

CURRICULA

**B. Tech./ B. Arch. Degree Programmes
(Students admitted in 2013 & 2014)**





CURRICULA

UNDER GRADUATE PROGRAMMES

(B.Tech., B.Arch.)

Students Admitted in 2013 & 2014



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**CREDIT DISTRIBUTION**

Sl. No.	DEPARTMENT	SEMESTER										Total
		1	2	3	4	5	6	7	8	9	10	
1.	Chemical Engineering	23 / 22	22 / 23	23	24	23	26	26	18			45 + 140 185
2.	Civil Engineering	23 / 22	22 / 23	22	22	23	27	25	18			45 + 137 182
3.	Computer Science and Engineering	23 / 22	22 / 23	24	24	24	25	25	18			45 + 140 185
4.	Electrical and Electronics Engineering	23 / 22	22 / 23	25	24	23	25	22	18			45 + 137 182
5.	Electronics and Communication Engineering (2013)	23 / 22	22 / 23	22	22	22	25	25	18			45 + 134 179
	Electronics and Communication Engineering (2014)	23 / 22	22 / 23	25	24	23	25	25	18			45 + 140 185
6.	Instrumentation and Control Engineering	23 / 22	22 / 23	25	23	23	25	22	18			45 + 136 181
7.	Mechanical Engineering	23 / 22	22 / 23	22	26	24	26	22	18			45 + 138 183
8.	Metallurgical and Materials Engineering	23 / 22	22 / 23	23	24	23	27	25	18			45 + 140 185
9.	Production Engineering	23 / 22	22 / 23	25	23	26	25	23	18			45 + 140 185
10.	Architecture	22	22	22	22	22	22	12	24	24	22	214

**B.Tech. (1st Year)****I SEMESTER**

Code	Course of Study	L	T	P	C
HM101	Basic Course in Communicative English	3	0	0	3
MA101	Mathematics - I	3	0	0	3
PH101	Physics - I	2	0	3	3
CH101	Chemistry - I	2	0	3	3
ME101	Engineering Mechanics	3	0	0	3
CS101	Basics of Programming (Theory and Laboratory)	2	0	2	3
CC101	Energy and Environmental Engineering	2	0	0	2
MP101 / PR101	Engineering Graphics / Workshop Practice	1 0	0 0	4 4	3 2
CF101	NSS / NCC / NSO	0	0	0	0
Total		18 / 17	0	12	23 / 22

II SEMESTER

Code	Course of Study	L	T	P	C
HM102	Professional Communication	3	0	0	3
MA102	Mathematics - II	3	0	0	3
PH102	Physics - II	3	0	3	4
CH102	Chemistry - II	3	0	3	4
BEI102	Basic Engineering - I	2	0	0	2
BEII102	Basic Engineering - II	2	0	0	2
BS102	Branch Specific Course	2	0	0	2
PR101 / MP101	Workshop Practice / Engineering Graphics	0 1	0 0	4 4	2 3
CF102	NSS / NCC / NSO	0	0	0	0
Total		18 / 19	0	10	22 / 23

**B. Tech. (CHEMICAL ENGINEERING)**

The total minimum credits required for completing the B.Tech. Programme in Chemical Engineering is 183 (45 + 138).

SEMESTER III

Code	Course of Study	L	T	P	C
MA201	Transforms, Special Functions and Partial Differential Equations	3	0	0	3
CL201	Organic Chemistry	3	0	0	3
EE221	Applied Electrical and Electronics Engineering	3	0	0	3
CL203	Chemical Technology	3	0	0	3
CL205	Momentum Transfer	3	1	0	4
CL207	Process Calculations	3	1	0	4
CL209	Technical Analysis Laboratory	0	0	3	2
EE225	Applied Electrical and Electronics Engineering Laboratory	0	0	2	1
Total		18	2	5	23

SEMESTER IV

Code	Course of Study	L	T	P	C
MA202	Numerical Techniques	2	1	0	3
CL202	Advanced Programming Languages, C++	2	1	0	3
CL204	Physical Chemistry	3	0	0	3
CL206	Chemical Engineering Thermodynamics	3	1	0	4
CL208	Particulate Science and Technology	3	1	0	4
CL210	Environmental Engineering	3	0	0	3
CL212	Momentum Transfer Laboratory	0	0	3	2
CL214	Physical Chemistry Laboratory	0	0	3	2
Total		16	4	6	24

SEMESTER V

Code	Course of Study	L	T	P	C
CL301	Chemical Reaction Engineering – I	3	0	0	3
CL303	Material Science and Technology	3	0	0	3
CL305	Mass Transfer	3	0	0	3
CL307	Heat Transfer	2	1	0	3
CL309	Biochemical Engineering	3	0	0	3
CL311	Elective I	3	0	0	3
CL313	Particulate Science and Technology Laboratory	0	0	3	2
CL315	Thermodynamics Laboratory	0	0	3	2
Total		17	1	6	22

**SEMESTER VI**

Code	Course of Study	L	T	P	C
HM302	Human Psychology and Organisational Behaviour	2	0	0	2
CL304	Chemical Reaction Engineering – II	3	0	0	3
CL306	Equilibrium Staged Operations	3	1	0	4
CL308	Process Dynamics and Control	2	1	0	3
	Elective II	3	0	0	3
	Elective III	3	0	0	3
CL310	Heat Transfer Laboratory	0	0	3	2
CL312	Chemical Reaction Engineering Laboratory	0	0	3	2
CL314	Industrial Lectures	0	0	0	1
CL316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	0	2
Total		16	2	6	25

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
CL401	Safety in Chemical Industries	3	0	0	3
CL403	Chemical Process Design	2	2	0	4
CL405	Project Engineering and Economics	3	0	0	3
CL407	Transport Phenomena	2	1	0	3
	Elective IV	3	0	0	3
	Elective V*	3	0	0	3
CL411	Mass Transfer Laboratory	0	0	3	2
CL413	Process Dynamics and Control Laboratory	0	0	3	2
CL409	Comprehensive Examination	0	0	0	3
Total		16	3	6	26

SEMESTER VIII

Code	Course of Study	L	T	P	C
HM402	Industrial Economics and Management	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII*	3	0	0	3
	Elective VIII*	3	0	0	3
CL406	Project Work	0	0	0	6
Total		12	0	0	18

* Global Electives Also

**LIST OF ELECTIVES****ELECTIVES 1**

Code	Course of Study	L	T	P	C
CL001	Petroleum and Petrochemical Engineering II	3	0	0	3
CL002	Nuclear Engineering	3	0	0	3

ELECTIVE 2 and 3

Code	Course of Study	L	T	P	C
CL021	Fertilizer Technology	3	0	0	3
CL022	Biotechnology	3	0	0	3
CL023	Energy Engineering	3	0	0	3
CL024	Process Instrumentation	3	0	0	3

ELECTIVE 4 and 5

CL041	Polymer Science Technology	3	0	0	3
CL042	New Separation Process	3	0	0	3
CL043	Applied Mathematics in Chemical Engineering	3	0	0	3
CL044	Renewable Energy	3	0	0	3
	Any other elective from other department				

ELECTIVE 6, 7 & 8

Code	Course of Study	L	T	P	C
CL061	Nano Technology	3	0	0	3
CL062	Fluidization Engineering	2	1	0	3
CL063	Pharmaceutical Technology	3	0	0	3
CL064	Process Optimization	3	0	0	3
CL066 ⁺	Pipeline Corrosion and Cathodic Protection	3	0	0	3

* Approved in 32nd Senate**ADVANCED LEVEL COURSES FOR B. Tech. HONOURS**

Code	Course of Study	L	T	P	C
CL090	Process Dynamics and Control – II	3	0	0	3
CL091	Advances in Fluidization Engineering	3	0	0	3
CL092	Process Modelling and Simulation	3	0	0	3
CL093	Pinch Analysis and Heat Exchange Network Design	3	0	0	3
CL094	Design and Analysis of Experiments	3	0	0	3
CL095	Advances in Heat Transfer	3	0	0	3

COURSES OFFERED TO OTHER DEPARTMENTS

Code	Course of Study	L	T	P	C
ME101	Engineering Mechanics	3	0	0	3

**B. Tech. (CIVIL ENGINEERING)**

The total minimum credits required for completing the B.Tech. Programme in Civil Engineering is 182 (45+137).

