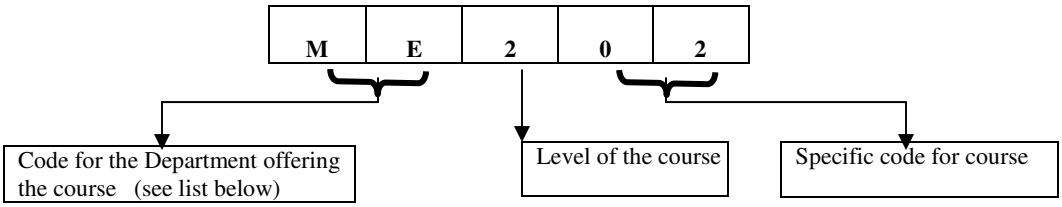
COURSE STRUCTURE - UG

CONTENTS

Course Numbering Scheme

Course Numbers are denoted by character strings



Typically, courses whose three numerals are between 100 and 499 are taken by under graduate students and 600 to 999 by post graduate & research students. Brief descriptions of courses for under graduate students are given in this booklet.

List of Codes for Departments

Department Code	Name of the Department
AM	Applied Mechanics and Hydraulics
CV	Civil Engineering
MN	Mining Engineering
CO	Computer Engineering
EC	Electronics & Communication Engineering
EE	Electrical & Electronics Engineering
IT	Information Technology
CH	Chemical Engineering
ME	Mechanical Engineering
MT	Metallurgical & Materials Engineering
CY	Chemistry
MA	Mathematical & Computational Sciences
PH	Physics
HU	Humanities, Social Sciences and Management

Contact Hours and Credits

Every Course comprises of specific Lecture-Tutorial-Practical (L-T-P) Schedule. The Course Credits are fixed based on the following norms:

Lectures/Tutorials - One hour per week is assigned one credit.
Practicals - 3-hour session per week is assigned 2 credits OR 2-hour session per week is assigned 1 credit.

For example, a theory course with a L-T-P schedule of 3-1-0 will be assigned 4 credits; a laboratory practical course with a L-T-P schedule of 0-0-3 will be assigned 2 credits.

In this booklet, the number of credits and contact hours per week are given after the course number and course title.

Example: **ME202 FLUID MECHANICS AND MACHINERY (3-1-0) 4**

It is a 4 credit course consisting of : 3hr Lectures, 1hr Tutorial and 0hr Practical, per week.

List of Open Elective Courses Common to All or Many Programmes

CY201	Principles of Organic Synthesis	(3-0-0) 3
CY202	Unit Processes in Organic Synthesis	(3-0-0) 3
CY251	Polymer Science and Technology	(3-0-0) 3
CY252	Industrial Chemistry	(3-0-0) 3
CY300	Instrumental Methods of Analysis	(3-0-0) 3
HU400	Managerial Economics	(3-0-0) 3
HU401	Marketing Management	(3-0-0) 3
HU402	Management Information System	(3-0-0) 3
HU403	Human Resource management	(3-0-0) 3
HU450	Financial Management	(3-0-0) 3
HU451	Entrepreneurs Development and Management	(3-0-0) 3
HU452	Intellectual property Rights	(3-0-0) 3
HU453	Yoga Sutras of Patanjali	(3-0-0) 3
HU454	Introduction to Indian Classical Music	(3-0-0) 3
MA201	Concrete Mathematics	(3-0-0) 3
MA202	Discrete mathematical Structures	(3-0-0) 3
MA203	Graph Theory	(3-0-0) 3
MA204	Linear Algebra and Matrices	(3-0-0) 3
MA205	Modern Computer Algebra	(3-0-0) 3
MA206	Number Theory and Cryptography	(3-0-0) 3
MA207	Numerical Methods	(3-0-0) 3
MA208	Probability Theory and Applications	(3-0-0) 3
MA209	Theory of Complex Variables	(3-0-0) 3
MA301	Advanced Graph Theory	(3-0-0) 3
MA302	Data Analysis, Time Series Analysis & Non Parametric Methods	(3-0-0) 3
MA303	Integral Transforms and Applications	(3-0-0) 3
MA304	Linear Programming and Applications	(3-0-0) 3
MA305	Network Optimization	(3-0-0) 3
MA306	Operations Research	(3-0-0) 3
MA307	Optimization Techniques and Statistical Methods	(3-0-0) 3
MA308	Statistical Analysis and Applications	(3-0-0) 3
MA401	Computational Fluid Dynamics	(3-0-0) 3
MA402	Finite Element Methods	(3-0-0) 3
MA403	Mathematical Modelling	(3-0-0) 3
MA404	Nonlinear Optimization	(3-0-0) 3
MA405	Reliability Theory and Applications	(3-0-0) 3
MA406	Statistical Design and Analysis of Experiments	(3-0-0) 3
MA407	Statistical Quality Control	(3-0-0) 3
MA408	Stochastic Analysis and Applications	(3-0-0) 3
PH201	Quantum Mechanics for Engineers	(3-0-0) 3
PH202	Basic Nuclear Physics	(3-0-0) 3
PH203	Classical Mechanics	(3-0-0) 3
PH251	Electrical Properties of Materials	(3-0-0) 3
PH252	Electromagnetic Theory	(3-0-0) 3
PH301	Semiconductor Physics	(3-0-0) 3
PH302	X- Rays and Crystallography	(3-0-0) 3
PH351	Physics of Semiconductor Devices	(3-0-0) 3
PH352	Vacuum Technology and Thin Films	(3-0-0) 3
PH401	Opto Electronics	(3-0-0) 3
PH402	Experimental Techniques for Characterisation of Materials	(3-0-0) 3

