

**INDIAN INSTITUTE OF ENGINEERING SCIENCE & TECHNOLOGY, SHIBPUR**  
**5 yr INTEGRATED B. TECH & M. TECH DUAL DEGREE COURSE STRUCTURE w.e.f. July,2015**

**1<sup>st</sup> semester (COMMON TO ALL DEPARTMENTS )**

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics – I	MA101	3	1	0	4	4
2.	Physics/Chemistry	PH1201/CH1201	3	1	0	4	4
3.	Int. to comp. & prog./ Prof. Comm. In English	CS1201/HU1201	2	1	0	3	3
4.	Basic Electrical Eng./Basic Electronics Eng.	EE1201/ET1201	3	1	0	4	4
5.	Environment & Ecology/Mechanics	CE1201/AM1201	2/3	0/1	0	2/4	2/4
	Theory Sub-total		13/14	4/5	NIL	17/19	17/19
6.	Physics-I Lab./Chemistry Lab.	PH1251/CH1251	0	0	3	2	
7.	Basic EE. Lab./Basic Electronics Eng. Lab.	EE1251/ET1251	0	0	3	2	
8.	Drawing Practice/Workshop Practice	AM1251/WS1251	0	0	3	2	
9.	Computing Practice Lab./None	CS1251/NIL	0	0	3/0	2/0	
	Sessional Sub-total		NIL	NIL	12/9	8/6	12/09
	1 <sup>st</sup> Semester Total					25/23	29/28

**2nd semester (COMMON TO ALL DEPARTMENTS EXCEPT ARCHITECTURE)**

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	Mathematics – II	MA 201	3	1	0	4	4
2.	Chemistry/Physics	CH1201/PH1201	3	1	0	4	4
3.	Prof.Comm. In English/Int. to comp. & Prog.	HU1201/CS1201	2	1	0	3	3
4.	Basic Electronics Eng./Basic Electircal Engg.	ET 1201/EE1201	3	1	0	4	4
5.	Mechanics/Environment& Ecology	AM 1201/CE1201	3/2	1/0	0	4/2	4/2
	Theory Sub-total		14/13	5/4	NIL	19/17	19/17
6.	Chemistry Lab./Physics Lab	CH1251/PH1251	0	0	3	2	
7.	Basic EE Lab./Basic Electronics Eng. Lab.	ET1251/EE1251	0	0	3	2	
8.	Workshop Practice / Drawing Practice	WS1251/AM1251	0	0	3	2	
9.	NONE/Computing Practice Lab.	NIL/CS1251	0	0	0/3	0/2	
	Sessional Sub-total		NIL	NIL	9/12	6/8	9/12
	1 <sup>st</sup> Semester Total					22/24	28/29

**Distribution of common core subjects**

Group	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
Aerospace, Civil, Mech, Met & Mining	CE1201 CH1201 CS1201 ET1201 AM1251 ET1251	AM1201 PH1201 HU1201 EE1201 EE1251 WS 1251	HU3401 MA 301		HU5601		HU7801	
CS, EE, ET, IT	AM1201 PH1201 HU1201 EE1201 EE1251 WS 1251	CE1201 CH1201 CS1201 ET1201 AM1251 ET 1251	MA 301	HU3401		HU5601		HU7801

# AEROSPACE ENGINEERING

## 3<sup>rd</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics – III	MA301	3	1	0	4	4
2.	Intr. to Mgmt. & Industrial Sociology	HU3401	4	0	0	4	4
3.	Dynamics	AM302	3	1	0	4	4
4.	Fluid Dynamics	AE301	3	1	0	4	4
5.	Strength of Materials	AM304	3	1	0	4	4
	Theory Sub-total		16	4	NIL	20	20
6.	Strength of Materials Lab	AM354	0	0	3	2	3
7.	Machine Drawing	AM351	0	0	3	2	3
9.	Fluid Mechanics Laboratory	AM353	0	0	3	2	3
8.	Mini Project I	AE371	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	9
	3 <sup>rd</sup> Semester Total					28	29

## 4<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Fundamentals of Viscous Flow	AE401	3	1	0	4	4
2.	Aerospace Structures I	AE402	3	1	0	4	4
3.	Aircraft Dynamics	AE403	3	1	0	4	4
4.	Engineering Thermodynamics	AE404	3	1	0	4	4
5.	Introduction to Aerospace Engineering	AE406	3	1	0	4	4
	Theory Sub-total		15	5	NIL	20	20
6.	MMS Lab	AE451	0	0	3	2	3
7.	CAD Lab	AE452	0	0	3	2	3
8.	Mini Project II	AE471	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	6	6	06
	4 <sup>th</sup> Semester Total					26	26

## 5<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Economics	HU5601	2	1	0	3	3
2.	Low Speed Aerodynamics	AE501	3	1	0	4	4
3.	Aerospace Structures II	AE502	3	1	0	4	4
4.	Aerospace Vehicle Dynamics and Navigation	AE503	3	1	0	4	4
5.	Open Elective I (OE I): Numerical Methods and Computational Tools -	AE531/1	3	0	0	3	3
	<b>Theory Sub-total</b>		14	4	NIL	18	18
6.	Low Speed Aerodynamics Laboratory	AE551	0	0	3	2	3
7.	Aerospace Structures Lab	AE552	0	0	3	2	3
8.	Numerical Methods and Computational Tools Lab	AE555	0	0	3	2	3
	<b>Sessional Sub-total</b>		NI L	NIL	9	6	9
	<b>5<sup>th</sup> Semester Total</b>					24	27

## 6<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	High Speed Aerodynamics	AE601	3	1	0	4	4
2.	Theory of Vibration I	AE602	3	1	0	4	4
3.	Aircraft Stability and Control	AE603	3	1	0	4	4
4.	Theory of Propulsion	AE604	3	1	0	4	4
5.	Orbital Mechanics	AE605	3	1	0	4	4
	<b>Theory Sub-total</b>		15	5	NIL	20	20
6.	High Speed Aerodynamics Laboratory	AE651	0	0	3	2	3
7.	Vibration Lab	AE652	0	0	3	2	3
8.	Aircraft Design and Flight Training	AE653	0	0	3	2	3
9.	Viva voce – I	AE671	0	0	0	2	0
	<b>Sessional Sub-total</b>		NI L	NIL	9	8	9
	<b>6<sup>th</sup> Semester Total</b>					28	29

# Aerospace Engineering (B.Tech-M.Tech. Program)

## Specialisation: Aerodynamics

### 7<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Accountancy and F.M.	HU7801	2	1	0	3	3
2.	ADC I	AE731	3	1	0	3	4
3.	ADC II	AE732	3	1	0	3	4
4.	ADS I	AE741/1	3	1	0	3	4
5.	Open Elective II (OE II): Finite Element Method	AE721/1	3	1	0	3	4
	<b>Theory Sub-total</b>		14	5	NIL	15	19
6.	Project Thesis Part I [Term Paper + Viva]	AE750	0	0	3	2	3
7.	Propulsion Laboratory	AE751	0	0	3	2	3
8.	Aircraft Stability and Control Laboratory	AE752	0	0	3	2	3
9.	Aircraft Design and Optimisation Techniques	AE753	0	0	3	2	3
	<b>Sessional Sub-total</b>		NIL	NIL	12	8	12
	<b>7<sup>th</sup> Semester Total</b>					23	31

### 8<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	ADC III	AE831	3	1	0	3	4
2.	ADC IV	AE832	3	1	0	3	4
3.	ADS II	AE841/1	3	1	0	3	4
4.	ADS III	AE842/1	3	1	0	3	4
5.	Departmental Elective I (DE I):		3	1	0	3	4
	1. Mechatronics and Avionics	AE821/1					
	2. Aero-Space Navigation	AE821/2					
	<b>Theory Sub-total</b>		15	5	NIL	15	20
6.	Project Thesis Part II [Thesis + Viva]	AE850	0	0	6	6	6
7.	Mechatronics and Avionics Laboratory	AE851	0	0	3	2	3
8.	Aircraft Design and Manufacturing Technologys	AE852	0	0	3	2	3
9.	Viva voce – II	AE871	0	0	0	2	0
	<b>Sessional Sub-total</b>		NIL	NIL	12	12	12
	<b>8<sup>th</sup> Semester Total</b>					27	32

SUMMER TERM: Project for two to two and a half month / Industrial Training (Viva/Report) / Academic Assignments in India or abroad (4 credit)

## 9<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	ADS IV	AE941/1	3	1	0	3	4
2.	ADS V	AE942/1	3	1	0	3	4
	<b>Theory Sub-total</b>		6	2	NIL	6	8
3.	Project Thesis Part III	AE950	0	0	12	6	12
4.	Project Thesis Viva-voce	AE951	0	0	0	2	0
	<b>Sessional Sub-total</b>		NIL	NIL	12	8	12
	<b>9<sup>th</sup> Semester Total</b>					14	20

## 10<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
	(No Theory Subject)						
	<b>Theory Sub-total</b>		NIL	NIL	NIL	NIL	NIL
1.	Project Thesis Part IV	AE1050	0	0	16	8	16
2.	Project Thesis Viva-voce	AE1051	0	0	0	2	0
3.	Viva voce – III	AE1071	0	0	0	2	0
	<b>Sessional Sub-total</b>		NIL	NIL	16	12	16
	<b>10<sup>th</sup> Semester Total</b>					12	16

## Nomenclature of subjects

ADVANCED COMMON SUBJECTS FOR ALL SPECIALISATIONS			
ADC I (AE731)	ADC II (AE732)	ADC III (AE831)	ADC IV (AE832)
Aerospace Structural Dynamics	Jet and Rocket Propulsion	Turbulent Flow	Spacecraft Dynamics
AE S4N/X	ADVANCED SUBJECTS FOR DIFFERENT SPECIALISATIONS		
S= 7/8/9: N=1/2/3..	AERODYNAMICS (X=1)	AEROSTRUCTURE (X=2)	
ADS I : AE741	Boundary Layer Theory	Composites & Structures	
ADS II: AE841	Computational Fluid Dynamics	Computational Solid Mechanics	
ADS III: AE842	Advanced Aerodynamics	Aero Elasticity	
ADS IV: AE941	Hypersonic Aerodynamics	Theory of Vibration II	
ADS V: AE942	Advanced Aerodynamics	Theory of Elasticity and Plasticity	