SEMESTER III

Code	Course of Study	L	T	P	C
MA203	Probability, Statistics and Linear Programming	3	0	0	3
CE201	Strength of Materials	3	0	0	3
CE203	Mechanics of Fluids	3	0	0	3
CE205	Surveying	3	0	0	3
CE207	Environmental Engineering – I	3	0	0	3
CE209	Concrete Technology	3	0	0	3
CE211	Strength of Materials and Concrete Laboratory	0	0	3	2
CE213	Survey Laboratory	0	0	3	2
Total		18	0	6	22

SEMESTER IV

Code	Course of Study	L	T	P	C
MA204	Numerical Techniques	2	1	0	3
CE202	Mechanics of Solids	2	1	0	3
CE204	Applied Hydraulic Engineering	3	0	0	3
CE206	Geotechnical Engineering – I	3	0	0	3
CE208	Environmental Engineering – II	2	0	2	3
CE210	Transportation Engineering – I	3	0	0	3
CE212	Fluid Mechanics Laboratory	0	0	3	2
CE214	Environmental Engineering Laboratory	0	0	3	2
Total		15	2	8	22

SEMESTER V

Code	Course of Study	L	T	P	C
CE301	Structural Analysis – I	3	0	0	3
CE303	Concrete Structures – I	3	0	2	4
CE305	Advanced Strength of Materials	3	0	0	3
CE307	Geotechnical Engineering - II	3	0	0	3
CE309	Transportation Engineering - II	3	0	0	3
	Elective I	3	0	0	3
CE 311	Geotechnical Engineering Laboratory	0	0	3	2
CE313	Building Planning and Drawing	0	0	3	2
Total		18	0	8	23

**SEMESTER VI**

Code	Course of Study	L	T	P	C
CE302	Structural Analysis – II	2	1	0	3
CE304	Concrete Structure – II	3	0	2	4
CE306	Design of Steel Structures	3	0	2	4
CE308	Water Resources Engineering	3	0	0	3
	Elective II	3	0	0	3
	Elective III	3	0	0	3
CE310	Highway Materials Laboratory	0	0	3	2
CE312	Computational Laboratory – I	0	0	3	2
CE314	Industrial Lectures	0	0	0	1
CE316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	0	2
Total		17	1	10	27

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
CE401	Matrix Methods of Structural Analysis	2	1	0	3
CE403	Irrigation and Hydraulic Structures	2	0	2	3
CE405	Construction Engineering and Management	3	0	0	3
HM401	Industrial Economics	3	0	0	3
	Elective IV	3	0	0	3
	Elective V*	3	0	0	3
CE407	Computational Laboratory - II	0	0	3	2
CE409	Estimation, Costing and Valuation	0	0	3	2
CE411	Comprehensive Examination	0	0	6	3
Total		16	1	14	25

SEMESTER VIII

Code	Course of Study	L	T	P	C
MB491	Management Concepts and Practices	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII*	3	0	0	3
	Elective VIII*	3	0	0	3
CE498	Project Work	0	0	12	6
Total		12	0	12	18

* Global Electives Also

**ELECTIVES**

Code	Course of Study	L	T	P	C
Structural Engineering					
CE001	Advanced Design of Steel Structures	3	0	0	3
CE002	Experimental Stress Analysis	3	0	0	3
CE003	Earthquake Resistant Structures	3	0	0	3
CE004	Structural Dynamics	3	0	0	3
CE005	Introduction to Finite Element Method	3	0	0	3
CE006	Steel - Concrete Composite Structures	3	0	0	3
CE007	Pre - stressed Concrete Structures	3	0	0	3
CE008	Ocean Structures and Materials	3	0	0	3
Geo - Technical Engineering					
CE009	Advanced Foundation Engineering	3	0	0	3
CE010	Geotechnical Earthquake Engineering	3	0	0	3
CE011	Reinforced Earth and Geotextiles	3	0	0	3
CE012	Earth and Earth Retaining Structures	3	0	0	3
CE013	Marine Foundation Engineering	3	0	0	3
Water Resource Engineering					
CE021	Ground Water Hydrology	3	0	0	3
CE022	Simulation Modeling in Water Resources	3	0	0	3
CE023	Coastal Engineering	3	0	0	3
CE024	Remote Sensing and GIS for Water Resources Engineering	3	0	0	3
CE025	Disaster Modeling and Management	3	0	0	3
Transportation Engineering					
CE041	Transportation Planning	3	0	0	3
CE042	Pavement Analysis and Design	3	0	0	3
CE043	Geo - informatics in Transportation Engineering	3	0	0	3
CE044	Traffic Engineering and Safety	3	0	0	3
CE045	Bridge Engineering	3	0	0	3
CE046	GIS and Remote Sensing (Global)	3	0	0	3
CE047	Advanced Surveying Techniques				
Environmental Engineering					
CE061	Air Pollution Management	3	0	0	3
CE062	Industrial Wastewater Engineering	3	0	0	3
CE063	Environmental Management and Impact Assessment	3	0	0	3
CE064	Solid Waste Management Techniques	3	0	0	3
CE065	Models for Air and Water Quality	3	0	0	3



ADVANCED LEVEL COURSES FOR B. Tech. HONOURS

Code	Course of Study	L	T	P	C
CE090	Bridge Planning and Design	3	0	0	3
CE091	Pavement Management System	3	0	0	3
CE092	Computational Fluid Dynamics	3	0	0	3
CE093	Free Surface Flow	3	0	0	3
CE094	Theory of Elasticity and Plasticity	3	0	0	3
CE095	Theory of Plates	3	0	0	3
CE096	Structural Optimization	3	0	0	3
CE097	Soil Dynamics and Machine Foundations	3	0	0	3
CE098	Numerical Modeling in Geotechnical Engineering	3	0	0	3
CE099	Biological Process Design for Wastewater Treatment	3	1	0	4
CE100	Physico Chemical Process for Water And Wastewater Treatment	3	1	0	4
CE101	Advanced Remote Sensing Techniques	3	0	0	3

**B. Tech. (COMPUTER SCIENCE AND ENGINEERING)**

The total minimum credits required for completing the B.Tech. Programme in Computer Science and Engineering is 185 (45 + 140).

SEMESTER III

Code	Course of Study	L	T	P	C
CS201	Data Structures and Algorithms	3	0	0	3
CS203	Discrete Structures	3	1	0	4
CS205	Digital Systems Design	3	0	0	3
CS207	Data Communication	3	0	0	3
CS209	Computer Organization	3	0	0	3
HM201	Corporate Communication	3	1	0	4
CS213	Data Structures Laboratory	0	0	2	2
CS215	Digital Systems Design Laboratory	0	0	2	2
Total		18	2	4	24

SEMESTER IV

Code	Course of Study	L	T	P	C
CS202	Operating Systems	3	0	0	3
MA204	Introduction to Probability Theory	3	1	0	4
CS206	Computer Networks	3	0	0	3
CS208	Automata and Formal Languages	3	1	0	4
CS210	Introduction to Algorithms	3	0	0	3
CS212	Combinatorics and Graph Theory	3	0	0	3
CS214	Algorithms Laboratory	0	0	2	2
CS216	Operating Systems Laboratory	0	0	2	2
Total		18	2	4	24

SEMESTER V

Code	Course of Study	L	T	P	C
CS301	Computer Architecture	3	1	0	4
MA304	Principles of Operations Research	3	1	0	4
CS303	Internetworking Protocols	3	0	0	3
CS305	Database Management System	3	0	0	3
CS307	Software Engineering	3	0	0	3
	Elective I	3	0	0	3
CS309	Networks Laboratory	0	0	2	2
CS311	DBMS Laboratory	0	0	2	2
Total		18	2	4	24

**SEMESTER VI**

Code	Course of Study	L	T	P	C
CS302	Principles of Cryptography	3	1	0	3
CS304	Service Oriented Architecture	3	0	0	3
CS306	Microprocessors and Microcontrollers	3	0	0	3
CS308	Mobile Applications Development	3	0	0	3
	Elective II	3	0	0	3
	Elective III	3	0	0	3
CS310	Mobile Applications Development Laboratory	0	0	2	2
CS312	Microprocessors and Microcontrollers Laboratory	0	0	2	2
CS314	Industrial Lecture	0	0	0	1
CS316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	0	2
Total		18	1	4	25

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
CS401	Web Technology	3	0	0	3
CS403	Parallel Architecture and Programming	3	0	0	3
CS405	Principles of Compiler Design	3	0	0	3
CS407	Network Security	3	0	0	3
	Elective IV	3	0	0	3
	Elective V*	3	0	0	3
CS409	Web Technology Laboratory	0	0	2	2
CS411	Compiler Design Laboratory	0	0	2	2
CS449	Comprehensive Examination	3	0	0	3
Total		21	0	4	25

SEMESTER VIII

Code	Course of Study	L	T	P	C
HM402	Software Project Management	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII*	3	0	0	3
	Elective VIII*	3	0	0	3
CS498	Project Work	6	0	0	6
Total		18	0	0	18

* Global Electives Also

**ELECTIVES (V SEMESTER) (1 out of 3)**

Code	Course of Study	L	T	P	C
CS061	Human Computer Interaction	3	0	0	3
CS062	Multimedia Systems	3	0	0	3
CS046	Mobile Computing and Communication	3	0	0	3

ELECTIVES (VI SEMESTER) (2 out of 5)

Code	Course of Study	L	T	P	C
CS047	Wireless Network Systems	3	0	0	3
CS001	Design and Analysis of Parallel Algorithms	3	0	0	3
CS016	Principles of Processor Design	3	0	0	3
CS031	Data Warehousing and Data Mining	3	0	0	3
CS063	Real Time Systems	3	0	0	3