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Department of Civil Engineering (CV)

Bachelor of Technology in Civil Engineering

Basic Science Core (BSC)

MA101	Engineering Mathematics – I	(3-1-0) 4
PH102	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engineering Mathematics – II	(3-1-0) 4
CY101	Chemistry	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2

Engineering Science Core (ESC)

EC100	Elements of Electronics Engg.	(3-1-0) 4
AM100	Engineering Mechanics	(3-1-0) 4
ME116	Workshop	(0-0-2) 1
ME151	Engineering Graphics	(1-3-0) 4
EE105	Elements of Electrical Engg.	(3-1-0) 4
ME100	Elements of Mechanical Engineering	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
CV240	Introduction to Civil Engineering	(1-0-0) 1

Humanities and Social Science Core (HSC)

HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3

Programme Core (PC)

AM200	Mechanics of Materials	(3-1-0) 4
AM216	Strength of Materials Lab	(0-0-3) 2
AM250	Mechanics of Fluids	(3-1-0) 4
AM300	W.C.S and Hydraulic Machines	(3-0-0) 3
AM316	Hydraulics Lab	(0-0-3) 2
AM350	Water Resources Engineering	(3-1-0) 4
CV200	Civil Engineering Materials	(3-0-0) 3
CV201	Elements of Surveying	(3-1-0) 4
CV202	Engineering Geology	(3-1-0) 4
CV216	Civil Engg. Materials Lab - I	(0-0-3) 2
CV217	Surveying Practice	(0-0-3) 2
CV250	Structural Analysis-I	(3-1-0) 4
CV251	Architecture, Construction and Town Planning	(3-0-0) 3
CV252	Structural Design-I	(3-1-0) 4
CV253	Soil Mechanics	(3-1-0) 4
CV266	Geology Lab	(0-0-3) 2
CV267	Soil Mechanics Lab	(0-0-3) 2
CV300	Structural Analysis-II	(3-1-0) 4
CV301	Highway and Traffic Engineering	(3-0-0) 3
CV316	Building Design And Drawing	(1-0-3) 3
CV350	Environmental Engineering	(3-1-0) 4
CV351	Structural Design-II	(2-1-0) 3
CV366	Environmental Engg. Lab	(0-0-3) 2
CV367	Civil Engineering Materials Lab–II	(0-0-3) 2
CV390	Professional Practice	1
CV400	Estimation Costing and Specifications	(3-1-0) 4
CV401	Bridge Engineering	(3-0-0) 3
CV417	Structural Design and Drawing	(1-0-3) 3
CV440	Practical Training / Educational Tour	2
CV490	Seminar	(0-0-2) 1

Programme Specific Electives (PSE)

CV321	Applied Soil Engineering	(3-0-0) 3
CV322	Concrete Technology	(3-0-0) 3
CV371	Railways, Tunnels, Harbours and Airports	(3-0-0) 3
CV372	Design of PSC Structures	(3-0-0) 3
CV385	Geoinformatics	(3-0-0) 3
CV386	Rock Mechanics	(3-0-0) 3
CV387	Applied Geology	(3-0-0) 3
CV388	Advanced Surveying	(3-0-2) 4
CV389	Advanced Structural Analysis	(3-0-0) 3
CV421	Transportation Project Planning and Evaluation	(3-0-0) 3
CV422	Advanced Design of Structures-I	(3-0-0) 3
CV423	Design of Foundations, Earth and Earth Retaining Structures	(3-0-0) 3
CV424	Advanced Environmental Engineering	(3-0-0) 3
CV425	Computer Aided Design and Applications in Civil Engineering	(2-0-3) 4
CV438	Structural Dynamics and Wind Engg.	(3-0-0) 3
CV471	Advanced Design of Structures – II	(3-1-0) 4
CV472	Ground Improvement Techniques	(3-0-0) 3
CV473	FEM Applications in Civil Engg	(3-0-0) 3
CV474	Elements of Earthquake Engg	(3-0-0) 3
CV485	Air Pollution and Noise Pollution	(3-0-0) 3
CV486	Environmental Impact Assessment	(3-0-0) 3
CV487	Construction and Project Management	(3-0-0) 3
AM290	Fundamental of Geographic Information System	(3-0-0) 3
AM291	Introduction to Digital Image Processing	(3-0-0) 3
AM371	Open Channel Flow and Sediment transport	(3-0-0) 3
AM372	Civil Engineering Systems	(3-0-0) 3
AM380	Mini Project – I	(0-0-3) 2
AM381	Mini Project – 1	(0-0-3) 2
AM421	Design and Drawing of Hydraulic Structures	(2-0-3) 4
AM422	Coastal Engg	(3-0-0) 3
AM423	Offshore Engg	(3-0-0) 3
AM424	Coastal Erosion and its Mitigation	(3-0-0) 3
AM435	Performance Appraisal of Large Projects	(3-0-0) 3
AM436	Disaster Management	(3-0-0) 3
AM437	Decision Making Under Risk and Uncertainty	(3-0-0) 3
AM438	Rural Infrastructure Development	(3-0-0) 3
AM439	Inverse Modelling in Distributed Parameter Systems	(3-0-0) 3
AM445	Finite Element Method	(3-0-0) 3
AM455	Engineering Optimization	(3-0-0) 3
AM473	Water Resources Excess Management	(3-0-0) 3
AM474	Computational Methods in Hydrology	(3-0-0) 3
AM475	Ground Water Engg	(3-0-0) 3
AM498	Remote Sensing and GIS	(3-0-0) 3