# Aerospace Engineering (B.Tech-M.Tech. Program)

## Specialisation: Aerostructure

### 7<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Accountancy and F.M.	HU7801	2	1	0	3	3
2.	ADC I	AE731	3	1	0	3	4
3.	ADC II	AE732	3	1	0	3	4
4.	ADS I	AE741/2	3	1	0	3	4
5.	Open Elective II (OE II): Finite Element Method	AE721/1	3	1	0	3	4
	<b>Theory Sub-total</b>		14	5	NIL	15	19
6.	Project Thesis Part I [Term Paper + Viva]	AE750	0	0	3	2	3
7.	Propulsion Laboratory	AE751	0	0	3	2	3
8.	Aircraft Stability and Control Laboratory	AE752	0	0	3	2	3
9.	Aircraft Design and Optimisation Techniques	AE753	0	0	3	2	3
	<b>Sessional Sub-total</b>		NIL	NIL	12	8	12
	<b>7<sup>th</sup> Semester Total</b>					23	31

### 8<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	ADC III	AE831	3	1	0	3	4
2.	ADC IV	AE832	3	1	0	3	4
3.	ADS II	AE841/2	3	1	0	3	4
4.	ADS III	AE842/2	3	1	0	3	4
5.	Departmental Elective I (DE I):		3	1	0	3	4
	1. Introduction to Plates & Shells	AE821/3					
	2. Nonlinear Dynamics	AE821/4					
	3. Fracture Mechanics	AE821/5					
	<b>Theory Sub-total</b>		15	5	0	15	20
6.	Project Thesis Part II [Thesis + Viva]	AE850	0	0	6	6	6
7.	Aircraft Design and Manufacturing Technologys	AE852	0	0	3	2	3
8.	Computational Solid Mechanics Laboratory	AE853	0	0	3	2	3
9.	Viva voce – II	AE871	0	0	0	2	0
	<b>Sessional Sub-total</b>		NIL	NIL	12	12	12
	<b>8<sup>th</sup> Semester Total</b>					27	32

SUMMER TERM: Project for two to two and a half month / Industrial Training (Viva/Report) / Academic Assignments in India or abroad (4 credit)

## 9<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	ADS IV	AE941/2	3	1	0	3	4
2.	ADS V	AE942/2	3	1	0	3	4
	<b>Theory Sub-total</b>		6	2	0	6	8
3.	Project Thesis Part III	AE950	0	0	12	6	12
4.	Project Thesis Viva-voce	AE951	0	0	0	2	0
	<b>Sessional Sub-total</b>		NIL	NIL	12	8	12
	<b>9<sup>th</sup> Semester Total</b>					14	20

## 10<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
	(No Theory Subject)						
	<b>Theory Sub-total</b>		NIL	NIL	NIL	NIL	NIL
1.	Project Thesis Part IV	AE1050	0	0	16	8	16
2.	Project Thesis Viva-voce	AE1051	0	0	0	2	0
3.	Viva voce – III	AE1071	0	0	0	2	0
	<b>Sessional Sub-total</b>		NIL	NIL	16	12	16
	<b>10<sup>TH</sup> Semester Total</b>					12	16

## Nomenclature of subjects

ADVANCED COMMON SUBJECTS FOR ALL SPECIALISATIONS			
ADC I (AE731)	ADC II (AE732)	ADC III (AE831)	ADC IV (AE832)
Aerospace Structural Dynamics	Jet and Rocket Propulsion	Turbulent Flow	Spacecraft Dynamics
AE 54N/X	ADVANCED SUBJECTS FOR DIFFERENT SPECIALISATIONS		
S= 7/8/9: N=1/2/3..	AERODYNAMICS (X=1)	AEROSTRUCTURE (X=2)	
ADS I : AE741	Boundary Layer Theory	Composites & Structures	
ADS II: AE841	Computational Fluid Dynamics	Computational Solid Mechanics	
ADS III: AE842	Advanced Aerodynamics	Aero Elasticity	
ADS IV: AE941	Hypersonic Aerodynamics	Theory of Vibration II	
ADS V: AE942	Advanced Aerodynamics	Theory of Elasticity and Plasticity	

### 3<sup>rd</sup> Semester CIVIL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics-III	MA301	3	1	0	4	4
2.	Intr. to Mgmt. & Industrial Sociology	HU3401	4	0	0	4	4
3.	Solid Mechanics	AM304/1	3	1	0	4	4
4.	Hydraulics	AM303/1	3	1	0	4	4
5.	Surveying	CE302	3	1	0	4	4
	Theory Sub-total		15	3	NIL	20	20
6.	Solid Mech Lab	AM354/1	0	0	3	2	3
7.	Hydraulics Lab	AM353/1	0	0	3	2	3
8.	Project on Building Planning	CE351	0	0	3	2	3
9	Introduction to Civil Engg. Profession (Mini I)	CE352	0	0	3	2	3
	Sessional Sub-total		NIL	NIL	12	8	12
	3 <sup>rd</sup> Semester Total					28	32

<load is crossing the 30 hr limit>

### 4<sup>th</sup> Semester CIVIL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	Engineering Geology	GE401	3	0	0	3	3
2.	Structural Analysis	CE401	3	1	0	4	4
3.	Civil Engineering Materials	CE402	3	1	0	4	4
4.	Geotechnical Engineering I	CE403	3	1	0	4	4
5.	Water Resource Engineering I	CE404	3	1	0	4	4
	Theory Sub-total		15	4	NIL	19	19
6.	Surveying Lab	CE451	0	0	3	2	3
7.	Estimation and Valuation Practice	CE452	0	0	3	2	3
8.	Civil Engineering Materials Lab	CE453	0	0	3	2	3
9.	General Civil Engg. problems I (MINI I)	CE471	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	9
	4 <sup>th</sup> Semester Total					27	28



## 5<sup>th</sup> Semester CIVIL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Economics	HU5601	2	1	0	3	3
2.	Structural Analysis II	CE502	3	1	0	4	4
3	Reinforced Concrete Design	CE503	3	1	0	4	4
4.	Environmental Engineering I	CE504	3	1	0	4	4
5.	Transportation Engineering I	CE505	3	1	0	4	4
	Theory Sub-total		15	4	NIL	19	19
6.	Reinforced Concrete Structure project	CE551	0	0	3	2	3
7.	Geotechnical Engg Lab	CE552	0	0	3	2	3
8.	Water Resource Engg Lab	CE553	0	0	3	2	3
	Sessional Sub-total		NIL	NIL	9	6	9
	5 <sup>th</sup> Semester Total					25	28

## 6<sup>th</sup> Semester CIVIL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Water Resource Engineering II	CE602	3	0	0	3	3
2.	Steel Design	CE601	3	1	0	4	4
3.	Transportation Engineering II	CE602	3	0	0	3	3
4.	Geotechnical Engineering II	CE603	3	1	0	4	4
5.	Environmental Engineering II	CE604	3	0	0	4	4
	Theory Sub-total		14	3	NIL	18	18
6.	Steel Structure Project		0	0	3	2	3
7.	Transportation Engineering Lab	CE651	0	0	3	2	3
	Environmental Engineering Lab	CE652	0	0	3	2	3
8.	Comprehensive Viva-voce	CE653	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	6	8	9
	6 <sup>th</sup> Semester Total					26	27

## 7<sup>th</sup> Semester CIVIL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Accountancy & F.M	HU 7801	2	1	0	3	3
2.	Elective I (DE/OE)	CE702/ or OE/	3	0	0	3	3
3.	EL II (OE)	OE/	2	1	0	3	3
4.	ADS I	CE741/X	3	0	0	3	3
5.	ADS II	CE742/X	3	0	0	3	3
	Theory Sub-total		14	2	NIL	16	16
6.	Structure Lab	CE751	0	0	3	2	3
7.	PG Sessional I	CE752	0	0	3	2	3
8.	Mini Project	CE753	0	0	3	2	3
	Modelling and Simulation	CE701	0	0	3	4	4
	Sessional Sub-total		NIL	NIL	9	6	9
	7 <sup>th</sup> Semester Total					22	25

Sl. No.	Name	Code	Type
1.	Advanced Mathematics and computing in Structural Engineering		
2.	Prestressed Concrete Design		
3.	Structures under Wind Excitation		
4.	Disaster Management		
5.	Flood Hazard Mitigation		
6.	Hydropower Engineering		
7.	Coastal Engineering		
8.	Geometric Design of Roads		
9.	Pavement Material & Construction		
10.	Chemistry for Environmental Engineering		
11.	Geotechnical investigations and Instrumentation		
12.	Ground Improvement Methods		

## 8<sup>th</sup> semester CIVIL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.							
2.	Construction & Management	CE801	3	0	0	3	3
3.	Elective III (DE/OE)	CE803/ or OE/	3	0	0	3	3
4.	ADS III	CE 841/X	3	0	0	3	3
5.	ADS IV	CE 842/X	3	0	0	3	3
	Theory Sub-total		14	1	0	15	15
6.	Project Thesis Part I	CE851			4	2	4
7.	PG Sessional II	CE852			3	2	3

8.	Industrial Problem	CE853			3	2	3
9.	Comprehensive viva-voce	CE854				2	
	Sessional Sub-total				10		10
	8 <sup>th</sup> Semester Total					23	25

### Elective Subjects

Sl. No.	Name	Code	Type
1.	Bridge Engineering		
2.	Earthquake Engineering		
3.	Probabilistic Structural Analysis		
4.	Irrigation and Drainage Engineering		
5.	Stochastic Hydrology		
6.	Fluvial Hydraulics		
7.	Advanced Numerical Methods in Water Resources Engineering		
8.	Advanced Airport Engineering		
9.	Energy & Environment in Transportation		
10.	Industrial and Hazardous Waste Management		
11.	Rock Mechanics and Tunneling		
12.	Principles of Slope Stability Analysis		