ELECTIVES (VII SEMESTER) (2 out of 5)

Code	Course of Study	L	T	P	C
CS032	Big Data Analytics	3	0	0	3
CS048	Cloud Computing	3	0	0	3
CS064	Artificial Intelligence and Expert Systems	3	0	0	3
CS017	Programming for Embedded Systems	3	0	0	3
CS002	Advanced Cryptography	3	0	0	3

ELECTIVES (VIII SEMESTER) (3 out of 6)

Code	Course of Study	L	T	P	C
CS003	Randomized Algorithms	3	0	0	3
CS065	Natural Language Processing	3	0	0	3
CS018	Network Processors Design	3	0	0	3
CS066	Image Processing	3	0	0	3
CS067	Software Quality Assurance	3	0	0	3
CS033	Advanced Database Management Systems	3	0	0	3

ADVANCED LEVEL COURSES FOR B. Tech. HONOURS

Code	Course of Study	L	T	P	C
CS090	Distributed Algorithms	3	0	0	3
CS091	High Speed Networks	3	0	0	3
CS092	Software Defined Networking	3	0	0	3
CS093	Transaction Processing Systems	3	0	0	3
CS094	Pervasive Computing	3	0	0	3



CS095	Programming for Multi Core Systems	3	0	0	3
CS096	Soft Computing	3	0	0	3
CS097	Digital System Testing and Verification	3	0	0	3
CS098	CAD for VLSI	3	0	0	3
CS099	Middleware Technologies	3	0	0	3

Elective Stream and their course code range

Sl. No.	Elective Stream	Couse code range
1.	Theoritcal Computer Science	CS001 – CS015
2.	Systems	CS016 – CS030
3.	Data base	CS031 – CS045
4.	Networking	CS046 – CS060
5.	Software Systems	CS061 – CS070
6.	Honors Elective	CS090 – CS099

**B. Tech. (ELECTRICAL AND ELECTRONICS ENGINEERING)**

The total minimum credits required for completing the B.Tech. programme in Electrical and Electronics Engineering is 182 (45+ 137)

SEMESTER III

Code	Course of Study	L	T	P	C
MA205	Transforms and Partial Differential Equations	3	0	0	3
EE201	DC Machines and Transformers	3	1	0	4
EE203	Circuit Theory	3	1	0	4
EE205	Electron Devices	3	0	0	3
EE207	Digital Electronics	3	0	0	3
ME231	Thermodynamics and Mechanics of Fluids	3	1	0	4
EE209	DC Machines and Transformers Laboratory	0	0	3	2
EE211	Circuits and Devices Laboratory	0	0	3	2
Total		18	3	6	25

SEMESTER IV

Code	Course of Study	L	T	P	C
MA202	Numerical Methods	3	0	0	3
EE202	AC Machines	3	1	0	4
EE204	Transmission and Distribution of Electrical Energy	3	0	0	3
EE206	Networks and Linear Systems	3	1	0	4
EE208	Measurements and Instrumentation	3	0	0	3
EE210	Analog Electronic Circuits	3	0	0	3
EE212	Synchronous and Induction Machines Laboratory	0	0	3	2
EE214	Electronic Circuits Laboratory	0	0	3	2
Total		18	2	6	24

SEMESTER V

Code	Course of Study	L	T	P	C
EE301	Power System Analysis	3	1	0	4
EE303	Control Systems	3	0	0	3
EE305	Linear Integrated Circuits	3	0	0	3
EE307	Data Structures and Algorithms	3	0	0	3
EC319	Communication Systems	3	0	0	3
	Elective I	3	0	0	3
EE309	Integrated Circuits Laboratory	0	0	3	2
EE311	Data Structures Laboratory	0	0	3	2
Total		18	1	6	23

**SEMESTER VI**

Code	Course of Study	L	T	P	C
EE302	Power Electronics	3	0	0	3
EE304	Power System Protection and Switchgear	3	0	0	3
EE306	Microprocessors and Microcontrollers	3	0	0	3
EE308	VLSI Design	3	0	0	3
-	Elective II	3	0	0	3
-	Elective III	3	0	0	3
EE310	Power Electronics Laboratory	0	0	3	2
EE312	Micro - Computing and VLSI Design Laboratory	0	0	3	2
EE314	Industrial Lectures	0	0	0	1
EE316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	0	2
	Total	18	0	6	25

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
MB491	Management Concepts and Practices	3	0	0	3
EE401	Power System Economics and Control Techniques	3	0	0	3
EE403	Wind and Solar Electrical Systems	3	0	0	3
	Elective IV	3	0	0	3
	Elective V*	3	0	0	3
EE405	Control and Renewable Energy Systems Laboratory	0	0	3	2
EE407	Power Systems Simulation Laboratory	0	0	3	2
EE447	Comprehensive Examination	0	0	0	3
	Total	15	0	6	22

SEMESTER VIII

Code	Course of Study	L	T	P	C
HM402	Professional Ethics and Values	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII*	3	0	0	3
	Elective VIII*	3	0	0	3
EE498	Project Work	0	0	15	6
	Total	12	0	15	18

* Global Electives Also



ELECTIVES
Group1 (Electrical Power Stream)

Code	Course of Study	L	T	P	C
EE001	Power Generation Systems	3	0	0	3
EE002	Design of Electrical Apparatus	3	0	0	3
EE003	Static Relays	3	0	0	3
EE004	EHV AC and DC Transmission	3	0	0	3
EE005	Fundamentals of Facts	3	0	0	3
EE006	Utilization of Electrical Energy	3	0	0	3
EE007	Special Electrical Machines	3	0	0	3
EE008	Electrical Safety	3	0	0	3
EE009	Computer Relaying and Phasor Measurement Unit	3	0	0	3
EE081	Solid State Drives	3	0	0	3
EE082	Power System Dynamics	3	0	0	3
EE083	Power System Restructuring	3	0	0	3
EE084	Power Switching Converters	3	0	0	3
EE085	Modern Optimization Techniques for Electric Power Systems	3	0	0	3
EE086	Vehicular Electric Power Systems	3	0	0	3
EE087	Distribution System Automation	3	0	0	3

Group2 (Electronics and Computer Stream)

Code	Course of Study	L	T	P	C
EE021	Computer Architecture	3	0	0	3
EE022	Computer Networks	3	0	0	3
EE023	Operating Systems	3	0	0	3
EE024	Design with PIC Microcontrollers	3	0	0	3
EE025	Embedded System Design	3	0	0	3
EE026	Digital Signal Processing	3	0	0	3
EE027	Digital System Design and HDLS	3	0	0	3
EE028	Low Power Microcontroller	3	0	0	3
EE088	Aircraft Electronic Systems	3	0	0	3
EE089	Applied Signal Processing	3	0	0	3

Group3 (Common to Group1 and 2)

Code	Course of Study	L	T	P	C
EE041	Artificial Neural Networks	3	0	0	3
EE042	Fuzzy Systems and Genetic Algorithms	3	0	0	3
EE043	Industrial Automation	3	0	0	3
EE044	Operation Research	3	0	0	3
EE090	Modern Control Systems	3	0	0	3
EE091	Digital Control Systems	3	0	0	3
EE092	Non - linear Control Systems	3	0	0	3

**ADVANCED LEVEL COURSES FOR B. Tech. HONOURS**

Code	Course of Study	L	T	P	C
EE081	Solid State Drives	3	0	0	3
EE082	Power System Dynamics	3	0	0	3
EE083	Power System Restructuring	3	0	0	3
EE084	Power Switching Converters	3	0	0	3
EE085	Modern Optimization Techniques for Electric Power Systems	3	0	0	3
EE086	Vehicular Electric Power Systems	3	0	0	3
EE087	Distribution System Automation	3	0	0	3
EE088	Aircraft Electronic Systems	3	0	0	3
EE089	Applied Signal Processing	3	0	0	3
EE090	Modern Control Systems	3	0	0	3
EE091	Digital Control Systems	3	0	0	3
EE092	Non - linear Control Systems	3	0	0	3

COURSES OFFERED TO OTHER DEPARTMENTS

Dept.	Code	Course of Study	L	T	P	C
Mechanical	EE223	Applied Electrical Engineering	2	0	1	3
Chemical	EE227	Applied Electrical and Electronics Engineering	3	0	0	3
Chemical	EE221	Electrical and Electronics Engineering Laboratory	0	0	2	2
Production	EE225	Applied Electronics	3	0	0	3
Production	EE242	Electrical and Control System Engineering	3	0	0	3
Production	EE224	Electrical and Electronics Engineering Laboratory	0	0	1	1
MME	EE220	Electrical Technology	2	0	1	3

**B. Tech. (ELECTRONICS AND COMMUNICATION ENGINEERING)****(Only for 2013 admitted batch)**

The total minimum credits required for completing the B.Tech. Programme in Electronics and communication Engineering is 179 (45 + 134).

