS
		Total Credits :				22	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	IL4020	Industrial Lecture	0	0	0	1	PIL
2	DPE3	Department Elective 3	3	0	0	3	PMT
3	DPE4	Department Elective 4	3	0	0	3	PMT
4	DPE5	Department Elective 5	3	0	0	3	PMT
5	DPE6	Department Elective 6	3	0	0	3	PMT
6	DPE7	Department Elective 7	3	0	0	3	PMT
7	DPE8	Department Elective 8	3	0	0	3	PMT
8	HSE3	Humanities Elective 3	3	0	0	3	HSS
		Total Credits :				22	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	MM5885	Viva Voce	0	0	0	2	PMP
2	MM5890	Project I (DD)	0	0	0	5*	PMP
3	DPE9	Department Elective 9	3	0	0	3	PMT
4	DPE10	Department Elective 10	3	0	0	3	PMT
		Total Credits :				8	

* Project (MM5890) grade will be assigned in 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	MM5900	Project II	0	0	0	18	PMP
		Total Credits :				18	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	22	24+6	24	22	23	23	22	22	8	18	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	16	20

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	79	6	3	7	14	10	2	6	0

Remarks

- Electives I to X from Metallurgical and Materials Engineering Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- Any two PMT electives can be taken as Pass/Fail courses (4000 or higher level)
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: 214+12 = 226)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Dual Degree (B.Tech. & M.Tech) in Naval Architecture and Ocean Engineering

2014-Batch

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	CY1002	Chemistry Lab I	1	0	3	3	SCY
2	ID1100	Concepts in Engineering Design	2	0	0	2	BET
3	MA1010	Calculus I Functions of One Variable	3	1	0	4	SMA
4	ME1100	Thermodynamics	3	0	0	3	BET
5	ME1120	Engineering Drawing	3	0	0	3	BES
6	OE1010	Introduction to Ocean Engg & Oceanography	2	0	0	2	PMT
7	PH1010	Physics I	3	0	0	3	SPH
8	PH1030	Physics Laboratory I	0	0	3	2	SPH
9	GN1100	Life Skills	2	0	0	2	HPF
		Total Credits :				24	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	AM1100	Engineering Mechanics	4	0	0	4	BET
2	CS1100	Computational Engineering	3	0	0	3	BET
3	CY1001	Chemistry: Structure, Bonding & Reactivity	4	0	0	4	SCY
4	MA1020	Calculus II Functions of Several Variables	3	1	0	4	SMA
5	OE1020	Materials and Production Processes	4	0	0	4	PMT
6	PH1020	Physics II	3	0	0	3	SPH
7	PH1040	Physics Laboratory II	0	0	3	2	SPH
		Total Credits :				24	
8	WS1010	Workshop I				4	BES
9	WS1020	Workshop II				2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	AM2200	Strength of Materials	4	0	0	4	PMT
2	BT1010	Life Sciences	2	0	0	2	SLS
3	EE1100	Basic Electrical Engineering	3	0	0	3	BET
4	ID1200	Ecology and Environment	2	0	0	2	BET
5	OE2010	Ship Theory	3	0	0	3	PMT
6	HSE1	Humanities Elective 1	3	0	0	3	HSS
7	MAE1	Mathematics Elective 1	3	0	0	3	SMA
		Total Credits :				20	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	AM2530	Foundations of Fluid Mechanics	4	0	0	4	PMT
2	AM2540	Applied Mechanics Lab	0	0	3	2	PML
3	OE2020	Analysis of Structures	4	0	0	4	PMT
4	OE2060	Ship Resistance and Propulsion	3	0	0	3	PMT
5	OE2100	CASDD I	1	0	6	5	PML
6	HSE2	Humanities Elective 2	3	0	0	3	HSS
7	MAE2	Mathematics Elective 2	3	0	0	3	SMA
		Total Credits :				24	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	OE3010	Ship Hydrodynamics	3	0	0	3	PMT
2	OE3050	Ocean Wave Hydrodynamics	3	0	0	3	PMT
3	OE3070	Ship Structure	3	0	0	3	PMT
4	OE3090	CASDD II	0	0	6	4	PML
5	OE3110	Ocean Engg Lab I	0	0	6	4	PML
6	OE3190	Design of Ocean Structures	3	0	0	3	PMT
7	MNS1	Minor Elective 1	3	0	0	3	MNS
8	SSE1	Self- Study Elective 1	3	0	0	3	PSS
		Total Credits :				26	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	OE3020	Ship Design	3	0	0	3	PMT
2	OE3030	Marine Engineering	3	0	0	3	PMT
3	OE3040	Vib of Marine Structures & Acoustics	3	0	0	3	PMT
4	OE3140	Lab II	0	0	6	4	PML
5	OE3160	Industrial Training	0	0	0	2	PIT
6	DPE2	Department Elective 2	3	0	0	3	PMT
7	FRE1	Free Elective 1	3	0	0	3	
8	MNS2	Minor Elective 2	3	0	0	3	MNS
		Total Credits :				24	

Remarks

- Electives I to II from Ocean Engineering Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- Free Electives I category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.