### 9<sup>th</sup> semester CIVIL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	ADS V	CE 941/X	3	0	0	3	3
2.	ADS VI (Adv. Elective I)	CE942/X	3	0	0	3	3
3.	ADS VII (Adv. Elective II)	CE943/X	3	0	0	3	3
4.	ADS VIII (Adv. Elective III)	CE944/X	3	0	0	3	3
	Theory Sub-total		12			12	12
6.	Project Thesis Part II	CE951			10	6	10
7.	Project Thesis Viva-voce	CE952				2	
8.							
	Sessional Sub-total						
	9 <sup>th</sup> Semester Total					20	22

### 10<sup>th</sup> Semester CIVIL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
	Theory Sub-total		NIL	NIL	NIL		
6.	Project thesis part III	CE1051			20	10	20

7.	Project Thesis Viva-voce	CE1052				2	
	Sessional Sub-total					12	
	10 <sup>TH</sup> Semester Total					12	20

ADVANCED SUBJECTS COMMON TO ALL SPECIALISATIONS					
NONE					
ADVANCED SUBJECTS FOR DIFFERENT SPECIALISATIONS					
NOMENCLATURE& CODE CE S4N/X/Y S=7/8/9 N=1/2/3/4/5	STRUCTURURAL ENGINEERING  (X=1)	GEOTECHNICAL ENGINEERING (X=2)	WATER RESOUARES ENGINEERING (X=3)	TRANSPORTATION ENGINEERING (X=4)	ENVIRONMENT ENGINEERING& MANAGEMENT (X=5)
ADS I (CE 741/X)	Advanced Mechanics of structures I	Theoretical Soil Mechanics	Hydraulic Structures	Pavement Structure Analysis and Design	Physicochemical Processes and Principles
ADS II (CE 742/X)	Structural Dynamics	Foundation Engineering – I	Flow through Open Channels	Traffic System Analysis and Design	Biological Processes in wastewater treatment
ADS III (CE 841/X)	Advanced Mechanics of structures II	Advanced Soil Mechanics – I	Groundwater Systems Analysis and Modeling	Analytical Techniques in Transportation Engine	Air and Noise Pollution Control Engineering
ADS IV (CE 842/X)	PG IV: Finite Element Method in Structural Analysis	Theory of vibration, discrete and continuous medium	Computer Applications in Water Resources Engineering	Urban and Regional Transportation Planning	Solid Waste Management
ADS V (CE 941/X)	Advanced Design of Structures	Foundation Engineering – II	Hydrologic Analysis and Design	Transportation Project Planning and Evaluation	Environment Management and Legislation
ADS VI (CE 942/X)	Elective 1	Elective-I	Hydraulics of River Flow	Elective-I	Elective-I
ADS VII (CE 943/X)	Elective 2	Elective-II	Watershed Management with Remote Sensing and GIS	Elective-II	Elective-II
ADS VIII(CE 944/X)	Elective 3	Elective-II	Water Resources Systems Planning and Management	Elective-II	Elective-II

#### LIST OF ADVANCED ELECTIVES

	Name of Specialisation			
	STRUCTURURAL ENGINEERING (Elective I, II and III)	GEOTECHNICAL ENGINEERING	TRANSPORTATION ENGINEERING (Elective I, II and III)	ENVIRONMENT ENGINEERING & MANAGEMENT (Elective I, II and III)
1	Design of tall structures	(Elective I) Advanced engineering analysis and numerical Methods	Advanced Pavement Engineering	Environmental Systems Management

2	Advanced Materials	(Elective I) Machine foundation and Geotechnical Earthquake engineering	Pavement Performance Management	Environmental Engineering Hydraulics
3	Offshore structures	(Elective I) Analysis and design of special foundations	Low Volume Roads	Environmental Economics
4	Optimization of structures	(Elective II) Geo-instrumentation techniques, digital data acquisition and signal processing	Transportation Asset Management	Rural Water Supply and Sanitation
5	Vibration control of structures	(Elective II) Offshore Geo-techniques	Advanced Traffic Engineering and Road Safety	Environment and Climate Change
6	Re-engineering of structures	(Elective III) Advanced Soil Mechanics – II	Public Transport System Planning and Design	Managing Water Supply and Sanitation in Emergencies
7	Mechanics of composite materials and structures	(Elective III) Environmental Geotechnics	Transportation in Business Logistics Management	Ecological Principles and Processes
8	Shell structures	(Elective III) Probabilistic Methods in Geotechnical Engineering		Remote Sensing and GIS
9	Forensic engineering of structures			
10	Structural health monitoring			
11	Structures under extreme loading			
12	Random vibration			
13	Behaviour of Metal Structures			
14	Experimental Methods of Structural Analysis			
15	One of the Advanced Electives from other specialisation			

Y =1/2/3... MAY BE USED IF YOU OFFER ELECTIVES IN THE ADVANCED LEVEL

## COMPUTER SCIENCE AND TECHNOLOGY

### 3<sup>rd</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics III	MA301	4	0	0	4	4
2.	Digital Logic	CS301	3	0	0	3	3
3.	Data Structures and Algorithms	CS302	3	0	0	3	3
4.	Discrete Structure	CS 303	3	1	0	4	4
5.	Electrical Machines	EE304	3	0	0	3	3
	<b>Theory Sub-total</b>		16	1	0	17	17

6.	Electrical Machines lab.	EE354	0	0	3	2	3
7.	Digital Logic Laboratory	CS351	0	0	3	2	3
8.	Algorithm-I Laboratory	CS352	0	0	3	2	3
9.	Mini Project -I	CS371	0	0	0	2	0
	<b>Sessional Sub-total</b>		0	0	9	8	9
	<b>3<sup>rd</sup> Semester Total</b>					25	26

#### 4<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Intr. To Mgmt. & Industrial Sociology	HU3401	4	0	0	4	4
5.	Design and Analysis of Algorithm	CS401	3	0	0	3	3
3.	Computer Architecture and Organization-I	CS402	3	0	0	3	3
4.	Programming Paradigms	CS403	3	0	0	3	3
2.	Theory of computation	CS 404	3	0	0	3	3
	<b>Theory Sub-total</b>		<b>15</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>16</b>
6.	Algorithm II Laboratory	CS451	0	0	3	2	3
7.	Computer Architecture and Org. Lab.	CS452	0	0	3	2	3
8.	Programming Paradigms Laboratory	CS453	0	0	3	2	3
9.	Mini Project II	CS471	0	0	0	2	0
	Sessional Sub-total		0	0	9	8	9
	<b>4<sup>th</sup> Semester Total</b>					<b>24</b>	<b>25</b>

#### 5<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Database Management Systems	CS501	3	0	0	3	3
2.	Computer Architecture and Org. II	CS502	3	0	0	3	3
3.	Operating Systems	CS503	3	0	0	3	3
4.	Elective-I	CS524/X	3	0	0	3	3
5.	Open Elective I	XX53N/Y	3	0	0	3	3
	<b>Theory Sub-total</b>		<b>15</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>15</b>
6.	DBMS Lab	CS551	0	0	3	2	3
7.	Operating Systems Laboratory	CS553	0	0	3	2	3
8.	Elective-I Laboratory	CS554/x	0	0	3	2	3
	Simulation and Modeling	CS611	0	0	3	2	3
	Sessional Sub-total		0	0	9	8	12

	5 <sup>th</sup> Semester Total					23	27
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### 6<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Economics	HU5601	3	0	0	3	3
2.	Microprocessor Based Systems	CS601	3	0	0	3	3
3.	Computer Network	CS602	3	0	0	3	3
4.	Elective II	CS623/x	3	0	0	3	3
5.							
	Theory Sub-total		12	1	2	14	15
6.	Microprocessor Laboratory	CS651	0	0	3	2	3
7.	Computer Network Lab	CS652	0	0	3	2	3
8.	Elective-II Laboratory	CS653/x	0	0	3	2	3
8.	Comprehensive Viva-voce	CS671	0	0	0	2	0
	Sessional Sub-total		0	0	9	8	9
	6 <sup>th</sup> Semester Total					22	24

### 7<sup>th</sup> Semester (only one specialisation)

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Compiler Design	CS701	3	0	0	3	3
2.	Software Engineering	CS702	3	0	0	3	3
3.	Information and coding theory (ADBI)	CS703	3	0	0	3	3
4.	Elective III	CS724/X	2	0	0	2	2
5.	Open Elective II	XX73N/Y	3	0	0	3	3
	Theory Sub-total		14	0	0	14	14
6.	Compiler Design Laboratory	CS751	0	0	3	2	3
7.	Software Engineering Laboratory	CS752	0	0	3	2	3
8.	Project Part I	CS771	0	0	3	3	3
	Sessional Sub-total		0	0	9	7	9
	7 <sup>th</sup> Semester Total					21	23

**8<sup>th</sup> semester**

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
1.	Accountancy & FM	HU7801	3	0	0	3	3
2.	Artificial Intelligence	CS801	3	0	0	3	3
3.	ADB II	CS802	3	0	0	3	3
4.	ADB III	CS803	3	0	0	3	3
5.	ADS I	CS81y	3	0	0	3	3
	Theory Sub-total		15	0	0	15	15
6.	Artificial Intelligence Laboratory	CS851	0	0	3	2	3
7.	ADS I Laboratory	CS86y	0	0	3	2	3
8.	Project Part I	CS871	0	0	3	3	3
9.	Comprehensive viva-voce	CS872	0	0	0	2	0
	Sessional Sub-total				9	9	9
	8 <sup>th</sup> Semester Total					24	24

**9<sup>th</sup> semester**

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	ADS II	CS91y	3	0	0	3	3
2.	ADS III	CS92y	3	0	0	3	3
3.	ADS IV	CS93y	3	0	0	3	3
4.	ADS V	CS94y	3	0	0	3	3
	Theory Sub-total		12	0	0	12	12
5.	Project Thesis Part II	CS971	0	0	12	6	12
6.	Project Thesis Viva-voce	CS972	0	0	0	2	
7.	Comprehensive Viva-voce	CS973				3	
	Sessional Sub-total		0	0	12	11	12
	9 <sup>th</sup> Semester Total					23	24