SEMESTER III

Code	Course of Study	L	T	P	C
MA207	Real Analysis and Partial Differential Equations	3	0	0	3
EC201	Signals and Systems	3	0	0	3
EC203	Network Analysis and Synthesis	3	0	0	3
EC205	Engineering Electromagnetics	3	0	0	3
EC207	Semiconductor Physics and Devices	3	0	0	3
EC209	Digital Circuits and Systems	3	0	0	3
EC211	Devices and Networks Laboratory	0	0	3	2
EC213	Digital Electronics Laboratory	0	0	3	2
Total		18	0	6	22

SEMESTER IV

Code	Course of Study	L	T	P	C
MA206	Probability Theory and Random Processes	3	0	0	3
EC202	Digital Signal Processing	3	0	0	3
IC218	Control Systems	3	0	0	3
EC204	Transmission Lines and Waveguides	3	0	0	3
EC206	Electronic Circuits	3	0	0	3
EC208	Microprocessors and Micro controllers	3	0	0	3
EC210	Electronic Circuits Laboratory	0	0	3	2
EC212	Microprocessor and Microcontroller Laboratory	0	0	3	2
Total		18	0	6	22

SEMESTER V

Code	Course of Study	L	T	P	C
EC301	Statistical Theory of Communication	3	0	0	3
EC303	Digital Signal Processors and Applications	3	0	0	3
EC305	Communication Theory	3	0	0	3
EC307	Antennas and propagation	3	0	0	3
EC309	Analog Integrated Circuits	3	0	0	3
EC311	Advanced Microprocessors	3	0	0	3
EC313	Analog Integrated Circuits Laboratory	0	0	3	2
EC315	Digital Signal Processing Laboratory	0	0	3	2
Total		18	0	6	22

**SEMESTER VI**

Code	Course of Study	L	T	P	C
EC302	Digital Communication	3	0	0	3
EC304	Mobile Communication	3	0	0	3
EC306	Microwave Components and Circuits	3	0	0	3
EC308	VLSI Systems	3	0	0	3
EC310	Embedded Systems	3	0	0	3
	Elective I	3	0	0	3
EC312	Communication Engineering Laboratory	0	0	3	2
EC318	VLSI and Embedded System Design Laboratory	0	0	3	2
EC314	Industrial Lectures	0	0	0	1
EC316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	0	2
Total		18	0	6	25

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
HM401	Industrial Economics	3	0	0	3
EC401	Communication Switching Systems	3	0	0	3
EC403	Fiber Optic Communication	3	0	0	3
EC405	Microwave Electronics	3	0	0	3
	Elective II	3	0	0	3
	Elective III	3	0	0	3
EC407	Fiber Optic Communication Laboratory	0	0	3	2
EC409	Microwave Laboratory	0	0	3	2
EC447	Comprehensive Evaluation	0	0	0	3
Total		18	0	6	25

SEMESTER VIII

Code	Course of Study	L	T	P	C
MB790	Management Concepts and Practices	3	0	0	3
	Elective IV	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII	3	0	0	3
EC498	Project Work	0	0	12	6
Total		12	0	12	18

**LIST OF ELECTIVES****VI Semester**

Code	Course of Study	L	T	P	C
EC352	Networks and Protocols	3	0	0	3
EC354	Speech Processing	3	0	0	3
CS356	Data Structures and Algorithms	3	0	0	3

VII Semester

Code	Course of Study	L	T	P	C
EC451	Image Processing	3	0	0	3
EC453	ARM System Architecture	3	0	0	3
EC455	Microwave Integrated Circuit Design	3	0	0	3
EC457	Operating Systems	3	0	0	3
EC459	Broadband Access Technologies	3	0	0	3
IC453	Virtual Instrumentation	3	0	0	3
Any other one elective course offered in the institute					

VIII Semester

Code	Course of Study	L	T	P	C
EC452	Principles of Radar	3	0	0	3
EC454	Display Systems	3	0	0	3
EC456	Satellite Communication	3	0	0	3
EC458	Design of Cognitive Radio	3	0	0	3
CS454	Network Security	3	0	0	3
Any other one elective course offered in the institute					

Additional Electives Approved by BoS

Code	Course of Study	L	T	P	C
IC451	Automotive Control Systems	3	0	0	3
EC459	Pattern Recognition	3	0	0	3
EC460	Multimedia Communication Technology	3	0	0	3
EC462	RF MEMS Circuit Design	3	0	0	3
EC464	Electronics Packaging	3	0	0	3
EC466	RF Circuits	3	0	0	3
EC461	Statistical Signal Processing	3	0	0	3
EC468	Functional Analysis	3	0	0	3
EC470	Low power VLSI	3	0	0	3

**ADVANCED LEVEL COURSES FOR B. Tech. HONOURS**

Code	Course of Study	L	T	P	C
EC090	Adhoc Wireless Networks	3	0	0	3
EC091	Wireless Sensor Networks	3	0	0	3
EC092	Detection and Estimation	3	0	0	3
EC093	Statistical Signal Processing	3	0	0	3
EC094	RF Circuits	3	0	0	3
EC095	Numerical Techniques for MIC	3	0	0	3
EC096	Applied Photonics	3	0	0	3
EC097	Advanced Radiation Systems	3	0	0	3
EC098	Bio MEMS	3	0	0	3
EC099	Analog IC Design	3	0	0	3
EC100	VLSI System Testing	3	0	0	3
EC101	Electronic Design Automation Tools	3	0	0	3
EC102	Design of ASICs	3	0	0	3
EC103	Digital System Design	3	0	0	3
EC104	Digital Signal Processing Structures for VLSI	3	0	0	3
EC105	Low Power VLSI Circuits	3	0	0	3
EC106	VLSI Digital Signal Processing Systems	3	0	0	3
EC107	Asynchronous System Design	3	0	0	3
EC108	Physical Design Automation	3	0	0	3
EC109	Mixed - Signal Circuit Design	3	0	0	3

**B. Tech. (ELECTRONICS AND COMMUNICATION ENGINEERING)****(Only for 2014 admitted batch)**

The total minimum credits required for completing the B.Tech. Programme in Electronics and communication Engineering is 185 (45 + 140).

SEMESTER III

Code	Course of Study	L	T	P	C
MA207	Real Analysis and Partial Differential Equations	3	1	0	4
EC201	Signals and Systems	3	1	0	4
EC203	Network Analysis and Synthesis	3	0	0	3
EC205	Electrodynamics and Electromagnetic Waves	3	1	0	4
EC207	Semiconductor Physics and Devices	3	0	0	3
EC209	Digital Circuits and Systems	3	0	0	3
EC211	Devices and Networks Laboratory	0	0	3	2
EC213	Digital Electronics Laboratory	0	0	3	2
Total		18	3	6	25

SEMESTER IV

Code	Course of Study	L	T	P	C
MA206	Probability Theory and Random Processes	3	1	0	4
EC202	Digital Signal Processing	3	1	0	4
IC218	Control Systems	3	0	0	3
EC204	Transmission Lines and Waveguides	3	0	0	3
EC206	Electronic Circuits	3	0	0	3
EC208	Microprocessors and Micro controllers	3	0	0	3
EC210	Electronic Circuits Laboratory	0	0	3	2
EC212	Microprocessor and Microcontroller Laboratory	0	0	3	2
Total		18	2	6	24

SEMESTER V

Code	Course of Study	L	T	P	C
EC301	Statistical Theory of Communication	3	1	0	4
EC303	Digital Signal Processors and Applications	3	0	0	3
EC305	Analog Communication	3	0	0	3
EC307	Antennas and Propagation	3	0	0	3
EC309	Analog Integrated Circuits	3	0	0	3
	Elective I	3	0	0	3
EC313	Analog Integrated Circuits Laboratory	0	0	3	2
EC315	Digital Signal Processing Laboratory	0	0	3	2
Total		18	1	6	23

**SEMESTER VI**

Code	Course of Study	L	T	P	C
EC302	Digital Communication	3	0	0	3
EC304	Networks and Protocols	3	0	0	3
EC306	Microwave Components and Circuits	3	0	0	3
EC308	VLSI Systems	3	0	0	3
	Elective II	3	0	0	3
	Elective III	3	0	0	3
EC312	Communication Engineering Laboratory	0	0	3	2
EC314	VLSI and Embedded System Design Laboratory	0	0	3	2
EC314	Industrial Lectures	0	0	0	1
EC316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	0	2
Total		18	0	6	25

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
HM401	Industrial Economics	3	0	0	3
EC401	Wireless Communication	3	0	0	3
EC403	Fiber Optic Communication	3	0	0	3
EC405	Microwave Electronics	3	0	0	3
	Elective IV	3	0	0	3
	Elective V*	3	0	0	3
EC407	Fiber Optic Communication Laboratory	0	0	3	2
EC409	Microwave Laboratory	0	0	3	2
EC447	Comprehensive Examination	0	0	0	3
Total		18	0	6	25

SEMESTER VIII

Code	Course of Study	L	T	P	C
MB790	Management Concepts and Practices	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII*	3	0	0	3
	Elective VIII*	3	0	0	3
EC498	Project Work	0	0	12	6
Total		12	0	12	18