Open Electives (OE)

AM290	Fundamental of Geographic Information System	(3-0-0) 3
AM291	Introduction to Digital Image Processing	(3-0-0) 3
AM372	Civil Engineering Systems	(3-0-0) 3
AM435	Performance Appraisal of Large Projects	(3-0-0) 3
AM436	Disaster Management	(3-0-0) 3
AM437	Decision Making Under Risk and Uncertainty	(3-0-0) 3
AM438	Rural Infrastructure Development	(3-0-0) 3
AM439	Inverse Modelling in Distributed Parameter Systems	(3-0-0) 3
AM445	Finite Element Method	(3-0-0) 3
AM455	Engineering Optimization	(3-0-0) 3
AM498	Remote Sensing and GIS	(3-0-0) 3
CV268	Advanced Mining Geology	(3-0-0) 3
CV385	Geo-informatics	(3-0-0) 3
CV386	Rock Mechanics	(3-0-0) 3
CV387	Applied Geology	(3-0-0) 3
CV388	Advanced Surveying	(3-0-2) 4
CV485	Air Pollution and Noise Pollution	(3-0-0) 3
CV486	Environmental Impact Assessment	(3-0-0) 3
CV487	Construction and Project Management	(3-0-0) 3

Programme Major Project (PMP)

CV449	Major Project - I	(0-0-3) 2
CV499	Major Project – II	(0-0-12) 8

Mandatory Learning Courses (MLC)

MLC1	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study :

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA151	CV200	CV250	CV300	CV350	CV400	CV490
2	PH102	CY101	CV201	CV251	CV301	CV351	CV401	CV499
3	EC100	HU100	CV202	CV252	CV316	CV366	CV417	*Elective*
4	ME100	AM100	CV216	CV253	AM300	CV367	CV440	*Elective*
5	CO100	EE105	AM200	CV266	AM316	AM350	CV449	*Elective*
6	PH105	ME151	AM216	CV267	HU301	HU300	*Elective*	*Elective*
7	CO101	CY105	CV240	AM250	*Elective*	CV390	*Elective*	*Elective*
8	MLC1	ME116	*Elective*	CV217	Elective	*Elective*	*Elective*	
9	MLC2			*Elective*		*Elective*		

Degree Requirements:

Category of Courses	Minimum Credits to be Earned
Basic Science Core (BSC)	20
Engineering Science Core (ESC)	28
Humanities and Social Science Core (HSC)	10
Programme Core (PC)	88
Programme Specific Elective (PSE)	20
Open Elective (OE)	12
Programme Major Project (PMP)	10
Mandatory Learning Courses (MLC)	03
Total	**191**

Department of Mining Engineering (MN)