**10<sup>th</sup> Semester**



Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Project Thesis Part III	CSA71	0	0	20	10	20
2.	Project Thesis Viva-voce	CSA72				3	
	Sessional Sub-total		0	0	20	13	20
	10 <sup>TH</sup> Semester Total					13	20

## ELECTRICAL ENGINEERING

### 3<sup>rd</sup> Semester EE

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics – III	MA301	3	1	0	4	4
2.	Strength of Materials & Theory of Machines	AM304/2	3	1	0	4	4
3.	Electrical Machines I	EE301	3	1	0	4	4
4.	Electrical and Electronic Measurements	EE302	4	0	0	4	4
5.	Field and Circuit Theory	EE303	3	1	0	4	4
	Theory Sub-total		16	4	NIL	20	20
6.	Electrical Machines Lab – I	EE351	0	0	3	2	3
7.	Electrical & Electronics Measurement Lab	EE352	0	0	3	2	3
8.	Electrical Circuits Lab	EE353	0	0	3	2	3
9.	Mini Project I	EE371	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	9
	<b>3<sup>rd</sup> Semester Total</b>					<b>28</b>	<b>29</b>

### 4<sup>th</sup> Semester EE

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	Intro. To Mgmt & Industrial Sociology	HU3401	4	0	0	4	4
2.	Electrical Machines –II	EE 401	3	1	0	4	4
3.	Analog and Digital Electronics	EE 402	3	1	0	4	4
4.	Signals and Systems	EE 403	3	1	0	4	4
5.	Control Systems	EE 404	4	0	0	4	4
	Theory Sub-total		17	3	NIL	20	20
6.	Electrical Machines Lab –II	EE 451	0	0	3	2	3
7.	Analog and Digital Electronics Lab.	EE 452	0	0	3	2	3
8.	Numerical Simul. & Application Tools Lab	EE 453	0	0	3	2	3
9.	Mini Project –II	EE471	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	9
	<b>4th Semester Total</b>					<b>28</b>	<b>29</b>

### 5<sup>th</sup> Semester ELECTRICAL ENGINEERING

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	Electrical M/Cs III	EE 501	3	0	0	3	3
2.	Power System – I	EE 502	3	0	0	3	3
3.	Power Electronics	EE 503	3	0	0	3	3
4.	Transducers & Instrumentation	EE 504	3	0	0	3	3
5.	Heat Power	ME 5xx	3	0	0	3	3
	Theory Sub-total		15	0	NIL	15	15
6.	Machine Lab & Control Lab	EE 551	0	0	3	2	3
7.	Power Sys. Des. and Estimation&M/cDesign	EE 552	0	0	3	2	3
8.	Heat Power Lab	ME55x	0	0	3	2	3
	Sessional Sub-total		NIL	NIL	9	6	9
	<b>5th Semester Total</b>					<b>21</b>	<b>24</b>

### 6<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	Economics	HU5601	2	1	0	3	3
2.	Electric Drives	EE – 601	3	0	0	3	3
3.	Power System II	EE – 602	3	0	0	3	3
4.	µP and µC	EE – 603	3	0	0	3	3
5.	<b>OE I</b>	<b>EE – 624/X</b>	3	0	0	3	3
	Theory Sub-total		14	1	NIL	15	15
6.	Power Systems & PE Lab	EE – 652	0	0	3	2	3
7.	Micropro & Transducers-Instrumentation Lab	EE– 653	0	0	3	2	3
8.	Comprehensive Viva-voce	EE– 651	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	6	6	6
	<b>6<sup>th</sup> Semester Total</b>					<b>21</b>	<b>21</b>

SL. NO	ELECTIVE SUBJECT	CODE	TYPE
1.	<b>Elements of Control Systems</b>	EE 624/1	Open (OE)

## 7<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	DSP & ES	EE 701	3	0	0	3	3
2.	Adv. Comp. Com. & Interfacing	EE 702	4	0	0	4	4
3.	EL II(OE): Open Elective 2		3	0	0	3	3
4.	ADC I	EE 731	3	0	0	3	3
5.	EL III		2	0	0	2	2
	Theory Sub-total		15	0	NIL	15	15
6.	DSP & Drives Lab	EE 751	0	0	3	2	3
7.	Advanced control systems Lab	EE 754	0	0	3	2	3
8.	EL III Lab:		0	0	3	2	3
	Sessional Sub-total		NIL	NIL	9	6	9
	<b>7<sup>th</sup> Semester Total</b>					<b>21</b>	<b>24</b>

SL. NO	ELECTIVE SUBJECT	CODE	TYPE
1.	<b>Electricity Conservation and Environment</b>	<b>EE – 723/1</b>	Open
2.	<b>Industrial Practice in Electronic Installations</b>	<b>EE – 723/2</b>	Open
3.	<b>Advanced Programming</b>	<b>EE – 715/1</b>	Departmental
4.	<b>Soft Computing</b>	<b>EE – 715/2</b>	Departmental
5.	<b>Renewable Energy</b>	<b>EE – 715/3</b>	Departmental
	<b>ELECTIVE LABORATORIES</b>		

1.	Adv. Programming Lab	EE – 755/1	
2.	Soft Comp Lab	EE – 755/2	
3.	Renewable Energy Lab.	EE – 755/3	

### 8<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	Acct, & F.M	HU 7801	2	1	0	3	3
2.	Electrical Energy Utilization & Grid Interactive Control	EE – 801	4	0	0	4	4
3.	<b>ADS I</b>		3	0	0	3	3
4.	<b>ADS II</b>		3	0	0	3	3
5.	<b>ADS III</b>		3	0	0	3	3
	Theory Sub-total		15	1	0	16	16
6.	Term paper (Project Thesis I)	EE – 851			4	2	
7.	ADVLAB I				3	2	
8.	Term paper Viva-Voce	EE – 853				2	
9.	Comprehensive viva-voce	EE – 854				2	
10.	Industrial Visit/Training? †	EE – 855			3	2	
	Sessional Sub-total				10	10	10
	<b>8<sup>th</sup> Semester Total</b>					<b>26</b>	<b>26</b>

† This industrial training / visit must be fully and completely organized by the Training and Placement Department; Electrical Engineering Department will bear no responsibility of this entire process

### 9<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	<b>ADS IV</b>		3			3	3
2.	<b>ADS V</b>		3			3	3
3.	<b>ADS VI</b>		3			3	3
	Theory Sub-total		<b>9</b>			<b>9</b>	<b>9</b>
6.	Project Thesis – II	EE –951			14	7	7
7.	<b>PG Lab II:</b>				3	2	2
8.	Project Thesis Viva-voce	EE – 953				2	<b>0</b>
	Sessional Sub-total				17	11	<b>9</b>
	<b>9<sup>th</sup> Semester Total</b>					<b>20</b>	<b>18</b>

### 10<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.							
	Theory Sub-total						

2.	Project thesis III	EE – 1051			<b>29 (student)*</b>	<b>15</b>	<b>4</b>
3.	Comprehensive viva-voce (specialisation)	EE – 1054				<b>3</b>	<b>0</b>
4.	Project Thesis Viva-voce	EE – 1053				<b>4</b>	<b>0</b>
	Sessional Sub-total						
	<b>10<sup>th</sup> Semester Total</b>					<b>22</b>	<b>4</b>

ADVANCED COMMON SUBJECTS FOR ALL SPECIALISATIONS				
ADC I : Advanced control systems (EE 731)				
ADVANCED SPECIALISED SUBJECTS	SPECIALISATIONS			
	Power Electornics and Machine Drives (X=1)	Power Electronics Drives (X=2)	Control System and Instrumentation (X=3)	
ADS I (EE 841/X)	Advanced Power Electronics	Power Sys. Stability, Security & HV Engg.	Discrete & Sampled Data Theory	
ADS II (EE 842/X)	EM Fields in Electrical Machines	Renewable Energy & Energy Conservation	Optimal Control theory	
ADSIII (EE 843/X)	Gen. Th. of Elec. Machines	Switchgear & Adv. Power Sys. Protection	Nonlinear control theory	
ADS IV (EE 941/X)	Analysis of Synch. & Asynch. Machine	Adv. Power System Analysis	Optimal Filtering Process	
ADS V (EE 942/X)	Advanced Solid State Drives	Energy System Planning & Mgmt	Process Control & Instrumentation	
ADS VI (EE 943/X/Y)	Y=1	Dyn. of Regulated M/c	Power Sys. Operation & Control	ANN & Fuzzy Control
	Y=2	Special Topics in Power Electronics applications		Robust Control
	Y=3	Condition Monitoring of Elec. Equipment		Power Sys. Operation & Control
ADAVNCED LABORATORIES				
ADLAB I	Adv. PE & M/c I	HV Engg.	Control & Instrumentation I	
ADLAB II	Adv. PE & M/c II	Adv. Power System	Control & Instrumentation II	

**ELECTRONICS AND TELECOMMUNICATION**

### 3<sup>rd</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics – III	MA301	3	1	0	4	4
2.	Network Theory	ET 301	3	1	0	4	4
3.	Analog Electronics	ET-302	4	0	0	4	4
4.	Electronic Devices	ET-303	4	0	0	4	4
5.	Signals and Systems	ET-304	3	1	0	4	4
	Theory Sub-total		15	4	NIL	20	19
6.	Network Theory Lab	ET351	0	0	3	2	3
7.	Analog Electronics Lab	ET352	0	0	3	2	3
8.	Electronic Devices Lab	ET353	0	0	3	2	3
9.	Mini Project –I	ET371	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	09
	<b>3<sup>rd</sup> Semester Total</b>					<b>28</b>	<b>29</b>