* Global Electives Also



LIST OF ELECTIVES
Group 1 (Communication and Signal Processing Stream)

Code	Course of Study	L	T	P	C
EC001	Principles of Radar	3	0	0	3
EC002	Satellite Communication	3	0	0	3
EC003	Cognitive Radio	3	0	0	3
EC004	Multimedia Communication Technology	3	0	0	3
EC005	Communication Switching Systems	3	0	0	3
EC006	Broadband Access Technologies	3	0	0	3
EC007	Digital Speech Processing	3	0	0	3
EC008	Image Processing	3	0	0	3
EC009	Pattern Recognition	3	0	0	3
EC010	Signal Processing for Wireless Communication	3	0	0	3

Group 2 (Microwave Engineering Stream)

Code	Course of Study	L	T	P	C
EC021	Microwave Integrated Circuit Design	3	0	0	3
EC022	RF MEMS Circuit Design	3	0	0	3

Group 3 (VLSI Circuits and Embedded Systems Stream)

Code	Course of Study	L	T	P	C
EC041	Computer Architecture and Organization	3	0	0	3
EC042	Embedded Systems	3	0	0	3
EC043	ARM System Architecture	3	0	0	3
EC044	Operating Systems	3	0	0	3
EC045	Display Systems	3	0	0	3
EC046	Electronic Packaging	3	0	0	3

ADVANCED LEVEL COURSES FOR B. Tech. HONOURS

Code	Course of Study	L	T	P	C
EC090	Adhoc Wireless Networks	3	0	0	3
EC091	Wireless Sensor Networks	3	0	0	3
EC092	Detection and Estimation	3	0	0	3
EC093	Statistical Signal Processing	3	0	0	3
EC094	RF circuits	3	0	0	3
EC095	Numerical Techniques for MIC	3	0	0	3
EC096	Applied Photonics	3	0	0	3
EC097	Advanced Radiation Systems	3	0	0	3
EC098	Bio MEMS	3	0	0	3
EC099	Analog IC Design	3	0	0	3
EC100	VLSI System Testing	3	0	0	3
EC101	Electronic Design Automation Tools	3	0	0	3
EC102	Design of ASICs	3	0	0	3
EC103	Digital System Design	3	0	0	3



EC104	Digital Signal Processing Structures for VLSI	3	0	0	3
EC105	Low Power VLSI circuits	3	0	0	3
EC106	VLSI Digital Signal Processing Systems	3	0	0	3
EC107	Asynchronous System Design	3	0	0	3
EC108	Physical Design Automation	3	0	0	3
EC109	Mixed - Signal Circuit Design	3	0	0	3

COURSES OFFERED TO OTHER DEPARTMENTS

Dept.	Code	Course of Study	L	T	P	C
CSE	EC214	Basics of Communication	3	0	0	3
ICE	EC317	Principles of Communication Systems	3	0	0	3
EEE	EC319	Communication Systems	3	0	0	3
MME	EC215	Applied Electronics	2	0	2	3
MECH	EC217	Applied Electronic Engineering	2	0	2	3
CHEMICAL	EC219	Digital Electronics	3	0	0	3

**B. Tech. (INSTRUMENTATION AND CONTROL ENGINEERING)**

The total minimum credits required for completing the B.Tech. Programme in Instrumentation and control Engineering is 181 (45 + 136)

SEMESTER III

Code	Course of Study	L	T	P	C
MA209	Mathematics - III	3	1	0	4
ME283	Thermodynamics and Fluid Mechanics	4	0	0	4
IC201	Sensors and Transducers	3	0	0	3
IC203	Circuit Theory	3	1	0	4
IC205	Digital Electronics	3	0	0	3
MT211	Material Science	3	0	0	3
IC207	Devices and Circuits Laboratory	0	0	3	2
ME285	Thermodynamics and Fluid Mechanics Laboratory	0	0	3	2
Total		19	2	6	25

SEMESTER IV

Code	Course of Study	L	T	P	C
MA202	Numerical Methods	3	1	0	4
IC202	Signals and Systems	3	0	0	3
IC204	Industrial Instrumentation – I	3	0	0	3
IC206	Analog Electronic Circuits	3	0	0	3
IC208	Microprocessors and Microcontrollers	3	0	0	3
IC210	Electrical and Electronic Measurements	3	0	0	3
IC212	Sensors and Transducers Laboratory	0	0	3	2
IC214	Microprocessors and Microcontrollers Laboratory	0	0	3	2
Total		18	1	6	23

SEMESTER V

Code	Course of Study	L	T	P	C
IC301	Control System – I	3	0	0	3
IC303	Data Structures and Algorithms	3	1	0	4
IC305	Linear Integrated Circuits	3	0	0	3
IC307	Industrial Instrumentation – II	3	0	0	3
EC317	Principles of Communication Systems	3	0	0	3
	Elective I	3	0	0	3
IC309	Linear Circuits Laboratory	0	0	3	2
IC311	Instrumentation Laboratory	0	0	3	2
Total		18	1	6	23

**SEMESTER VI**

Code	Course of Study	L	T	P	C
CS303	Computer Networks	3	0	0	3
IC302	Control System – II	3	0	0	3
IC304	Process Control	3	1	0	4
IC306	Product Design and Development (T)	2	0	3	2
	Elective II	3	0	0	3
	Elective III	3	0	0	3
IC308	Interfacing and Signal Processing Laboratory	0	0	3	2
IC310	Control Engineering Laboratory	0	0	3	2
IC314	Industrial Lectures	0	0	0	1
IC316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	0	2
Total		17	1	9	25

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
IC401	Industrial Psychology	3	0	0	3
IC403	Logic and Distributed Control Systems	3	1	0	4
IC405	Analytical Instrumentation	3	0	0	3
	Elective IV	3	0	0	3
	Elective V*	3	0	0	3
IC407	Product Design and Development (P)	0	0	3	2
IC409	Process Control Laboratory	0	0	3	2
IC411	Comprehensive Examination	0	0	0	2
Total		15	1	6	22

SEMESTER VIII

Code	Course of Study	L	T	P	C
IC408	Industrial Economics and Management	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII*	3	0	0	3
	Elective VIII*	3	0	0	3
IC488	Project Work	0	0	15	6
Total		12	0	15	18

* Global Electives Also

**LIST OF ELECTIVES
GROUP 1 (INSTRUMENTATION STREAM)**

Code	Course of Study	L	T	P	C
IC001	Virtual Instrument Design	3	0	0	3
IC002	Micro System Design	3	0	0	3
IC003	Smart Materials and Systems	3	0	0	3
IC004	Opto - Electronics and Laser Based Instrumentation	3	0	0	3
IC005	MEMS and Nanotechnology	3	0	0	3
IC006	Power plant Instrumentation and Control	3	0	0	3
IC007	Biomedical Instrumentation	3	0	0	3
IC008	SMART and Wireless Instrumentation	3	0	0	3

GROUP 2 (CONTROL STREAM)

Code	Course of Study	L	T	P	C
IC021	Computational Techniques in Control Engineering	3	0	0	3
IC022	System Identification	3	0	0	3
IC023	Fault Detection and Diagnosis	3	0	0	3
IC024	Cooperative Control Systems	3	0	0	3
IC025	Digital Control Systems	3	0	0	3
IC026	Robotics	3	0	0	3
IC027	Neural Networks and Fuzzy Logic Control	3	0	0	3
IC028	Design of Automotive Systems	3	0	0	3

GROUP 3 (COMMON STREAM)

Code	Course of Study	L	T	P	C
IC041	Electron Devices	3	0	0	3
IC042	Electrical Machines	3	0	0	3
IC043	Digital Signal Processing	3	0	0	3
IC044	Power Electronics	3	0	0	3
IC045	Embedded Systems	3	0	0	3
IC046	Engineering Optimization	3	0	0	3
IC047	Sensor Networks	3	0	0	3
IC048	Uncertainty Analysis in Engineering	3	0	0	3
IC049	Probability and Computing	3	0	0	3
IC050	Image Processing	3	0	0	3
IC051	ARM System Architecture	3	0	0	3
IC052	Introduction to Chemical Processes	3	0	0	3
IC053	Disaster Management	3	0	0	3



ADVANCED LEVEL COURSES FOR B. Tech. HONOURS

Code	Course of Study	L	T	P	C
IC090	Instrumentation System Design	3	0	0	3
IC091	Additional Topics in Control Engineering	3	0	0	3
IC092	Advanced Process Control	3	0	0	3
IC093	Nonlinear Control Systems	3	0	0	3
IC094	Physiological Control Systems	3	0	0	3

COURSES OFFERED TO OTHER DEPARTMENTS

Dept.	Code	Course of Study	L	T	P	C
ECE	IC218	Control Systems	3	0	0	3
MME	IC216	Instrumentation and Control	3	0	0	3
MME	IC220	Instrumentation and Control Laboratory	3	0	0	3