Bachelor of Technology in Mining Engineering

Basic Science Core Courses (BSC)		
MA101	Engineering Mathematics-I	(3-1-0) 4
PH102	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engineering Mathematics-II	(3-1-0) 4
CY101	Chemistry	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2
Engineering Science Core (ESC)		
EC100	Elements of Electronics Engg.	(3-1-0) 4
EE105	Elements of Electrical Engg	(3-1-0) 4
ME100	Elements of Mechanical Engg	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
AM100	Engineering Mechanics	(3-1-0) 4
ME151	Engineering Graphics	(1-3-0) 4
ME116	Workshop	(0-0-2) 1
ME270	Thermodynamic and Fluid Mechanics	(3-1-0) 4
CV203	Mining Geology	(3-1-0) 4
CV218	Mining Geology Lab	(0-0-3) 2
Humanities and Social Science (HSC)		
HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3
Programme Core (PC)		
MN201	Development of Mineral Deposits	(3-1-0) 4
MN202	Drilling and Blasting Engineering	(3-1-0) 4
MN203	Mine Surveying-I	(3-1-0) 4
MN204	Mine Surveying Lab-I	(0-0-3) 2
MN252	Mine Environmental Engineering- I	(4-0-0) 4
MN254	Mine Environmental Engg. Lab-I	(0-0-3) 2
MN271	Mine Mechanization –I	(3-0-0) 3
MN272	Mine Surveying –II	(3-0-0) 3
MN273	Mine Surveying Lab-II	(0-0-3) 2
MN301	Surface Mining	(3-1-0) 4
MN302	Mine Environmental Engg.-II	(3-0-0) 3
MN303	Underground Coal Mining	(3-1-0) 4
MN306	Mine Environmental Engg. Lab-II	(0-0-3) 2
MN321	Mine Mechanization-II	(3-0-0) 3
MN324	Industrial Training –I	1
MN351	Underground Metal Mining	(3-1-0) 4
MN355	Industrial Training -II	1
MN371	Rock Mechanics	(3-0-0) 3
MN372	Rock Mechanics Lab.	(0-0-3) 2
MN373	Mine Systems Engineering	(3-1-0) 4
MN390	Professional Practice	1
MN402	Mineral Processing	(3-0-0) 3
MN403	Ground Control Engineering	(3-1-0) 4
MN404	Mineral Processing Lab.	(0-0-3) 2
MN421	Mine Economics	(3-0-0) 3
MN440	Industrial Training -III	1
MN451	Mine Legislation	(4-0-0) 4
MN452	Environmental Management in Mines	(3-0-0) 3
MN490	Seminar	(0-0-2) 1
Programme Specific Elective (PSE)		
MN274	Rock Excavation Engg.	(3-0-0) 3
MN311	Noise Pollution and Control Engg.	(3-0-0) 3
MN325	Rock Reinforcement Engg.	(3-0-0) 3
MN360	Advanced Underground Coal Mining	(3-0-0) 3
MN361	Advanced Surface Mining Technology	(3-0-0) 3
MN411	Rock Fragmentation Engineering	(3-0-0) 3
MN412	Rock Slope Engineering	(3-0-0) 3
MN460	Coal Washing and Handling	(3-0-0) 3
MN461	Production Drilling for oil wells	(3-0-0) 3
MN462	Seabed Mining	(3-0-0) 3
MN463	Planning of Surface Mining Projects	(3-0-0) 3
MN464	Planning of Underground Coal Mining Projects	(3-0-0) 3
MN465	Planning of Underground Metal Mining Projects	(3-0-0) 3
MN468	Mine Health and Safety Engg.	(3-0-0) 3
MN469	Computer Applications in Mining	(3-0-0) 3
Open Elective (OE)		
MN310	Maintenance and Reliability Engg.	(3-0-0) 3
MN326	Financial Engineering	(3-0-0) 3
MN375	Tunneling Engg.	(3-0-0) 3
MN413	Numerical Modeling Techniques	(3-0-0) 3
MN425	Knowledge Management	(3-0-0) 3
MN455	Technology Management	(3-0-0) 3
Programme Major Project (PMP)		
MN449	Programme Major Project-I	(0-0-6) 4
MN499	Programme Major Project-II	(0-0-9) 6
Mandatory Learning Courses (MLC)		
MLC I	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study:

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA151	MN201	MN252	MN301	MN351	MN402	MN451
2	PH102	CY101	MN202	MN254	MN302	MN355	MN403	MN452
3	EC100	HU100	MN203	MN271	MN303	MN371	MN404	MN490
4	ME100	AM100	MN204	MN272	MN306	MN372	MN440	MN499
5	CO100	EE105	CV203	MN273	MN321	MN373	MN421	Elective
6	PH105	ME151	CV218	ME270	MN324	MN390	MN449	Elective
7	CO101	CY105	Elective	Elective	HU301	HU300	Elective	Elective
8	MLC I	ME116	Elective	Elective	Elective	Elective	Elective	Elective
9	MLC 2				Elective	Elective	Elective	Elective

Degree Requirements:

Category of Courses	Minimum Credits to be Earned
Basic Science Core(BSC)	20
Engineering Science Core(ESC)	37
Humanities and Social Sciences Core(HSC)	10
Programme Core (PC)	81
Programme Specific Elective (PSE)	18
Open Elective (OE)	12
Programme Major Project (PMP)	10
Mandatory Learning Courses (MLC)	03
Total	**191**

Department of Computer Engineering (CE)

Bachelor of Technology in Computer Engineering

Basic Science Core (BSC)

MA101	Engineering Mathematics – I	(3-1-0) 4
PH103	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engineering Mathematics – II	(3-1-0) 4
CY151	Chemistry (Module 2)	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2
MA201	Concrete Mathematics	(3-0-0) 3

Engineering Science Core (ESC)

EE101	Fundamentals of Electrical Engg	(3-1-0) 4
ME100	Elements of Mechanical Engg.	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
CO207	Introduction to Computer Hardware	(0-0-2) 1
EC150	Fundamentals of Electronics Engg.	(3-1-0) 4
AM100	Engineering Mechanics	(3-1-0) 4
ME151	Engineering Graphics	(1-3-0) 4
ME116	Workshop	(0-0-2) 1

Humanities and Social Science Core (HSC)

HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3

Programme Core (PC)