### 4<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	Intro. To Mgmt & Industrial Sociology	HU 3401	4	0	0	4	4
2.	Principles of Analog & Digital Communications	ET 401	4	0	0	4	4
3.	Digital Electronics	ET 402	3	0	0	3	3
4.	Microelectronics	ET 403	3	0	0	3	3
5.	Electromagnetic Theory & Transmission Lines	ET 404	4	0	0	4	4
	Theory Sub-total		16	3	NIL	18	19
6.	Analog and Digital Communication Lab	ET451	0	0	3	2	3
7.	Digital Electronics Lab	ET 452	0	0	3	2	3
8.	Microelectronics Lab	ET 453	0	0	3	2	3
9.	Modelling and Simulation Lab.	ET 454	0	0	0	2	2
10.	Mini Project -II	ET471	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	09
	<b>4<sup>th</sup> Semester Total</b>					<b>26</b>	<b>28</b>

### 5<sup>th</sup> SEMESTER

Sl no	Course Name	Course Code	Class Load/ Week			Credit	Total Class Load/ Week
			L	T	P		
1.	Wireless and Mobile Communication	ET 501	3	0	0	3	3
2.	Integrated Circuits and Systems	ET502	4	0	0	4	4
3.	Microprocessorsand Microcontrollers	ET503	3	0	0	3	3
4.	Wave Propagation and Antenna	ET504	3	0	0	3	3
5.	Open Elective-I	ET 521/x	3	0	0	3	3
	<b>Theory Sub Total</b>					16	16
6	Integrated Circuits and Systems Lab	ET552	0	0	3	2	3
7	Microprocessorsand Microcontrollers Lab.	ET553	0	0	3	2	3
8	Transmission Line and Antenna Lab	ET554	0	0	3	2	3
	<b>Sessional Sub Total</b>					6	9
	<b>5<sup>th</sup> Semester Total</b>					<b>22</b>	<b>25</b>

### 6<sup>th</sup> SEMESTER

Sl no	Course Name	Course Code	Class Load/ Week			Credit	Total Class Load/ Week
			L	T	P		
1.	Economics	HU 5601	2	0	0	2	2
2.	Tele. Switching and Communication Network	ET601	4	0	0	4	4
3.	Introduction to VLSI	ET602	3	0	0	3	3
4.	Advanced Microprocessorsand Computer Architecture	ET603	3	0	0	3	3
5.	Electronic Instrumentation and Measurements	ET604	4	0	0	4	4
	<b>Theory Sub Total</b>					<b>16</b>	<b>16</b>
6.	Wireless Communication and Networking Lab	ET651	0	0	3	2	3
7.	Advanced MicroprocessorsLab	ET652	0	0	3	2	3

8.	Electronic Instrumentation and Measurements Lab	ET653	0	0	3	2	3
9.	Comprehensive Viva-voce-I	ET671	0	0	0	2	0
	<b>Sessional Sub Total</b>					8	9
	<b>6<sup>th</sup> Semester Total</b>					<b>24</b>	<b>25</b>

### 7<sup>th</sup> SEMESTER

Sl no	Course Name	Course Code	Class Load/Week			Credit	Class Load/Week	Full Marks
			L	T	P			
1.	Digital Signal Processing	ET701	3	0	0	3	3	100
2.	Microwave and Radar Engineering	ET702	3	0	0	3	3	100
3.	ADC I	MA 731	3	1	0	4	4	100
4.	Dep. Elective-I	ET704/x	3	0	0	3	3	100
5.	Open Elective-II	ET705/x	3	0	0	3	3	100
	<b>Theory Sub Total</b>					<b>16</b>	<b>16</b>	
6	Digital Signal Processing Lab	ET751	0	0	3	2	3	50
7	Microwave and Radar Engineering Lab	ET752	0	0	3	2	3	50
8	Dep. Elective-I Lab	ET753/x	0	0	3	2	3	50
	<b>Sessional Sub Total</b>					6	9	
	<b>7<sup>th</sup> Semester Total</b>					<b>22</b>	<b>25</b>	

### 8<sup>th</sup> SEMESTER

Sl no	Course Name	Course Code	Class Load/Week			Credit	Class Load/Week	Full Marks
			L	T	P			
1.	Acct. & F.M.	HU7801	2	0	0	2	2	50
2.	Digital Image Processing and Computer Vision	ET801	3	0	0	3	3	100
3.	ADC II	ET 831	3	0	0	3	3	100
4.	ADS I Information Theory and Coding	ET803	3	0	0	3	3	100
5.	ADS II Digital Voice and Picture Communication	ET804	3	0	0	3	3	100
	<b>Theory Sub Total</b>					<b>14</b>	<b>14</b>	
6	Project Thesis-I	ET851	0	0	6	3	6	100
7	Digital Image Processing and Computer Vision Lab	ET852	0	0	3	2	3	50
8	Electronic Design Automation Lab	ET853	0	0	3	2	3	50
9	Comprehensive Viva Voce-II	ET871	0	0	0	2	0	
10	Seminar on Project Thesis-I	ET872	0	0	0	2	0	50
	<b>Sessional Sub Total</b>					<b>11</b>	<b>12</b>	
	<b>8<sup>th</sup> Semester Total</b>					<b>25</b>	<b>26</b>	



**Course Structure for the 9<sup>th</sup>Semester Dual Degree**-Communication and Signal Processing Specialization

Sl no	Course Name	Course Code	Class Load/Week			Credit	Total Class Load/Week	Full Marks
			L	T	P			
1.	ADS III Advanced Digital Communication	ET901	3	0	0	3	3	100
2.	ADS IV Advanced Digital Signal Processing	ET902	3	0	0	3	3	100
3.	ADS V Advanced Elective-I	ET903/x	3	0	0	3	3	100
4.	ADS VI Advanced Elective-II	ET904/x	3	0	0	3	3	100
	<b>Theory Sub Total</b>					12	12	
5	Project Thesis-II	ET951	0	0	10	5	10	150
6	Advanced Communication Lab	ET952	0	0	3	2	3	50
7	<b>Seminar on</b> Project Thesis-II	ET971	0	0	0	2	0	50
	<b>Sessional Sub Total</b>					9	13	
	<b>9<sup>th</sup> Semester Total</b>					<b>21</b>	<b>25</b>	

**Course Structure for the 10<sup>th</sup>Semester Dual Degree**. All Specialization

Sl no	Course Name	Course Code	Class Load/Week			Credit	Total Class Load/Week	Full Marks
			L	T	P			
1	Project Thesis-III	ET1051	0	0	18	9	18	250
2	Comprehensive Viva Voce- III	ET1071	0	0	0	2	0	50
3	<b>Seminar on</b> Project Thesis-III	ET1072	0	0	0	<b>3</b>	0	100
	<b>Sessional Sub Total</b>					<b>14</b>	<b>18</b>	
	<b>10<sup>th</sup> Semester Total</b>					<b>14</b>	<b>18</b>	

ADVANCED COMMON SUBJECTS FOR ALL SPECIALISATIONS				
ADC I (ET 731):Advanced Mathematics		ADC II (ET 831): Electronic Design Automation		
ADVANCED SPECIALISED SUBJECTS	SPECIALISATIONS			
	MICROELECTRONICS & VLSI	RF & MICROWAVE TECHNOLOGY	COMMUNICATION & SIGNAL PRPCESSING	
NOMENCLATURE CODE (ET S4N/X/Y)	(X=1)	(X=2)	(X=3)	
ADS I (ET 841/X)	Digital VLSI Design	Computational Electromagnetics	Information Theory and Coding	
ADS II (ET 842/X)	Advanced Semiconductor Devices	Microwave devices and circuits	Digital Voice and Picture Communication	
ADSIII (ET 843/X)	Analog VLSI Design	Advanced Antenna Engineering	Advanced Digital Communication	
ADS IV (ET 941/X)	Micro and Nano Fabrication Technology	Microwave Integrated Circuits	Advanced Digital Signal Processing	
ADS V (ET 942/X)	Y=1	Specialized Elective-I	Specialized Elective-I	Specialized Elective-I
	Y=2			
	Y=3			
ADS VI (ET 943/X)	Y=1	Specialized Elective-II	Specialized Elective-II	Specialized Elective-II
	Y=2			
	Y=3			
ADAVNCED LABORATORIES				
ADLAB I				
ADLAB II				

## INFORMATION TECHNOLOGY

### 3<sup>rd</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics – III	MA301	3	1	0	4	4
3.	Programming & Data Structure	IT 301	4	0	0	4	4
4.	Digital Logic & Circuit Design	IT 302	4	0	0	4	4
2.	Discrete Mathematics & Graph theory	IT 303	3	1	0	4	4
5.	Signals, System & Circuits	IT304	3	1	0	4	4
	Theory Sub-total		17	3	NIL	20	20
6.	Programming & Data structure lab	IT 351	0	0	3	2	3
7.	Digital Logic & Circuit Design Lab	IT 352	0	0	3	2	3
	Sessional Sub-total		NIL	NIL	6	4	6
	<b>3<sup>rd</sup> Semester Total</b>					<b>24</b>	<b>26</b>

### 4<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
1.	Intro. to Mgmt. & Industrial Sociology	HU3401	3	1	0	4	4
2.	Computer Graphics	IT403	3	0	0	3	3
3.	Formal Language and Automata	IT404	3	1	0	4	4
4.	Computer Organisation & Architecture	IT401	3	1	0	4	4
5.	Communication Systems	IT402	3	1	0	4	4
	Theory Sub-total		15	4	NIL	19	19
6.	Computer Graphics Lab.	IT453	0	0	3	2	3
7.	Computer Org. & Architecture Lab.	IT451	0	0	3	2	3
8.	Signal system and communication lab	IT 452	0	0	3	2	3
9.	Modelling and Simulation Lab.	IT455	0	0	3	2	3
	Sessional Sub-total		NIL	NIL	9	8	12
	<b>4<sup>th</sup> Semester Total</b>					<b>27</b>	<b>31</b>



1.	Intro. to Mgmt. & Industrial Sociology	HU3401	3	1	0	3	3
2.	Design & Analysis of Algorithm	IT601	3	1	0	4	4
3.	Compiler Design	IT602	3	0	0	3	3
4.	Computer Networks	IT603	3	1	0	4	4
5.	Elective -II	IT 621/X	3	0	0	3	3
	Theory Sub-total		15	3	NIL	17	17
6.	Design & Analysis of Algorithm Lab.	IT651	0	0	3	2	3
7.	Compiler Design Lab.	IT652	0	0	3	2	3
8.	Computer Networks Lab.	IT653	0	0	3	2	3
9.	Grand viva	IT 691				2	
	Sessional Sub-total		NIL	NIL	9	8	9
	<b>6th Semester Total</b>					<b>25</b>	<b>26</b>