**B. Tech. (MECHANICAL ENGINEERING)**

The total minimum credits required for completing the B.Tech. Programme in Mechanical Engineering is 183 (45 + 138)

SEMESTER III

Code	Course of Study	L	T	P	C
MA211	Special Functions and Statistics	3	0	0	3
EE223	Applied Electrical Engineering	2	0	2	3
EC217	Applied Electronics Engineering	2	0	2	3
PR221	Production Technology - I	3	0	0	3
ME203	Engineering Thermodynamics	3	1	0	4
ME205	Strength of Materials	3	0	0	3
ME211	Machine Drawing	0	0	6	2
ME213	Strength of Materials Laboratory	0	0	2	1
Total		16	1	12	22

SEMESTER IV

Code	Course of Study	L	T	P	C
MA208	Fourier Series and Partial Differential Equations	3	0	0	3
MT252	Engineering Metallurgy	3	0	0	3
PR222	Production Technology - II	3	0	0	3
ME202	Thermal Engineering	3	0	0	3
ME204	Mechanics of Machines - I	3	1	0	4
ME206	Fluid Mechanics	3	1	0	4
MT262	Metallurgy Laboratory	0	0	2	1
PR232	Production Process Laboratory	0	0	3	2
ME208	Thermal Engineering Laboratory - I	0	0	3	2
ME210	Fluid Mechanics Laboratory	0	0	2	1
Total		18	2	10	26

SEMESTER V

Code	Course of Study	L	T	P	C
MA301	Numerical Methods	3	0	0	3
ME303	Heat and Mass Transfer	3	0	0	3
ME305	Mechanics of Machines - II	3	1	0	4
ME307	Analysis and Design of Machine Components	3	0	0	3
ME309	Mechatronics	3	0	0	3
ME3E1	Elective I	3	0	0	3
ME311	Mechatronics Laboratory	0	0	2	1
ME313	Dynamics Laboratory	0	0	3	2
ME315	Production Drawing and Cost Estimation	1	0	2	2
Total		19	1	7	24

**SEMESTER VI**

Code	Course of Study	L	T	P	C
ME302	Turbomachines	3	0	0	3
ME304	Automobile Engineering	3	0	0	3
ME306	Design of Mechanical Drives	3	0	0	3
ME308	Computer Aided Design and Drafting	3	0	0	3
ME3E2	Elective II	3	0	0	3
ME3E3	Elective III	3	0	0	3
ME310	Automobile Engineering Laboratory	0	0	3	2
ME312	Thermal Engineering Laboratory II	0	0	3	2
ME314	Industrial Lectures	0	0	0	1
ME316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	0	2
ME318	Computer Aided Design and Drafting Practice	0	0	2	1
	Total	18	0	8	26

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
HM401	Industrial Economics	3	0	0	3
ME403	Power Plant Engineering	3	0	0	3
ME405	Metrology and Quality Control	3	0	0	3
ME407	Finite Element Method	3	0	0	3
ME4E4	Elective IV	3	0	0	3
ME4E5	Elective V	3	0	0	3
ME409	Metrology Laboratory	0	0	2	1
ME411	Comprehensive Examination	0	3	0	3
ME413	Project Work Phase – I	0	1	0	0
	Total	18	4	2	22

SEMESTER VIII

Code	Course of Study	L	T	P	C
HM402	Management Principles and Concepts	3	0	0	3
ME4E6	Elective VI	3	0	0	3
ME4E7	Elective VII	3	0	0	3
ME4E8	Elective VIII	3	0	0	3
ME410	Project Work Phase – II	0	0	15	6
	Total	12	0	15	18

**ELECTIVES I
(V SEMESTER)**

Code	Course of Study	L	T	P	C
ME331	Compressible Flow and Jet Propulsion	3	0	0	3
ME333	Advanced Machining Processes	3	0	0	3

**ELECTIVE II and III
(VI SEMESTER)**

Code	Course of Study	L	T	P	C
ME354	Advanced I.C. Engines	3	0	0	3
ME356	Refrigeration and Air Conditioning	3	0	0	3
ME358	Design of Gears and Cams	3	0	0	3

**ELECTIVE IV and V
(VII SEMESTER)**

Code	Course of Study	L	T	P	C
ME451	Industrial Safety	3	0	0	3
ME453	Optimization in Engineering Design	3	0	0	3
ME455	Oil Hydraulics and Pneumatics	3	0	0	3
HM401	Corporate Communication	3	0	0	3
	Any one Elective from other Departments	3	0	0	3

**ELECTIVE VI, VII and VIII
(VIII SEMESTER)**

Code	Course of Study	L	T	P	C
ME452	Industrial Robotics	3	0	0	3
ME454	Combustion Engineering	3	0	0	3
ME456	Dynamics of Machinery	3	0	0	3
ME458	Renewable Energy	3	0	0	3
ME460	MEMS Devices – Design and Fabrication	3	0	0	3
ME462	Welding Engineering	3	0	0	3
ME464	Computational Fluid Dynamics	3	0	0	3
PR472	Resource Management Techniques	3	0	0	3
	Any one elective from other Department	3	0	0	3

ADVANCED LEVEL COURSES FOR B. Tech. HONOURS**Group 1 Advanced Thermal Engineering**

Code	Course of Study	L	T	P	C
ME001	Advanced Thermodynamics	3	0	0	3
ME002	Advanced Thermodynamics and kinetics	3	0	0	3
ME003	Advanced Heat Transfer	3	0	0	3
ME004	Advanced Fluid Mechanics	3	0	0	3
ME005	Design and Analysis of Turbo Machines	3	0	0	3
ME006	Advanced IC Engines	3	0	0	3

**Group 2 Advanced Engineering Design**

Code	Course of Study	L	T	P	C
ME021	Computer Applications in Design	3	0	0	3
ME022	Advanced Mechanics of Materials	3	0	0	3
ME023	Vibration Analysis and Control	3	0	0	3
ME024	Mechanisms Design and Simulation	3	0	0	3
ME025	Advanced Tool Design	3	0	0	3
ME026	Composite Materials and Structures	3	0	0	3

Group 3 Advanced Productions and Manufacturing

Code	Course of Study	L	T	P	C
ME041	Advanced Metrology and Computer Aided Inspection	3	0	0	3
ME042	Advances in Manufacturing Technology	3	0	0	3
ME043	Advances in Welding and Casting Technology	3	0	0	3
ME044	Advanced Metal Forming Techniques	3	0	0	3
ME045	Lean Manufacturing and Six Sigma	3	0	0	3
ME046	Advanced Materials Technology	3	0	0	3
ME047	Rapid Manufacturing Processes	3	0	0	3

Group 4 Advanced Numerical and Simulation

Code	Course of Study	L	T	P	C
ME061	Advanced Numerical Methods	3	0	0	3
ME062	Applied Mathematics for Thermal Engineers	3	0	0	3
ME063	Computational Fluid Dynamics	3	0	0	3
ME064	Advanced Finite Element Analysis	3	0	0	3
ME065	Advanced Optimization Techniques	3	0	0	3
ME066	Simulation of IC Engines	3	0	0	3
ME067	Fuzzy Logic and Neural Networks	3	0	0	3

**B. Tech. (METALLURGICAL AND MATERIALS ENGINEERING)**

The total minimum credits required for completing the B.Tech. Programme in Metallurgical and Materials Engineering is 185 (45+ 140).

SEMESTER III

Code	Course of Study	L	T	P	C
MA205	Transforms and Partial Differential Equations	3	0	0	3
EC219	Applied Electronics	2	0	2	3
MT291	Strength of Materials	3	0	0	3
MT293	Electrical, Electronic and Magnetic Materials	3	0	0	3
MT207	Metallurgical Thermodynamics	3	1	0	4
MT209	Mineral Processing and Metallurgical Analysis	3	0	0	3
MT213	Physical Metallurgy	3	1	0	4
Total		20	2	2	23

SEMESTER IV

Code	Course of Study	L	T	P	C
MA202	Numerical Techniques	3	0	0	3
EE220	Electrical Technology	2	0	2	3
IC218	Instrumentation and Control	3	0	0	3
MT208	Transport Phenomena	2	1	0	3
MT210	Phase Transformation and Heat treatment	3	1	0	4
ME292	Mechanical Technology	3	0	0	3
IC220	Instrumentation and Control Laboratory	0	0	3	2
MT216	Ferrous Metallography Laboratory	0	0	3	2
MT222	Process Metallurgy Laboratory	0	0	2	1
Total		16	2	10	24

SEMESTER V

Code	Course of Study	L	T	P	C
MT301	Metal Casting Technology	3	0	0	3
MT303	Iron and Steel Making	3	1	0	4
MT305	Polymers and Composites	3	0	0	3
MT307	Materials Joining Technology	3	0	0	3
MT309	Mechanical Behavior of Materials	3	0	0	3
	Elective I (MME elective)	3	0	0	3
MT331	Foundry and Welding Laboratory	0	0	3	2
MT315	Mechanical Testing Laboratory	0	0	3	2
Total		18	1	6	23