Branch Code: NA21 2014-Batch

Dual Degree (B.Tech. & M.Tech) in Naval Architecture and Ocean Engineering (Curriculum for the first six semester is common – refer Page No. 63 & 64)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	OE4030	Dynamics of Floating Systems and Manoeuvring of Marine Vehicles	3	0	0	3	PMT
2	DPE3	Department Elective 3	3	0	0	3	PMT
3	DPE4	Department Elective 4	3	0	0	3	PMT
4	DPE5	Department Elective 5	3	0	0	3	PMT
5	FRE2	Free Elective 2	3	0	0	3	
6	HSE4	Humanities Elective 4	3	0	0	3	HSS
7	MNS3	Minor Elective 3	3	0	0	3	MNS
		Total Credits :				21	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	HS3050	Professional Ethics	2	0	0	2	PPF
2	OE4020	Industrial Lecture	0	0	0	1	PIL
3	OE5320	Nonlinear Problems in Ocean Engineering	3	0	0	3	PMT
4	OE5800	Coastal Engineering	3	0	0	3	PMT
5	DPE6	Department Elective 6	3	0	0	3	PMT
6	DPE7	Department Elective 7	3	0	0	3	PMT
7	DPE8	Department Elective 8	3	0	0	3	PMT
		Total Credits :				18	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	OE5365	Viva Voce	0	0	0	2	PMP
2	OE5370+	Project I	0	0	0	4*	PMP
3	DPE9	Department Elective 9	3	0	0	3	PMT
4	DPE10	Department Elective 10	3	0	0	3	PMT
		Total Credits :				8	

* Project (OE5370+) grade will be assigned in 10th semester

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	OE5370\$	Project	0	0	0	16	PMP
2	OE5230	Foundation for Offshore Structures	4	0	0	4	PMT
		Total Credits :				20	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	24	24+6	20	24	26	24	21	18	8	20	215

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	19	18

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	85	0	3	7	14	10	2	6	0

Remarks

- Electives I to IV from Ocean Engineering Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: 215+12 = 227)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: NA22
2014 Batch

**Dual Degree (B.Tech. in Naval Architecture and Ocean Engineering and
M.Tech. in Applied Mechanics)**

(Curriculum for the first six semester is common – refer Page No. 63 & 64)

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5390	Advanced Structural Mech.	3	0	0	3	PMT
2	AM5530	Advance Fluid Mechanics	3	0	0	3	PMT
3	AM5010	Biomechanics	3	0	0	3	PMT
4	OE4030	Dynamics of floating bodies & Manoeuvring of Marine Vehicles	3	0	0	3	PMT
5	OE	Department Elective 3	3	0	0	3	PMT
6	MNS3	Minor Elective 3	3	0	0	3	MNS
7	HS3050	Professional Ethics	2	0	0	2	HPF
		Total Credits :				20	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
	OE4020	Industrial Lecture (Pass/Fail)	1	0	0	1	PIL
	HSE3	HS Elective III	3	0	0	3	HSS
	FRE2	Free Elective II	3	0	0	3	
	AM	Specialization Core I [#]	3	0	0	3	PMT
	AM	Specialization Core II [#]	3	0	0	3	PMT
	AM	Specialization Core Lab [#]	0	0	3	2	PML
		MTech Elective I	3	0	0	3	PMT
		MTech Elective II	3	0	0	3	PMT
		Total Credits:				21	

#- Students opting Fluid Mechanics group will credit two courses from Fluid Mechanics specialization courses and respective Laboratory. Students opting for solid mechanics will credit two solid Mechanics courses and respective Laboratory.