#### Elective II:

1. System Programming
2. Advance computer architecture
3. Mobile Communication
4. Distributed database

#### 7<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Software Engineering	IT701	3	0	0	3	3
2.	Internet & Web Technology	IT 702	4	0	0	4	4
3.	Open Elective II	IT 731/X	3	0	0	3	3
4.	Elective III	IT 721/X	3	0	0	3	3
5.	ADB I	IT731/X	3	0	0	3	3



	Theory Sub-total		12	0	NIL	12	12
6.	Project Thesis Part II	IT 972	0	0	9	6	9
7.	Project Thesis Viva Voce II					3	
8.	ADS II Lab	IT 981/X	0	0	3	2	3
	Sessional Sub-total		NIL	NIL	12	11	12
	<b>9<sup>th</sup> Semester Total</b>					<b>23</b>	<b>24</b>

### 10<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/Week
			L	T	P		
	Theory Sub-total						
1.	Project Thesis III	IT X73	0	0	20	12	20
2.	Project Thesis Viva-Voce III					4	
	Sessional Sub-total		NIL	NIL	20	16	20
	<b>10<sup>th</sup> Semester Total</b>					<b>16</b>	<b>20</b>

### Specialization: Computer Science and Information Technology

ADB I (IT 715/X)	Algebra and Computation
ADB II (IT 812/X)	Artificial Intelligence
ADB III (IT 813/X)	Image Processing and Pattern Recognition
<b>Advanced Specialized Subjects</b>	<b>Electives</b>
ADS I (IT 824/X)	Algorithm II, Distributed Algorithms, Big data analytics, Introduction to Embedded and Real Time Systems
ADS II (IT 921/X)	Complex Systems and Cellular Automata, Wireless SensorNetwork, Cognitive Radio Networks, Embedded Processors and Microcontrollers
ADS III (IT 922/X)	Computational Topology, Computer Vision, Medical Image Processing, Multi-core Architectures Systems
ADS IV (IT 923/X)	Human computer Interaction, Multimedia coding and compression, Embedded System Security
ADS V (IT 924/X)	Soft computing techniques, Cloud computing, Mobile Computing, Embedded Programming

Laboratories: ADB-I, ADB-II, and ADS-II laboratories

## MECHANICAL ENGINEERING

### 3<sup>rd</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics – III	MA301	3	1	0	4	4
2.	Intr. To Mgmt. & Ind. Sociology	HU3401	4	0	0	4	4
3.	Fundamentals of Thermodynamics	ME 301	3	0	0	3	3
4.	Rigid body Dynamics	AM 302	3	1	0	4	4
5.	Strength of Materials	AM 304	3	1	0	4	4
	Theory Sub-total		16	3	NIL	19	19
6.	Thermodynamics Lab	ME 351	0	0	3	2	3
7.	Machine Drawing	AM351	0	0	3	2	3
8.	Strength of Materials Lab	AM 354	0	0	3	2	3
9.	Mini Project I	ME 371	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	09
	3 <sup>rd</sup> Semester Total					27	28

### 4<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Fluid Mechanics	AM403	3	1	0	4	4
2.	Basics of Machine Design	ME 401	3	0	0	3	3
3.	Applied Thermodynamics	ME 402	3	1	0	4	4
4.	Engineering Materials and Processes	ME 403	3	1	0	4	4
5.	Mechanical Measurement and Control Engineering	ME 404	4	0	0	4	4
	Theory Sub-total		14	4	NIL	19	19
6.	Fluid Mechanics Lab	AM453	0	0	3	2	3
7.	Applied Thermodynamics lab	ME 451	0	0	3	2	3
8.	Mechanical Measurement lab	ME 452	0	0	3	2	3
9.	Mini Project II	ME471	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	9
	4 <sup>th</sup> Semester Total					27	28

### 5<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week	Credit	Class load/week
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			L	T	P		
1.	Economics	HU5601	3	0	0	3	3
2.	Kinematics of Mechanisms	ME - 501	3	0	0	3	3
3.	Heat Transfer	ME - 502	3	0	0	3	3
4.	Machine Tools & Metal Cutting	ME - 503	3	0	0	3	3
5.	EL I (OE): <b>Subject Names not given</b>	ME – 504/1,2,..	3	0	0	3	3
	Theory Sub-total		15	0	NIL	15	15
6.	Basics of Machine Design Sessional	ME - 551	0	0	3	2	3
7.	Heat Transfer Lab	ME - 552	0	0	3	2	3
8.	Machine Tools & Metal Cutting Lab	ME - 553	0	0	3	2	3
	Sessional Sub-total		NIL	NIL	9	6	9
	5 <sup>th</sup> Semester Total					21	24

## 6<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Dynamics of Machines Design of Power Transmission Elements	ME - 601	3	0	0	3	3
2.	Boiler and Steam Turbine	ME - 602	3	0	0	3	3
3.	Dynamics of Machines	ME - 603	3	0	0	3	3
4.	Manufacturing Technology	ME - 604	3	0	0	3	3
5.	Fluid Power Engineering	AM – 6 ...	3	0	0	3	3
	Theory Sub-total		15	0	NIL	15	15
6.	Design of Power Transmission Elements Sessional	ME - 651	0	0	3	2	3
7.	Modelling and Simulation Lab	ME - 652	0	0	3	2	3
8.	Fluid Power Engineering Lab	AM- 67...	0	0	3	2	3
8.	Comprehensive Viva-voce	ME - 671	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	9	8	9
	6 <sup>th</sup> Semester Total					23	24

## 7<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Tribo-Design of Machine Elements	ME - 701	3	0	0	3	3
2.	IC Engines, Refrigeration & Air Conditioning	ME - 702	2+2	0	0	4	4
3.	EL II (OE): <b>Subject names not given now</b>	ME-703/1,2,..	3	0	0	3	3
4.	Modern Manufacturing Technology	ME- ADB 701	3	0	0	3	3
5.	EL III (DE) Automation and CIM Non-conventional energy systems Finite Element method	ME-704/1,2,..	2	0	0	2	2
	Theory Sub-total		15	0	0	15	15
6.	Tribo-Design of Machine Elements Sessional	ME - 751	0	0	3	2	3

7.	IC Engines, Refrigeration & Air Conditioning Lab	ME - 752	0	0	3	2	3
8.	Steam Power Lab	ME - 753	0	0	3	2	3
9.	Modern Manufacturing Technology Lab.	ME 754	0	0	3	2	3
	Sessional Sub-total		0	0	9	8	12
	7 <sup>th</sup> Semester Total					23	27

### 8<sup>th</sup> semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Acct, & F.M	HU 7801	3	0	0	3	3
2.	Industrial Engg. & Operations Research	ME -801	2+2	0	0	4	4
3.	ADB II	ME –ADB 801	3	0	0	3	3
4.	Elective I	ME- 811/1,2,..	3	0	0	3	3
5.	ADS I	ME 841/X	3	0	0	3	3
	Theory Sub-total		16	0	0	16	16
6.	Term paper (Project Thesis I)	ME- 850	0	0	2	3	2
7.	Computational Methods Lab	ME- ADB 851	0	0	3	2	3
9.	Comprehensive viva-voce	ME- 871	0	0	0	2	0
	Sessional Sub-total		0	0	05	07	05
	8 <sup>th</sup> Semester Total					23	21

### 9<sup>th</sup> semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	ADS II	ME 941/X	3	0	0	3	3
2.	ADS III	ME 942/1	3	0	0	3	3
3.	ADS IV	ME 943/X	3	0	0	3	3
4.	ADS V	ME 944/X	3	0	0	3	3
	Theory Sub-total		12	0	0	12	12
6.	Project Thesis – II	ME - 950	0	0	10	5	10
8.	Project Thesis Viva-voce	ME - 951	0	0	0	2	0
	Sessional Sub-total		0	0	10	07	10
	9 <sup>th</sup> Semester Total					19	22

### 10<sup>th</sup> Semester

Sl.	Course Name	Course code	Class Load/Week	Credit	Class
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No							load/ week
			L	T	P		
6.	Project thesis III	ME - 1050	0	0	18	9	18
7.	Comprehensive viva-voce (specialisation)	ME - 1071	0	0	0	2	0
8.	Project Thesis Viva-voce	ME - 1051	0	0	0	2	0
	Sessional Sub-total		0	0	18	13	18
	10 <sup>TH</sup> Semester Total					13	18

ADVANCED COMMON SUBJECTS FOR ALL SPECIALISATIONS				
ADC I (ME 741):Modern Manufacturing Technology		ADC II (ME 841): Computational Methods		
ADVANCED SPECIALISED SUBJECTS	SPECIALISATIONS			
	MACHINE DESIGN	THERMAL ENGINEERING	PRODUCTION ENGINEERING	
NOMENCLATURE CODE (ME S4N/X/Y)	(X=1)	(X=2)	(X=3)	
ADS I (ME 841/X)	Theory of Mechanical Vibration	Advanced Engineering Thermodynamics	Advanced Machine Tools and Metal Cutting	
ADS II (ME 842/X)	Advanced Solid Mechanics	IC Engines and Gas Turbines	Materials Processing Technology	
ADSIII (ME 843/X)	Engineering Tribology	Advanced Heat Transfer	Design of production Systems	
ADS IV (ME 941/X)	Fracture Mechanics	Numerical Heat Transfer	Energy beam processing of materials	
ADS V (ME 942/X)	Dynamics and Control of Mechanical Systems	Refrigeration and Air Conditioning	Quality Control & Reliability Engg.	
ADS VI (ME 943/X/Y)	Y=1			
	Y=2			
	Y=3			
ADVANCED LABORATORIES				
ADLAB I				
ADLAB II				

Elective subjects will be given later. Applied mechanics department subjects –codes are not given properly. AM dept will supply it.