**SEMESTER VI**

Code	Course of Study	L	T	P	C
MT304	Non ferrous Extraction	3	0	0	3
MT306	Particulate Processing	3	0	3	4
MT308	Non - Ferrous Physical Metallurgy	3	0	0	3
MT310	Metal Forming Technology	3	1	0	4
	Elective 2 (MME Elective)	3	0	0	3
	Elective 3 (MME Elective)	3	0	0	3
MT312	Heat Treatment Laboratory	0	0	3	2
MT318	Non - Ferrous Metallography Laboratory	0	0	3	2
MT314	Industrial Lectures	1	0	0	1
MT316	Internship / Industrial Training / Academic Attachment [#] (2 to 3 months duration during summer Vacation)	0	0	3	2
Total		19	1	12	27

[#] To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
MT401	Ceramic Materials	3	0	0	3
MT403	Corrosion Engineering	3	0	0	3
MT405	Materials Characterization	3	0	0	3
MB491	Management Practices and Concepts	3	0	0	3
	Elective IV	3	0	0	3
	Elective V [*]	3	0	0	3
MT409	Corrosion Engineering Laboratory	0	0	3	2
MT411	NDT and Ceramics Laboratory	0	0	3	2
MT447	Comprehensive Examination	0	3	0	3
Total		18	3	6	25

SEMESTER VIII

Code	Course of Study	L	T	P	C
HM402	Industrial Economics	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII [*]	3	0	0	3
	Elective VIII [*]	3	0	0	3
MT498	Project Work	0	0	15	6
Total		12	0	15	18

^{*} Global Electives Also



LIST ELECTIVES Metallurgy stream

Code	Course of Study	L	T	P	C
MT001	Fatigue, Creep and Fracture Mechanics	3	0	0	3
MT002	Special Steels and Cast Irons	3	0	0	3
MT003	Special Casting Techniques	3	0	0	3
MT004	Special Topics in Metal Forming	3	0	0	3
MT005	Ladle Metallurgy and Continuous Casting of Steels	2	1	0	3
MT006	Welding Metallurgy	3	0	0	3
MT007	Processing of Aluminium Alloys	3	0	0	3
MT008	Design of Castings and Weldments	3	0	0	3
MT009	Thermodynamics of Solidification	3	0	0	3
MT010	Alloy Development	3	0	0	3
MT011	Production and Applications of Ferro Alloys	3	0	0	3
MT012	Rapid Prototyping of Materials	3	0	0	3

Materials stream (All electives open to Mechanical, Production and Chemical engineering students)

Code	Course of Study	L	T	P	C
MT021	Ceramic Processing	3	0	0	3
MT022	High Temperature Materials	3	0	0	3
MT023	Emerging Materials	3	0	0	3
MT024	Automotive Materials	3	0	0	3
MT025	Processing of Composite Materials	3	0	0	3
MT026	Nano Materials and Applications	3	0	0	3
MT027	Nuclear Materials	3	0	0	3
MT028	Processing of Electronic Materials	3	0	0	3
MT029	Processing of Amorphous Materials	3	0	0	3
MT030	Mechanical Behaviour of Composite Materials	3	0	0	3
MT031	Biomaterials	3	0	0	3
MT032	Advanced Characterization Techniques	3	0	0	3
MT033	Materials for Extreme Environments	3	0	0	3

GLOBAL ELECTIVES

Code	Course of Study	L	T	P	C
CA002	C++ and UNIX (for MME)	3	0	0	3
MT041	Non Destructive Testing and Failure Analysis	3	0	0	3
MT042	Process Modeling and Applications	1	1	2	3
MT043	Computational Techniques	3	0	0	3
MT044	Design and Selection of Materials	3	0	0	3
MT045	New Product Development	3	0	0	3
MT046	Introduction to Quality Management	2	1	0	3
MT047	Surface Engineering	3	0	0	3

**ADVANCED LEVEL COURSES FOR B. Tech. HONOURS**

Code	Course of Study	L	T	P	C
MT091	Advanced Thermodynamics of Materials	3	0	0	3
MT092	Advanced Solidification Processing	3	0	0	3
MT093	Crystallography	3	0	0	3
MT094	Aerospace Materials	3	0	0	3
MT095	Recent Developments in Welding Processes	3	0	0	3
MT096	Recent Developments in Forming Processes	3	0	0	3
MT097	Recent Trends in Nano materials	3	0	0	3
MT098	Economics of Metal Production Processes	3	0	0	3

Subjects offered to other Departments

Code	Course of Study	L	T	P	C
MT081	Introduction to Materials	3	0	0	3
MT082	Metallurgy for Non - Metallurgists	3	0	0	3
MT083	Physical Metallurgy and Heat Treatment	3	0	0	3
MT084	Deformation Processing	3	0	0	3
MT085	Manufacturing Methods	3	0	0	3
MT086	Testing and Evaluation of Materials	3	0	0	3
MT087	Physics of Materials	3	0	0	3
MT088	Non - Metallic Materials	3	0	0	3

Subjects offered by faculty of MME to other Departments

Code	Course of Study	L	T	P	C
MT211	Materials Science (to students of B.Tech. / ICE)	3	0	0	3
MT252	Engineering Metallurgy (to students of B.Tech. / Mech.)	3	0	0	3
MT262	Metallurgy Laboratory (to students of B.Tech. / Mech.)	0	0	2	1

**B. Tech. (PRODUCTION ENGINEERING)**

The total minimum credits required for completing the B.Tech. Programme in Production Engineering is 185 (45 + 140).

SEMESTER III

Code	Course of Study	L	T	P	C
MA207	Mathematics for Production Engineers	2	1	0	3
PR201	Casting Technology	3	0	0	3
PR203	Machining Technology	3	0	0	3
PR205	Metallurgy and Materials Engineering	3	0	0	3
CE282	Fluid Mechanics and Machinery	3	0	0	3
ME325	Thermal Engineering	3	0	0	3
PR207	Mechanics of Materials (Theory and Laboratory)	2	1	0	3
PR211	Manufacturing Processes Laboratory - I	0	0	3	2
ME331	Fluid Machinery and Thermal Engineering Laboratory	0	0	3	2
Total		19	2	6	25

SEMESTER IV

Code	Course of Study	L	T	P	C
MA208	Probability and Statistics	2	1	0	3
PR204	Kinematics and Dynamics of Machines	2	2	0	4
PR206	Welding Technology	3	0	0	3
PR208	Forming Technology	3	0	0	3
PR210	Metrology (Theory and Laboratory)	2	0	2	3
EE244	Electrical and Control Systems (Theory and Laboratory)	2	0	2	3
PR212	Manufacturing Processes Laboratory - II	0	0	3	2
PR214	Weldability and Formability Testing Laboratory	0	0	3	2
Total		14	3	10	23

SEMESTER V

Code	Course of Study	L	T	P	C
PR301	Design of Machine Elements	2	2	0	4
PR305	Tooling for Manufacturing	2	2	0	4
PR307	Quality, Reliability and Safety Engineering	3	0	0	3
PR309	Unconventional Machining Processes	3	0	0	3
PR311	Professional Ethics and Psychology	3	0	0	3
PR313	Computer integrated manufacturing (Theory and Laboratory)	2	0	2	3
	Elective I	3	0	0	3
PR315	Machine Drawing Practice	2	0	2	3
Total		20	4	4	26

**SEMESTER VI**

Code	Course of Study	L	T	P	C
PR302	Operations Research	2	2	0	4
PR304	Work Design and Facilities Planning	3	0	0	3
PR306	Precision Engineering (Theory and Laboratory)	2	0	2	3
PR308	Computer Aided Design and Engineering (Theory and Laboratory)	2	0	2	3
PR310	Mechatronics and Industrial Automation (Theory and Laboratory)	2	0	2	3
	Elective II	3	0	0	3
	Elective III	3	0	0	3
PR312	Production Drawing and Cost Estimation	1	0	2	2
PR314	Industrial Lectures	1	0	0	1
Total		19	2	8	25

To be evaluated at the beginning of the VII semester by assessing the report and conducting seminar presentations

SEMESTER VII

Code	Course of Study	L	T	P	C
PR401	Supply Chain Management	3	0	0	3
PR403	Analysis of Production Systems and IE Laboratory	2	0	2	3
PR405	Manufacturing System Simulation (Theory and Laboratory)	3	0	2	4
PR407	Sustainable Manufacturing (Theory and Laboratory)	2	0	2	3
	Elective IV	3	0	0	3
	Elective V*	3	0	0	3
PR411	Colloquium	0	0	2	1
PR447	Comprehensive Examination	0	3	0	3
Total		13	3	8	23

SEMESTER VIII

Code	Course of Study	L	T	P	C
PR402	Entrepreneurship Development	3	0	0	3
	Elective VI	3	0	0	3
	Elective VII*	3	0	0	3
	Elective VIII*	3	0	0	3
PR498	Project Work	0	0	12	6
Total		12	0	12	18