CO200	Information Systems	(3-0-0) 3
CO201	Computer Organization and Architecture	(3-0-0) 3
CO202	Design of Digital Systems	(3-0-0) 3
CO203	Unix Programming	(2-0-3) 4
CO204	Data Structures and Algorithms	(3-1-0) 4
CO205	Data Structures Lab	(0-0-3) 2
CO206	Digital Systems Lab	(0-0-3) 2
CO250	Microprocessor and Interfacing	(3-1-0) 4
CO251	Object Technology	(3-0-0) 3
CO252	Principles of Data Communication	(3-0-0) 3
CO253	Computer Graphics	(3-0-0) 3
CO254	Theory of Computation	(3-0-0) 3
CO255	Microprocessor Lab	(0-0-3) 2
CO256	Computer Graphics Lab	(0-0-3) 2
CO300	Operating Systems	(3-0-0) 3
CO301	Database Systems	(3-1-0) 4
CO302	Systems Programming	(3-0-0) 3
CO303	Computer Networks	(3-0-0) 3
CO304	Operating Systems Lab	(0-0-3) 2
CO305	Database Systems Lab	(0-0-3) 2
CO350	Compiler Design	(3-0-0) 3
CO351	Software Engineering	(3-0-0) 3
CO352	Distributed Computing Systems	(3-0-0) 3
CO353	Design and Analysis of Algorithms	(3-0-0) 3
CO354	Compilers Lab	(0-0-3) 2
CO355	Software Lab	(0-0-3) 2
CO356	Networks Lab	(0-0-3) 2
CO400	Number Theory and Cryptography	(3-0-0) 3
CO440	Practical Training/Educational Tour	1
CO450	Information Security	(3-0-0) 3
CO490	Seminar	(0-0-2) 1

Programme Specific Elective (PSE)

CO401	Real Time Systems	(3-0-0) 3
CO402	Fault Tolerant Computing	(3-0-0) 3
CO403	Advanced Microprocessors	(3-0-0) 3
CO404	Parallel Algorithms	(3-0-0) 3
CO405	Distributed Object Computing	(3-0-0) 3
CO406	Model Driven Computing	(3-0-0) 3
CO409	Mobile Computing	(3-0-0) 3
CO410	Protocol Engineering	(3-0-0) 3
CO411	Network Processors & Network Design	(3-0-0) 3
CO412	Advanced Topics in Networks and Distributed Computing	(3-0-0) 3
CO413	Network Management	(3-0-0) 3
CO414	Grid Computing	(3-0-0) 3
CO415	Requirements Engineering	(3-0-0) 3
CO417	Applied Algorithms	(3-0-0) 3
CO418	Advanced Data Structures and Algorithms	(3-0-0) 3
CO419	Distributed Algorithms	(3-0-0) 3
CO451	Advanced Concepts in Theoretical Computer Science	(3-0-0) 3
CO452	Formal Method in Computing	(3-0-0) 3
CO453	Combinatorics	(3-0-0) 3
CO454	Performance Modelling and Analysis	(3-0-0) 3
CO455	Optimization Techniques in Computing	(3-0-0) 3
CO456	Modern Computer Algebra	(3-0-0) 3
CO457	Bioinformatics	(3-0-0) 3
CO458	Advanced Database Systems	(3-0-0) 3
CO459	Data Warehousing and Data Mining	(3-0-0) 3
CO462	Computer Vision	(3-0-0) 3
CO463	Machine Intelligence	(3-0-0) 3
CO464	Algorithmic Graph Theory	(3-0-0) 3
CO465	Computational Complexity	(3-0-0) 3
CO467	Software Quality Assurance	(3-0-0) 3
CO468	Software Testing	(3-0-0) 3

Open Elective (OE)

CO420	Internet Technology and Applications	(3-0-0) 3
CO421	Artificial Intelligence and Expert Systems	(3-0-0) 3
CO422	Multimedia and Virtual Reality	(3-0-0) 3
CO423	ERP and Supply Chain Management	
CO469	Software Project Management	(3-0-0) 3
CO470	Web Engineering	(3-0-0) 3
CO471	Software Architecture	(3-0-0) 3

Programme Major Project (PMP)

CO449	Major Project - I	(0-0-6) 4
CO499	Major Project – II	(0-0-9) 6

Mandatory Learning Courses (MLC)

MLC1	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study:

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA151	CO200	CO250	CO300	CO350	CO400	CO450
2	CY151	PH103	CO201	CO251	CO301	CO351	Elective	Elective
3	EE101	EC150	CO202	CO252	CO302	CO352	Elective	Elective
4	AM100	ME100	CO203	CO253	CO303	CO353	Elective	Elective
5	ME151	CO100	CO204	CO254	CO304	CO354	Elective	Elective
6	CY105	PH105	CO205	CO255	CO305	CO355	Elective	Elective
7	ME116	CO101	CO206	CO256	HU300	CO356	CO440	CO490
8	HU100	MLC1	MA201	Elective	Elective	HU301	CO449	C0499
9		MLC2	CO207	Elective	Elective	Elective		
10			Elective					

Degree Requirements:

Category of Courses	Minimum Credits to be Earned
Basic Science Core (BSC)	23
Engineering Science Core (ESC)	28
Humanities and Social Science Core (HSC)	10
Programme Core (PC)	84
Programme Elective (PSE)	21
Open Elective (OE)	12
Programme Major Project (PMP)	10
Mandatory Learning Courses (MLC)	03
Total	**191**

Department of Electronics and Communication Engineering (EC)

Bachelor of Technology in Electronics and Communication Engineering

Basic Science Core (BSC)

MA101	Engineering Mathematics – I	(3-1-0) 4
PH103	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engineering Mathematics – II	(3-1-0) 4
MA208	Probability Theory and Application	(3-0-0) 3
CY151	Chemistry	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2

Engineering Science Core (ESC)