## METALLURGY AND MATERIAL SCIENCE

### 3<sup>rd</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics – III	MA301	3	1	0	4	4
2.	Intro. to Mgmt. & Industrial Sociology	HU3401	4	0	0	4	4
3.	Physics of Materials	MT301	3	1	0	4	4
4.	Metallurgical Thermodynamics & Kinetics	MT302	3	1	0	4	4
5.	Introduction to Physical Metallurgy	MT303	3	1	0	4	4
	Theory Sub-total		16	4	NIL	20	20
6.	Physics of Materials Lab	MT351	0	0	3	2	3
7.	Met. Thermodynamics & Kinetics Lab	MT352	0	0	3	2	3
8.	Introduction to Physical Metallurgy Lab	MT353	0	0	3	2	3
9.	Mini Project I	MT371	0	0	0	2	2
	Sessional Sub-total		NIL	NIL	9	8	11
	3 <sup>rd</sup> Semester Total					28	30

### 4<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Introduction to Materials Manufacturing	MT 404	2	1	0	3	3
2.	Instrumentation & Control	MT 405	2	1	0	3	3
3.	Phase Transformation	MT401	3	1	0	4	4
4.	Principles of Extractive Metallurgy	MT402	3	1	0	4	4
5.	Deformation behaviour of Materials	MT403	3	1	0	4	4
	Theory Sub-total		13	5	NIL	18	18
6.	Phase Transformation Lab	MT451	0	0	3	2	3
7.	Extractive Metallurgy Lab	MT452	0	0	2	1	2
8.	Modelling and Simulation Lab	MT453	0	0	3	2	3
9.	Mini Project II	MT471	0	0	0	2	2
	Sessional Sub-total		NIL	NIL	8	7	10
	4 <sup>th</sup> Semester Total					25	28

### 5<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		

1.	Economics	HU5601	3	0	0	3	3
2.	Iron & Steel Making	MT501	3	1	0	4	4
3.	X-ray and Electron Diffraction	MT502	3	1	0	4	4
4.	Metal Casting Technology	MT503	3	1	0	4	4
5.	Heat Treatment Technology	MT504	2	1	0	3	3
	Theory Sub-total		14	4	NIL	18	18
6.	Metal Casting Technology Lab	MT551	0	0	3	2	3
7.	X-ray and Electron Diffraction Lab	MT552	0	0	2	1	2
8.	Heat Treatment Technology Lab	MT553	0	0	3	2	3
	Sessional Sub-total		NIL	NIL	8	5	8
	5 <sup>th</sup> Semester Total					23	26

## 6<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Polymer and Refractory Technology	CH601	3	0	0	3	3
2.	Mechanical Properties Evaluation	MT601	3	1	0	4	4
3.	Metallurgy of Ferrous Alloys	MT602	3	1	0	4	4
4.	Non-ferrous Materials	MT603	3	1	0	4	4
5.	EL I (DE 1)	MT621/X	3	0	0	3	3
	Theory Sub-total		14/14	4/4	NIL	18	18
6.	Mechanical Properties Evaluation Lab	MT651	0	0	3	2	3
7.	Metallurgy of Ferrous Alloys Lab	MT652	0	0	3	2	3
8.	Communication skill	MT653	0	0	2	1	2
9.	Comprehensive Viva-voce I	MT671	0	0	0	1	0
	Sessional Sub-total		NIL	NIL	8	6	8
	6 <sup>th</sup> Semester Total					24	26

(MT 621/1) Environmental issues in Metallurgical Industries

(MT 621/2) Hydrometallurgy and Electrometallurgy

**After 6<sup>th</sup> semester, “industrial visit/3 to 4 weeks industrial training”**

## 7<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Acct. & F. M.	HU 7801					
2.	Joining of Materials	MT701	2	1	0	3	3
3.	Degradation of Materials & their prevention	MT702	2	1	0	3	3
4.	Composites and Ceramic Materials	MT703	2	1	0	3	3
5.	ADC I	MT 734	2	1	0	3	3
	Theory Sub-total		10	5	NIL	15	15
6.	Joining of Materials Lab	MT751	0	0	3	2	3
7.	Degradation of Materials & their prevention Lab	MT752	0	0	3	2	3
8.	Composites and Ceramic Materials Lab	MT753	0	0	3	2	3
	Sessional Sub-total :		NIL	NIL	11	7	11
	7 <sup>th</sup> Semester Total					22	26

### 8<sup>th</sup> semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Materials Processing	MT801	3	1	0	4	4
2.	EI II (OE)	MT721/X	2	1	0	3	3
3.	Computational Materials Engineering	AMT802	2	1	0	3	3
4.	ADS I	MT 841/X	3	0	0	3	3
5.	ADS II	MT 842/X	2	1	0	3	3
	Theory Sub-total		12	4	0	16	16
6.	Term paper (Project Thesis I)	MT851	0	0	4	2	4
7.	Materials Characterisation Lab	AMT852	0	0	3	2	3
8.	Materials Processing Lab	MT853	0	0	3	2	3
9.	Comprehensive Viva-Voce II	MT871	0	0	0	2	0
	Sessional Sub-total		NIL	NIL	10	8	10
	8 <sup>th</sup> Semester Total					24	26

(i) Selection of Engineering Materials (OE) - to be offered for other departments.

(ii) Finite Elements Methods (OE) – to be offered from AM and AE department.

SUMMER TERM: Project for two to two and a half month / Industrial Training (Viva/Report) / Academic Assignments in India or abroad (4 credit)

### 9<sup>th</sup> semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		

1.	Design and Selection of Materials	MT901	3	0	0	3	3
2.	ADS III:	MT 941/X	3	0	0	3	3
3.	ADS IV:	MT 942/X	3	0	0	3	3
4.	ADS V:	MT 943/X	3	0	0	3	3
	Theory Sub-total		12	0	0	12	12
5.	Project Thesis – II	AMT951	0	0	10	5	10
6.	(i) Nano-structured materials Lab	AMT952	0	0	2	1	2
	(ii) Non-destructive Evaluation Lab	AMT953					
	(iii) Electron Microscopy Lab	AMT954					
7.	Project Thesis Viva-voce – I	AMT971	0	0	0	2	0
	Sessional Sub-total		0	0	12	8	12
	9 <sup>th</sup> Semester Total		NIL	NIL	12	20	24

### 10<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
	Theory Sub-total		0	0	0	0	0
1.	Project Thesis – III	MT1051	0	0	18	9	18
2.	Comprehensive viva-voce (specialisation)	MT1071	0	0	0	2	0
3.	Project Thesis Viva-voce - II	MT1072	0	0	0	2	0
	Sessional Sub-total		0	0	18	13	18
	10 <sup>th</sup> Semester Total					13	18

ADVANCED COMMON SUBJECTS FOR ALL SPECIALISATIONS			
ADC I (MT 731) : MATERIALS CHARACTERISATION		ADC II (MT 831) : COMPUTATIONAL MATERIALS ENGINEERING	
ADVANCED SPECIALISED SUBJECTS	SPECIALISATIONS		
	PHYSICAL METALLURGY (X=1)	IRON AND STEEL TECHNOLOGY (X=2)	SURFACE ENGINEERING (X=3)
NOMENCLATURE CODE (MT S4N/X/Y)			
ADS I (MT 841/X)	Advanced Phase Transformation	Advances in Iron & Steel Technology I	Principles of Thin Films and Coatings
ADS II (EE 842/X)	Fracture Mechanics and Failure Analysis	Transportation Phenomena in Metallurgical Industries	Fracture Mechanics and Failure Analysis
ADSIII (EE 843/X)	High Temperature Materials	Advances in Iron & Steel Technology II	Coating Technology and Applications
ADS IV (EE Y=1)	Electron Microscopy	Non-destructive Evaluation	Electron Microscopy

941/X/Y)	Y=2			Nano structured materials
ADS V (EE 943/X/Y)	Y=1	Industrial Practices in Materials Processing	Industrial Practices in materials processing	Surface Treatment and Modifications
	Y=2	Surface Treatment and Modifications		Bio Materials
	Y=3	Electronics and Magnetic materials		Electronics and Magnetic materials
<b>ADAVNCED LABORATORIES</b>				
ADLAB I				
ADLAB II				

## MINING ENGINEERING

### 3<sup>rd</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Mathematics – III	MA301	3	1	0	4	4
2.	Intro. To Mgmt & Industrial Sociology	HU3401	4	0	0	4	4
3.	Electro-Technology in Mining	EE305	3	1	0	4	4
4.	Drilling and Blasting	MN301	3	0	0	3	3
5.	Mine Development	MN302	3	0	0	3	3
	<b>Theory Sub-total</b>		<b>16</b>	<b>2</b>	<b>NIL</b>	<b>18</b>	<b>18</b>
6.	Electro-Technology in Mining Lab.	EE355	0	0	3	2	3
7.	Industrial Visit to Underground Coal Mines	MN351	0	0	0	1	0
8.	Seminar & Report Writing	MN352	0	0	2	1	2
9.	Modelling & Simulation Lab.	MN353	0	0	3	2	3
10.	Mini Project I	MN371	0	0	0	2	0
	<b>Sessional Sub-total</b>		<b>NIL</b>	<b>NIL</b>	<b>5</b>	<b>8</b>	<b>8</b>
	<b>3<sup>rd</sup> Semester Total</b>					<b>26</b>	<b>25</b>

### 4<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/week
			L	T	P		
1.	Geology	GE401	3	1	0	4	4
2.	Heat Power and Theory of Machines	ME	4	0	0	4	4
3.	Fluid Mechanics and Fluid Machines	AM403/4	3	1	0	4	4
4.	Underground Coal Mining	MN401	3	1	0	4	4



5.	Underground Mine Environment	MN402	3	0	0	3	3
	Theory Sub-total		15	2	NIL	19	19
6.	Geology Lab.	GE451	0	0	2	1	2
7.	Heat Power and Theory of Machines Lab	ME	0	0	2	1	2
8.	Fluid Mechanics Lab.	AM453/4	0	0	3	1	0
9.	Geology Field Study	GE	0	0	0	2	0
10.	Mini Project II	MT471	0	0	0	2	3
	Sessional Sub-total		NIL	NIL	8	7	8
	4 <sup>th</sup> Semester Total					26	26