SPECIALIZATION CORE / LABORATORY

S.No	Course No	Course Name	L	T	P	C	Category
Fluid Mechanics							
1	AM 5570	Introduction to Turbulence	3	0	0	3	PMT
2	AM 5540	Hydrodynamics	3	0	0	3	PMT
3	AM 5630	Foundations of CFD	3	0	0	3	PMT
4	AM 5820	Wind Tunnel and Numerical Experiments	0	0	3	2	PML
Solid Mechanics							
1	AM 5240	Experimental Stress Analysis	3	0	0	3	PMT
2	AM 5450	Discrete Element Methods in Engineering Analysis	3	0	0	3	PMT
3	AM 5620	Theory of Plates and Shells	3	0	0	3	PMT
4	AM 5400	Experimental Stress Analysis Laboratory	0	0	3	2	PML

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1		M.Tech Elective III	3	0	0	3	PMT
2		M.Tech Elective IV	3	0	0	3	PMT
3	AM5490*	Project I	0	0	0	5*	PMP
		Total Credits				6	

** Project (AM5490*) grade will be assigned in 10th semester*

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	AM5490#	PROJECT II	0	0	0	19	PMP
		Total Credits	0	0	0	19	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	21	27+6	20	24	26	24	20	21	6	19	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	17	4	9	9	1	2	21	19

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	81	0	3	7	14	10	2	6	0

Remarks

- Electives I to III from Ocean Engineering Elective List or other equivalents from other departments with the consent of the Faculty Adviser & HoD.
- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: 214+12 = 226)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.

Branch Code: PH21

Dual Degree (B.S. & M.S.) in Physics 2014-Batch

SEMESTER 1

S.No	Course No	Course Name	L	T	P	C	Category
1	CS1100	COMPUTATIONAL ENGINEERING	3	0	0	3	BET
2	CY1001	CHEMISTRY I	4	0	0	4	SCY
3	EP1010	INTRODUCTION TO ENGINEERING PHYSICS	2	0	0	2	PMT
4	ID1100	CONCEPTS IN ENGINEERING DESIGN	2	0	0	2	1
5	MA1010	CALCULUS I - FUNCTIONS OF ONE VARIABLE	3	1	0	4	SMA
6	PH1010	PHYSICS I	3	0	0	3	SPH
7	PH1030	PHYSICS LAB I	0	0	3	2	SPH
8	GN1100	Life Skills	2	0	0	2	HPF
		TOTAL				22	

SEMESTER 2

S.No	Course No	Course Name	L	T	P	C	Category
1	MA1020	Calculus II - Functions of Several Variables	3	1	0	4	SMA
2	PH1020	PHYSICS II	3	0	0	3	SPH
3	PH1080	THERMODYNAMICS AND KINETIC THEORY	3	0	0	3	PMT
4	PH 1040	PHYSICS LAB II	0	0	3	2	SPH
6	HSS	Humanities (Elective) I	3	0	0	3	HSS
5	ME1120	ENGINEERING DRAWING	1	0	3	3	BES
6	CY1002	CHEMISTRY LAB - I	1	0	3	3	SCY
		Total Credits :				21	
7	WS1010	Workshop I	0	0	6	4	BES
8	WS1020	Workshop II	0	0	3	2	BES

SEMESTER 3

S.No	Course No	Course Name	L	T	P	C	Category
1	BT1010	LIFE SCIENCES	2	0	0	2	SLS
2	EP2010	ELEMENTS OF CLASSICAL DYNAMICS	3	0	0	3	PMT
3	EP2100	INTRODUCTION TO ENGINEERING OPTICS	3	0	0	3	PMT
4	HS	Humanities (Elective) II	3	0	0	3	HSS
5	ID1200	ECOLOGY AND ENVIRONMENT	2	0	0	2	BET
6	MA2020	DIFFERENTIAL EQUATIONS	3	0	0	3	SMA
7	PH2050	PHYSICS LAB III	0	0	6	4	PML
		TOTAL				20	

SEMESTER 4

S.No	Course No	Course Name	L	T	P	C	Category
1	EP2110	Introduction to Mathematical Physics	3	0	0	3	PMT
2	HS	Humanities (Elective) III	3	0	0	3	HSS
3	MA	Mathematics Elective I	3	0	0	3	SMA
4	PH2040	PHYSICAL CHEMISTRY	3	0	0	3	PMT
5	PH2060	CONTEMPORARY PHYSICS	3	0	0	3	PMT
6	PH2070	Introduction to Biological Physics	3	0	0	3	PMT
7	PH2080	PHYSICS LAB IV	0	0	6	4	PML
		TOTAL				22	

SEMESTER 5

S.No	Course No	Course Name	L	T	P	C	Category
1	MNS1	MINOR ELECTIVE 1	3	0	0	3	MNS
2	PH2030	WAVES & OSCILLATIONS	3	0	0	3	PMT
3	PH5030	CLASSICAL MECHANICS	4	0	0	4	PMT
4	PH5040	ELECTRONICS	3	0	0	3	PMT
5	PH5060	PHYSICS LAB I (PG)	1	0	6	7	PML
6	PH5100	QUANTUM MECHANICS - I	4	0	0	4	PMT
		TOTAL				24	