EE101	Fundamentals of Electrical Engg.	(3-1-0) 4
ME100	Elements of Mechanical Engg.	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
EC150	Fundamentals of Electronics Engg.	(3-1-0) 4
EC307	Electronic Product Design	(0-0-2) 1
AM100	Engineering Mechanics	(3-1-0) 4
ME151	Engineering Graphics	(1-3-0) 4
ME116	Workshop	(0-0-2) 1

Humanities and Social Science Core (HSC)

HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3

Programme Core (PC)

EC200	Analog Electronics Circuits	(3-1-0) 4
EC201	Signals and Systems	(3-1-0) 4
EC202	Digital Electronics	(3-1-0) 4
EC203	Electromagnetic Waves	(3-1-0) 4
EC204	Analog Electronic Circuits Lab	(0-0-3) 2
EC205	Digital Electronic Circuits Lab	(0-0-3) 2
EC206	Signals and Systems Lab	(0-0-3) 2
EC250	Linear Integrated Circuits	(3-1-0) 4
EC251	Analog Communication	(3-1-0) 4
EC252	Data Structures and Algorithms	(3-0-0) 3
EC253	Microprocessors	(3-1-0) 4
EC254	Digital Computer Organisation & Arch.	(3-0-0) 3
EC255	Linear Integrated Circuits Lab	(0-0-3) 2
EC256	Microprocessor Lab	(0-0-3) 2
EC300	Digital System Design	(3-0-0) 3
EC301	Linear Control Systems	(3-1-0) 4
EC302	Information Theory and Coding	(3-1-0) 4
EC303	Antennas and Propagation	(3-1-0) 4
EC304	Telecommunication Switching and Systems	(3-0-0) 3
EC305	Digital System Design Lab	(0-0-3) 2
EC306	Basic Communications Lab	(0-0-3) 2
EC350	Digital Signal Processing	(3-1-0) 4
EC351	Digital Communications	(3-1-0) 4
EC352	VLSI Design	(3-1-0) 4
EC353	Digital Signal Processing Lab	(0-0-3) 2
EC354	VLSI Design Lab	(0-0-3) 2
EC355	Advanced Communication Lab	(0-0-3) 2
EC390	Professional Practice	1
EC440	Practical Training/ Education Tour	1
EC490	Seminar	(0-0-2) 1

Programme Specific Elective (PSE)

EC356	Computer Networks	(3-0-0) 3
EC401	Power Electronics	(3-0-0) 3
EC402	Mixed Signal Design	(3-0-0) 3
EC403	Sub Micron Technology	(3-0-0) 3
EC404	VLSI Physical Design Automation	(3-0-0) 3
EC405	Opto-Electronics	(3-0-0) 3
EC406	Biomedical Instrumentation	(3-0-0) 3
EC407	DSP Systems and Architecture	(3-0-0) 3
EC408	Advanced Digital Signal Processing	(3-0-0) 3
EC409	Modeling and Simulation	(3-0-0) 3
EC410	Speech and Image Processing	(3-0-0) 3
EC411	VLSI Systems and Architecture	(3-0-0) 3
EC412	VLSI Testing and Testability	(3-0-0) 3
EC413	Low Power VLSI Design	(3-0-0) 3
EC414	Embedded Systems	(3-0-0) 3
EC415	Advanced Computer Architecture	(3-0-0) 3
EC416	Logic Synthesis and Techniques	(3-0-0) 3
EC417	Fiber Optic Technology & Applications	(3-0-0) 3
EC418	Radar & Electronic Navigation Systems	(3-0-0) 3
EC419	Wireless Mobile Communication	(3-0-0) 3
EC420	Cryptography	(3-0-0) 3
EC421	Spread Spectrum Communications	(3-0-0) 3
EC422	RF Devices and Circuits	(3-0-0) 3
EC423	MIMO Wireless Systems	(3-0-0) 3
EC424	Error Control Coding	(3-0-0) 3
EC425	Advanced Topics in Communication Engg	(3-0-0) 3
EC426	Electronic Instrumentation	(3-0-0) 3
EC427	Soft Computing	(3-0-0) 3
EC428	TV Engineering	(3-0-0) 3
EC429	Satellite Communication	(3-0-0) 3
MA204	Linear Algebra & Matrices	(3-0-0) 3

Open Elective (OE)

EC406	Biomedical Instrumentation	(3-0-0) 3
EC414	Embedded Systems	(3-0-0) 3
EC426	Electronic Instrumentation	(3-0-0) 3
EC427	Soft Computing	(3-0-0) 3

Programme Major Project (PMP)

EC449	Major Project - I	(0-0-6) 4
EC499	Major Project – II	(0-0-9) 6

Mandatory Learning Courses (MLC)

MLC1	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study:

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA151	EC200	EC250	EC300	EC350	*Elective*	*Elective*
2	CY151	PH103	EC201	EC251	EC301	EC351	*Elective*	*Elective*
3	EE101	EC150	EC202	EC252	EC302	EC352	*Elective*	*Elective*
4	AM100	ME100	EC203	EC253	EC303	EC353	*Elective*	EC490
5	ME151	CO100	EC204	EC254	EC304	EC354	*Elective*	EC499
6	CY105	PH105	EC205	EC255	EC305	EC355	EC440	
7	ME116	CO101	EC206	EC256	EC306	HU301	EC449	
8	HU100	MLC1	MA208	*Elective*	EC307	*Elective*		
9		MLC2			HU300	EC390		