\* Industrial Training/Internship after 4<sup>th</sup> semester

### 5<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Economics	HU 5601	3	0	0	3	3
2.	Surface Mining	MN 501	3	1	0	4	4
3.	Mining Machinery	MN 502	3	1	0	4	4
4.	Surveying	MN 503	3	1	0	4	4
5.	EL I (OE)		3	0	0	3	3
	Theory Sub-total		15	3	NIL	18	18
6.	Design of Mine Layout	MN 551	0	0	3	2	3
7.	Surveying Practicals	MN 552	0	0	3	2	3
8.	Industrial Training/Internship Evaluation	MN 553	0	0	0	1	0
9.	Industrial Visit to Surface Mine	MN 554	0	0	0	1	0
10.	Minor Project I	MN 571	0	0	2	2	2
	Sessional Sub-total		NIL	NIL	6	8	8
	5 <sup>th</sup> Semester Total					26	26

### 6<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Environmental Engineering and Management in Mines	MN 601	3	0	0	3	3
2.	Mine Ventilation Engineering	MN 602	3	1	0	4	4
3.	Rock Mechanics	MN 603	3	1	0	4	4
4.	Underground Metal Mining	MN 604	3	0	0	3	3

5.	EL II (OE)		3	0	0	3	3
	Theory Sub-total		14	1	NIL	17	17
6.	Mine Ventilation Engineering Practical	MN 651	0	0	2	1	2
7.	Rock Mechanics Practical	MN 652	0	0	2	1	2
8.	Comprehensive Viva-voce	MN 653	0	0	0	2	0
9.	Industrial Visit to Underground Metal Mine	MN 654	0	0	0	1	0
10.	Environmental Engineering Practical	MN 655	0	0	2	1	2
11.	Minor Project II	MN 671	0	0	2	2	2
	Sessional Sub-total		NIL	NIL	6	8	8
	6 <sup>th</sup> Semester Total					25	25

\* Industrial Training/Internship after VIth Semester

## 7<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Coal and Mineral Beneficiation	MN 701	3	0	0	3	3
2.	Mine Planning and Design	MN 702	3	1	0	4	4
3.	Acct. & F.M /EL III (OE)	HU 7801/	3	0	0	3	3
4.	ADS I	MN 703/	3	0	0	3	3
5.	EL IV (OE)		3	0	0	3	3
	Theory Sub-total		15	1	NIL	16	16
6.	Coal and Mineral Beneficiation Lab	MN 751	0	0	2	1	2
7.	Mine Planning and Design Practicals	MN 752	0	0	3	2	3
8.	Evaluation of Industrial Training/Internship	MN 753	0	0	0	1	0
9.	ADS I Sessional	MN 754/	0	0	2	1	2
10.	Term Paper	MN 771	0	0	3	3	3
	Sessional Sub-total		NIL	NIL	7	8	10
	7 <sup>th</sup> Semester Total					24	26

## 8<sup>th</sup> semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	Mine Mngement Legislation and Safety	MN 801	3	1	0	4	4
2.	El III (OE)/ Acct, & F.M	HU 7801/	3	0	0	3	3
3.	ADS II	MN 802/	3	0	0	3	3
4.	ADS III	MN 803/	3	0	0	3	3
5.	ADS IV	MN 804/	3	0	0	3	3
	Theory Sub-total		15	1	0	16	16
6.	Project Thesis I	MN 871	0	0	4	4	4
7.	ADS II Sessional	MN 851/	0	0	2	1	2
8.	ADS III Sessional	MN 852/	0	0	2	1	2

9.	ADS IV Sessional	MN 853/	0	0	2	1	2
9.	Comprehensive viva-voce	MN 854	0	0	0	2	0
	Sessional Sub-total					09	10
	8 <sup>th</sup> Semester Total					25	26

Industrial Training/internship after 8<sup>th</sup> Semester

### 9<sup>th</sup> semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.	ADS V	MN 901/	3	0	0	3	3
2.	ADS VI	MN 902/	3	0	0	3	3
3.	ADS VII	MN 903/	3	0	0	3	3
4.	ADS VIII	MN 904/	3	0	0	3	3
	Theory Sub-total		12	0	0	12	12
6.	Project Thesis – II	MN 971	0	0	0	5	0
7.	ADS V Sessional	MN 951/	0	0	2	1	2
8.	ADS VI Sessioanl	MN 952/	0	0	2	1	2
9.	ADS VII Sessioanl	MN 953/	0	0	2	1	2
10.	ADS VIII Sessioanl	MN 954/	0	0	2	1	2
11.	Project Thesis Viva-voce		0	0	0	2	0
12.	Evaluation of Industrial Training/Internship	MN 955	0	0	0	1	0
	Sessional Sub-total						
	9 <sup>th</sup> Semester Total					24	20

### 10<sup>th</sup> Semester

Sl. No	Course Name	Course code	Class Load/Week			Credit	Class load/ week
			L	T	P		
1.							
2.							
3.							
4.							
5.							
	Theory Sub-total						NIL
6.	Project thesis III						
7.	Comprehensive viva-voce (specialisation)		0	0	0	2	0
8.	Project Thesis Viva-voce		0	0	0	2	0
	Sessional Sub-total					10	
	10 <sup>TH</sup> Semester Total					19	

**Total number of theory subjects:**

Departmental Core (To be offered by the Department): 14

Departmental Core Others (To be offered by other departments): 04

Open Electives: 04

Advanced Specialization (To be offered by the Department as well as other departments): 08

The Department will offer the following electives, which students of any discipline including Mining Engineering can opt for.

OE1 MN 501/1 Optimization Techniques

OE2 MN 601/1 Geostatistics

OE3 MN 701/1 Petroleum Drilling and Production Engineering

OE4 MN 801/1 Industrial Safety Engineering and Ergonomics

Subject	Advanced Sepcialization for M.Tech			
	Mining Engineering	Geomechanics	Geoinformatics	Environmental Engineering and Management
<b>7<sup>th</sup> Semester</b>				
ADS I	Engineering Geology and Site Characterization	Engineering Geology and Site Characterization	Geographical Informations System	Environmental Chemistry and Microbiology
ADS I Sessional	Engineering Geology and Site Characterization Practicals	Engineering Geology and Site Characterization Practicals	Geogrpahical Information System Practical	Environmental Pollution Control Lab I
<b>8<sup>th</sup> Semester</b>				
ADS II	Soil Mechanics	Soil Mechanics	Cartography and Global Navigational Satellite System	Industrial Water Treatment
ADS III	Subsurface Rock Engineering and Tunneling	Subsurface Rock Engineering and Tunneling	Remote Sensing I	Air Pollution Control Engineering
ADS IV	Rock Slope Engineering	Rock Slope Engineering	Database Management System	Industrial Wastes Management
ADS II Sessional	Design Analysis in Rock Engineering	Design Analysis in Rock Engineering	Remote Sensing I Practical	Environmental Software and Computing Lab
ADS III Sessional	Statistical Analysis and Simulation in Geosciences	Statistical Analysis and Simulation in Geosciences	Database Management System Practical	Environmental Laboratory Viva Voce
ADS IV Sessional	Seminar	Seminar	Seminar	Seminar
<b>9<sup>th</sup> Semester</b>				
ADS V	Advanced	Geophysics for	Web GIS and	Environmental

	Statistics and Design of Experiments	Subsurface Characterization	Application Design	Modelling and Assessment
ADS VI	Material Handling and Transport	Advanced Engineering Analysis and Numerical Methods in Geomechanics	Remote Sensing II	Environmental Planning, Strategy, and Legislation
ADS VII	Environmental Engineering and Control in Mines	Fluid Flow through Porous Media	Spatial Modelling and Analysis	Sustainable Environmental Project Design
ADS VIII	Industrial Safety Engineering and Management	Reservoir Geomechanics	* Elective (One from the list)	+ Elective (any one from the list)
ADS V Sessional	Surface Mine Design	Reservoir Fluid Flow Simulation	Web GIS Practical	Industrial/Intern Project
ADS VI Sessional	Underground Mine Design	Rock Core Analysis and Petrophysics	Remote Sensing II Practical	Environmental Pollution Control Lab II
ADS VII Sessional	Material Handling and Transport Design	Reservoir Geomechanics Analysis	Practical on Elective	Practical on Elective
ADS VIII Sessional	Seminar	Seminar	Seminar	Seminar
			<ul style="list-style-type: none"> <li>• Electives</li> <li>1) Geoinformatics Application in Natural Resource Management</li> <li>2) Geoinformatics Application in Mineral Exploration and Orebody Modeling and</li> <li>3) Geoinformatics Application in Facility and Utility Management</li> <li>4) Geoinformatics Application in Disaster Management</li> </ul>	+ Electives <ul style="list-style-type: none"> <li>1) Environmental Economics and Finance</li> <li>2) Environmental Health, Risk, and Safety</li> <li>3) Rehabilitation of Industrial Sites</li> <li>4) Agriculture, Environment, and Climate Change</li> <li>5) Design of Water Supply System and Sanitation</li> </ul>

**ADVANCED COMMON SUBJECTS FOR ALL SPECIALISATIONS**

<b>ADC I (MN 731) : MATERIALS CHARACTERISATION</b>		<b>ADC II (MN 831) : COMPUTATIONAL MATERIALS ENGINEERING</b>		
<b>ADVANCED SPECIALISED SUBJECTS</b>	<b>SPECIALISATIONS</b>			
	(X=1)	(X=2)	(X=3)	

NOMENCLATURE CODE (MT S4N/X/Y)			
ADS I (MT 841/X)			
ADS II (EE 842/X)			
ADSIII (EE 843/X)			
ADS IV (EE 941/X)			
ADS V (EE 942/X)			
ADS VI (EE 943/X/Y)	Y=1		
	Y=2		
	Y=3		
ADAVNCED LABORATORIES			
ADLAB I			
ADLAB II			