* Global Electives Also



LIST OF ELECTIVES
Group 1 (Manufacturing Engineering Stream)

Code	Course of Study	L	T	P	C
PR001	Material Handling and Storage	3	0	0	3
PR002	Manufacturing of Composite Materials	3	0	0	3
PR003	Machine Tool Technology	3	0	0	3
PR004	Industrial Robotics	3	0	0	3
PR005	Plant Engineering	3	0	0	3
PR006	Non Destructive Testing	3	0	0	3
PR007	Micro Fabrication Processes	3	0	0	3
PR008	Surface Engineering	3	0	0	3
PR009	Processing of Polymeric Composites	3	0	0	3

Group 2 (Design Stream)

Code	Course of Study	L	T	P	C
PR021	Rapid Prototyping, Tooling and Manufacturing	3	0	0	3
PR022	Finite Element Methods	3	0	0	3
PR023	Product Development Strategies	3	0	0	3
PR024	Design for Manufacture and Assembly	3	0	0	3
PR025	Vibration and Noise Engineering	3	0	0	3
PR026	Concepts of Engineering Design	3	0	0	3
PR027	Engineering Optimization	3	0	0	3
PR028	Computational Fluid Dynamics	3	0	0	3
PR029	Experimental Stress Analysis	3	0	0	3
PR030	Design of Automated Manufacturing System	3	0	0	3

Group 3 (Industrial Engineering Stream)

Code	Course of Study	L	T	P	C
PR041	Design and Analysis of Experiments	3	0	0	3
PR042	Agile Manufacturing	3	0	0	3
PR043	Integrated Materials Management	3	0	0	3
PR044	Lean Manufacturing	3	0	0	3
PR045	Total Quality Management	3	0	0	3
PR046	Engineering Optimization	3	0	0	3

LIST OF GLOBAL ELECTIVES

Code	Course of Study	L	T	P	C
PR081	Operations Management	3	0	0	3
PR082	Project Management	3	0	0	3
PR083	Value Engineering	3	0	0	3
PR084	Artificial Intelligence and Expert Systems	3	0	0	3
ME080	Automobile Engineering	3	0	0	3
HM080	Corporate Communication	3	0	0	3
MB080	Financial Management	3	0	0	3

**ADVANCED LEVEL COURSES FOR B. Tech. HONOURS**

Code	Course of Study	L	T	P	C
PR091	Tolerance Technology	3	0	0	3
PR092	Robotics	3	0	0	3
PR093	Intelligent Manufacturing Systems	3	0	0	3
PR094	Total Quality Engineering	3	0	0	3
PR095	Product Analysis and Cost Optimization	3	0	0	3
PR096	Decision Support Systems	3	0	0	3
PR097	Knowledge Management	3	0	0	3
PR098	Product Life Cycle Management	3	0	0	3
PR099	Technology Management	3	0	0	3
PR100	Multi - Criteria Decision Making Techniques	3	0	0	3

COURSES OFFERED TO OTHER DEPARTMENTS

Dept.	Code	Course of Study	L	T	P	C
MECH	PR511	Production Technology - I	3	0	0	3
MECH	PR512	Production Technology - II	3	0	0	3
MECH	PR513	Productions Process Laboratory	0	0	2	1
MECH	PR514	Resource Management Techniques	3	0	0	3

**BACHELOR OF ARCHITECTURE****SEMESTER I**

Code	Course of Study	L	T	P	C
AR101	Architectural Graphics – I	1	0	4	3
AR103	World Architecture	3	0	0	3
AR105	Principles of Architecture – I	3	0	0	3
AR107	Communicative English	2	0	2	3
AR109	Basic and Architectural Design - I*	0	0	8	4
AR111	Visual Arts - I	0	0	6	3
AR113	Environmental Science	3	0	0	3
	NCC, NSS, NSO	0	0	0	0
	Total	12	0	20	22

* Minimum of E grade is required in this subject for moving to the next higher semester

SEMESTER II

Code	Course of Study	L	T	P	C
AR102	Building Construction and Materials - I	1	0	4	3
AR104	Mechanics of Solids	3	0	0	3
AR106	Hindu and Buddhist Architecture	3	0	0	3
AR108	Principles of Architecture – II	3	0	0	3
AR110	Architectural Graphics - II	1	0	4	3
AR112	Basic and Architectural Design – II*	0	0	8	4
AR114	Visual Arts – II	0	0	6	3
	NCC, NSS, NSO	0	0	0	0
	Total	11	0	22	22

* Minimum of E grade is required in this subject for moving to the next higher semester

SEMESTER III

Code	Course of Study	L	T	P	C
AR201	Building Construction and Materials - II	1	0	4	3
AR203	Structural Analysis	3	0	0	3
AR205	European Architecture	3	0	0	3
AR207	Architectural Graphics – III	1	0	2	2
AR209	Site Planning	3	0	0	3
AR211	Architectural Design – III*	0	0	10	5
AR213	Applied Visual Arts	0	0	5	3
	Total	11	0	21	22

* Minimum of E grade is required in this subject for moving to the next higher semester

**SEMESTER IV**

Code	Course of Study	L	T	P	C
AR202	Building Construction and Materials - III	1	0	4	3
AR204	Concrete Technology	3	0	0	3
AR206	Indo - Islamic Architecture	3	0	0	3
AR208	Model Making	0	0	3	2
AR210	Computer Applications in Architecture – I	1	0	4	3
AR212	Climatically Responsive Architecture	2	1	0	3
AR214	Architectural Design – IV*	0	0	10	5
	Total	10	1	21	22

* Minimum of E grade is required in this subject for moving to the next higher semester

SEMESTER V

Code	Course of Study	L	T	P	C
AR301	Building Construction and Materials - IV	1	0	4	3
AR303	Design of RCC Structures	2	1	0	3
AR305	Contemporary Architecture - I	3	0	0	3
AR307	Water Supply and Drainage	3	0	0	3
AR309	Computer Applications in Architecture - II	1	0	4	3
AR311	Architectural Design – V*	0	0	10	5
	Elective - I	0	0	4	2
	Total	10	1	22	22

* Minimum of E grade is required in this subject for moving to the next higher semester

SEMESTER VI

Code	Course of Study	L	T	P	C
AR302	Building Construction and Materials - V	1	0	4	3
AR304	Advanced Structures	3	0	0	3
AR306	Contemporary Architecture - II	3	0	0	3
AR308	Artificial Lighting and Electrical Services	3	0	0	3
AR310	Landscape Architecture	3	0	0	3
AR312	Architectural Design – VI *	0	0	10	5
	Elective – II	0	0	4	2
	Total	13	0	18	22

* Minimum of E grade is required in this subject for moving to the next higher semester

**SEMESTER VII**

Code	Course of Study	L	T	P	C
AR401	Professional Training (One Semester)	0	0	0	12
	Total	0	0	0	12

SEMESTER VIII

Code	Course of Study	L	T	P	C
AR402	Building Construction and Materials - VI	2	0	2	3
AR404	Building Structural Systems	2	0	0	2
AR406	Architectural Acoustics	3	0	0	3
AR408	Estimation and Specification	1	0	2	2
AR410	Human Settlement Science - I	3	0	0	3
AR412	Air Conditioning and Mechanical Services	3	0	0	3
AR414	Architectural Design – VII*	0	0	12	6
	Elective – III	0	0	4	2
	Total	14	0	20	24

* Minimum of E grade is required in this subject for moving to the next higher semester

SEMESTER IX

Code	Course of Study	L	T	P	C
AR501	Professional Practice – I	3	0	0	3
AR503	Human Settlement Science – II	3	0	0	3
AR505	Architectural Design – VIII*	0	0	14	7
AR507	Environment and Behavior	3	0	0	3
AR509	Urban Design	3	0	0	3
	Elective – IV	2	0	2	3
	Elective – V	2	0	0	2
	Total	16	0	16	24

* Minimum of E grade is required in this subject for moving to the next higher semester

SEMESTER X

Code	Course of Study	L	T	P	C
AR502	Professional Practice – II	3	0	0	3
AR504	Construction Management	3	0	0	3
AR506	Dissertation	0	0	32	16
	Total	6	0	32	22

**LIST OF ELECTIVES**

Sl. No.	Sem	Elective	Code	Electives	L	T	P	C
1.	V	I	AR351	Vernacular Architecture	0	0	4	2
2.			AR353	Painting	0	0	4	2
3.	VI	II	AR352	Advanced Computer Applications	0	0	4	2
4.			AR354	Graphic Design	0	0	4	2
5.			-	Any one elective course from other departments	3	0	0	3
6.	VIII	III	AR452	Interior Design	0	0	4	2
7.			AR454	Environmental Control and Design Workshop	3	0	0	3
8.			-	Any one elective course from other departments	3	0	0	3
9.	IX	IV	AR551	Energy Efficient Buildings	2	0	2	3
10.			AR553	Housing	3	0	0	3
11.	X	V	AR557	Architecture Criticism	2	0	0	2
12.			AR559	Landscape Design	0	0	4	2



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