Degree Requirements:

Category of Courses	Minimum Credits to be Earned
Basic Science Core (BSC)	23
Engineering Science Core (ESC)	28
Humanities and Social Sciences Core (HSC)	10
Programme Core (PC)	87
Programme Specific Electives (PSE)	18
Open Electives (OE)	12
Programme Major Project (PMP)	10
Mandatory Learning Courses (MLC)	03
Total	**191**

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Department of Electrical and Electronics Engineering (EE)

Bachelor of Technology in Electrical and Electronics Engineering

Basic Science Core Courses (BSC)

MA101	Engineering Mathematics – I	(3-1-0) 4
PH103	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engineering Mathematics - II	(3-1-0) 4
CY151	Chemistry	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2

Engineering Science Core (ESC)

EE101	Fundamentals of Electrical Engineering	(3-1-0) 4
ME100	Elements of Mechanical Engineering	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
EC150	Fundamentals of Electronics Engineering	(3-1-0) 4
AM100	Engineering Mechanics	(3-1-0) 4
ME151	Engineering Graphics	(1-3-0) 4
ME116	Workshop	(0-0-2) 1
EE232	Signals and Systems Lab	(0-0-3) 2

Humanities and Social Science Core (HSC)

HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3

Programme Core (PC)

EE200	Circuit Theory	(3-1-0) 4
EE207	Electromagnetic Theory	(3-1-0) 4
EE212	Transformers and Induction Machines	(3-1-0) 4
EE215	Signals and Systems	(3-1-0) 4
EE223	Electrical Measurements and Measuring Instruments	(3-1-0) 4
EE225	Linear Integrated Circuits	(3-1-0) 4
EE230	Transformers and Induction Machines Lab	(0-0-3) 2
EE241	Electrical Measurements Lab	(0-0-3) 2
EE257	Synchronous Machines	(3-1-0) 4
EE265	Elements of Power System Engineering	(3-1-0) 4
EE275	Digital Electronic Circuits	(3-1-0) 4
EE283	Synchronous Machines Lab	(0-0-3) 2
EE292	Analog and Digital Electronics Lab	(0-0-3) 2
EE308	Power Electronics	(3-1-0) 4
EE313	Digital Signal Processing	(3-1-0) 4
EE326	Linear and Digital Control Theory	(3-1-0) 4
EE350	Power System Analysis	(3-1-0) 4
EE360	Microprocessors	(3-1-0) 4
EE390	Professional Practices	1
EE440	Practical Training/Educational Tour	2
EE490	Seminar	(0-0-2) 1

Programme Specific Elective (PSE)

EE229	Polyphase Systems and Component – Transformations	(3-1-0) 4
EE253	Commutator Machines	(3-1-0) 4
EE255	Introduction to Algorithms and Data Structures	(3-1-0) 4
EE260	Digital Computer Organization and Architecture	(3-1-0) 4
EE281	Commutator Machines Lab	(0-0-3) 2
EE298	Elements of Analog and Digital Communication	(3-1-0) 4
EE303	Distribution Systems Planning and Control	(3-1-0) 4
EE311	Digital System Design	(3-1-0) 4
EE312	Power System Harmonics	(3-1-0) 4
EE319	Neural Networks and Applications	(3-0-0) 3
EE321	Linear and Nonlinear Systems	(3-1-0) 4
EE324	Electronic Measurements and Instrumentation	(3-1-0) 4
EE329	Traveling Waves on Transmission Systems	(3-1-0) 4
EE331	Distribution Systems Lab	(0-0-3) 2
EE334	Power Electronics Lab	(0-0-3) 2
EE335	Digital System Design Lab	(0-0-3) 2
EE337	Power System Harmonics Lab	(0-0-3) 2
EE342	Electronic Measurements Lab	(0-0-3) 2
EE345	Miniproject - 1	(0-0-3) 2
EE346	Miniproject - 2	(0-0-3) 2
EE359	Energy Auditing	(3-1-0) 4
EE361	Power System Communications	(3-1-0) 4
EE362	Optimal Operation of Power Systems	(3-1-0) 4
EE363	Advanced Digital Signal Processing	(3-0-0) 3
EE366	Special Machines and Drives	(3-1-0) 4
EE369	Embedded System Design	(3-1-0) 4
EE371	Power Electronic Applications to Power Systems	(3-1-0) 4
EE373	Electric Power Stations	(3-1-0) 4
EE374	Electric Energy Systems	(3-0-0) 3
EE376	Advanced Control Systems	(3-0-0) 3
EE377	Modeling and Simulation Techniques for Dynamic Systems	(3-1-0) 4
EE378	Shell Scripting with Bash	(3-1-0) 4
EE379	Incremental Motion Control	(3-1-0) 4
EE382	Virtual Instrumentation Lab	(0-0-3) 2
EE384	Energy Auditing Lab	(0-0-3) 2
EE385	Microprocessors Lab	(0-0-3) 2
EE386	Digital Signal Processing Lab	(0-0-3) 2
EE387	Advanced Digital Signal Processing Lab	(0-0-3) 2
EE389	Embedded System Design Lab	(0-0-3) 2
EE392	Power System Operation Lab	(0-0-3) 2
EE393	Dynamic System Simulation Lab	(0-0-3) 2
EE395	Miniproject - 3	(0-0-3) 2
EE396	Miniproject - 4	(0-0-3) 2
EE402	HVDC Transmission	(3-1-0) 4
EE404	Soft Computing	(3-0-0) 3
EE406	Electromagnetic Compatibility	(3-1-0) 4
EE408	Solid-State Drives	(3-1-0) 4
EE410	Power System Protection	(3-1-0) 4
EE412	Random Signal Processing	(3-1-0) 4
EE414	Non-Conventional Energy Systems	(3-0-0) 3
EE418	Advanced Power Electronics	(3-1-0) 4
EE420	Power System Dynamics	(3-1-0) 4
EE422	Switchgear and Protection	(3-1-0) 4
EE427	Computer Networks	(3-0-0) 3
EE428	The ARM Core: Architecture and Programming	(3-1-0) 4
EE439	Advanced Power Electronics Lab	(0-0-3) 2