SEMESTER 6

S.No	Course No	Course Name	L	T	P	C	Category
1	MNS2	MINOR ELECTIVE II	3	0	0	3	MNS
2	PH5020	ELECTROMAGNETIC THEORY	4	0	0	4	PMT
3	PH5080	STATISTICAL PHYSICS	3	0	0	3	PMT
4	PH5120	PHYSICS LAB - II (PG)	0	0	9	6	PML
5	PH5160	CONDENSED MATTER PHYSICS - I	4	0	0	4	PMT
6	PH5170	QUANTUM MECHANICS II	3	0	0	3	PMT
		TOTAL	17	0	9	23	

SEMESTER 7

S.No	Course No	Course Name	L	T	P	C	Category
1	MNS3	MINOR ELECTIVE III	3	0	0	3	MNS
2	PH5210	Condensed Matter Physics II	3	0	0	3	PMT
3	PH5211	High energy Physics	3	0	0	3	PMT
4	PH5270	PHYSICS LAB. III (PG)	1	0	6	5	PML
5	PH5410	ATOMIC AND MOLECULAR PHYSICS	4	0	0	4	PMT
6	PH5440	Self- study	0	0	0	3	PSS
		TOTAL				21	

SEMESTER 8

S.No	Course No	Course Name	L	T	P	C	Category
1	FRE1	Free Elective - I	0	0	0	3	*
2	PH4500	Research / Industrial Training (in Summer)	0	0	0	2	PIT
3	PH5400*	Comprehensive Viva Voce	0	0	0	2	PMT
4	PH5250	ADV. ELECTRONICS	3	0	3	5	PMT
5	PH5720	Numerical Methods and Programming	3	0	3	5	PMT
6	PH5910	Mini-project	0	0	0	2	PMP
7	PH	Elective I	3	0	0	3	PMT
8	PH	Elective II	3	0	0	3	PMT
		TOTAL				24	

SEMESTER 9

S.No	Course No	Course Name	L	T	P	C	Category
1	HS3050	Professional Ethics (Pass / Fail)	2	0	0	2	HPF
2	PH	Elective III	3	0	0	3	PMT
3	PH5941	Project I	0	0	0	5	PMP
4	PH5401	Comprehensive Viva Voce - II	0	0	0	1	PMT
5	FRE2	Free Elective - II	0	0	0	3	*
6	PH5425	Industrial Lecture	0	0	3	1	PIL
7	PH5920*	Viva Voce (Project)	0	0	0	1	PMP
		TOTAL				16	

SEMESTER 10

S.No	Course No	Course Name	L	T	P	C	Category
1	PH	Elective IV	3	0	0	3	PMT
2	PH5930	Seminar	0	0	0	1	PMT
3	PH5920	Viva Voce (Project)	0	0	0	1	PMP
4	PH5942	Project II	0	0	0	12	PMP
		TOTAL	3	0	0	17	

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Req. Cr.	22	21+6	20	22	24	23	24	24	13	15	214

Category	BES	BET	HPF	HSS	MNS	PIL	PIT	PML	PMP
Req. Cr.	9	7	4	9	9	1	2	26	15

Category	PMT	PPF	PSS	SCY	SMA	SPH	SLS	FRE	EXT
Req. Cr.	84	6	3	7	14	10	2	6	0

Remarks

- Free Electives I & II category will be indicated in the grade card according to the course chosen by the student from own department or from other departments such as MA, HS & PH.
- Any two PMT elective can be taken as Pass/Fail courses (PPF)
- The students can opt for 3 PMT elective courses in lieu of 9 cr project.
- Dual Degree (B.Tech. Honours & M.Tech.) - (Total credit requirement: 214+12 = 226)
 - Students having a CGPA of ≥ 8.5 and who have cleared all the courses in the first attempt can opt for B.Tech (Honours) at the end of the fourth semester.
 - Those who opt for B.Tech (Honours) must register for 12 additional PMT credits.
 - Students can register for a maximum of 2 additional PMT courses in a semester from the Honours basket of courses over and above the courses prescribed in the B.Tech curriculum from 5th semester onwards.
 - Project work is a must for B.Tech (Honours) students in B.Tech programme.
 - Those who have registered for B.Tech (Honours) must maintain an average CGPA of 8.5 from 4th semester onwards. Otherwise, they will be awarded only B.Tech Degree.
 - Extra credits earned by the students will be counted for prizes and awards.