EE445	Power System Simulation Lab	(0-0-3) 2
EE454	Flexible AC Transmission Systems	(3-1-0) 4
EE456	High-Voltage Engineering	(3-1-0) 4
EE458	Photovoltaics and Applications	(3-1-0) 4
EE464	Power Generation and Economics	(3-1-0) 4
EE466	Utilization of Electrical Energy	(3-0-0) 3
EE468	Advanced Electric Drives	(3-1-0) 4
EE470	Computational Technique for large system analysis	(3-0-0) 3
EE472	Insulation and Testing Engineering	(3-1-0) 4
EE476	Optimisation Techniques	(3-0-0) 3
EE478	An Introduction to the Intel IA-32 Architecture	(3-1-0) 4
EE489	Advanced Electric Drives Lab	(0-0-3) 2
EE491	Insulation and Testing Engineering Lab	(0-0-3) 2

Open Elective (OE)

EE319	Neural Networks and Applications	(3-0-0) 3
EE363	Advanced Digital Signal Processing	(3-0-0) 3
EE374	Electric Energy Systems	(3-0-0) 3
EE376	Advanced Control Systems	(3-0-0) 3
EE404	Soft Computing	(3-0-0) 3
EE414	Non-Conventional Energy Systems	(3-0-0) 3
EE427	Computer Networks	(3-0-0) 3
EE466	Utilization of Electrical Energy	(3-0-0) 3
EE470	Computational Technique for large system analysis	(3-0-0) 3
EE476	Optimisation Techniques	(3-0-0) 3

Programme Major Project (PMP)

EE449	Major Project – I	(0-1-6) 5
EE499	Major Project - II	(0-1-6) 5

Mandatory Learning Courses (MLC)

MLC1	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study:

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA151	EE200	EE215	HU300	HU301	EE440	EE490
2	CY151	PH103	EE207	EE232	EE308	EE350	EE449	EE499
3	EE101	EC150	EE212	EE257	EE313	EE360	Elective	Elective
4	ME151	ME100	EE223	EE265	EE326	EE390	Elective	Elective
5	ME116	CO100	EE225	EE275	Elective	Elective	Elective	Elective
6	CY105	PH105	EE230	EE283	Elective	Elective		
7	HU100	CO101	EE241	EE292	Elective	Elective		
8	AM100	MLC1	Elective	Elective				
9		MLC2						

Degree Requirements :

Category of Courses	Minimum Credits to be Earned
Basic Science Core (BSC)	20
Engineering Science Core (ESC)	29
Humanities and Social Sciences (HSC)	10
Programme Core (PC)	68
Programme Specific Elective (PSE)	27
Open Elective (OE)	24
Programme Major Project (PMP)	10
Mandatory Learning Courses (MLC)	03
Total	**191**

Department of Information Technology (IT)

Bachelor of Technology in Information Technology

Basic Science Core (BSC)

MA101	Engineering Mathematics – I	(3-1-0) 4
PH103	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engineering Mathematics – II	(3-1-0) 4
CY151	Chemistry	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2
MA202	Discrete Mathematical Structures	(3-0-0) 3
MA208	Probability Theory and Applications	(3-0-0) 3

Engineering Science Core (ESC)

EE101	Fundamentals of Electrical Engg.	(3-1-0) 4
ME100	Elements of Mechanical Engg.	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
EC150	Fundamentals of Electronics Engg	(3-1-0) 4
AM100	Engineering Mechanics	(3-1-0) 4
ME151	Engineering Graphics	(1-3-0) 4
ME116	Workshop	(0-0-2) 1
IT208	Introduction to Information Technology	(1-0-0) 1

Humanities and Social Science Core (HSC)

HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3

Programme Core (PC)

IT201	Data Structures and Algorithms	(3-1-0) 4
IT202	Digital Systems and Design	(3-1-0) 4
IT203	Computer Organisation and Architecture	(3-0-0) 3
IT204	Digital Systems and Design Lab	(0-0-3) 2
IT205	Data Structures and Algorithm Lab	(0-0-3) 2
IT250	Unix Programming	(3-1-0) 4
IT251	Microprocessors and Interfacing	(3-1-0) 4
IT252	Principles of Data Communication	(3-0-0) 3
IT253	Computer Graphics	(3-0-0) 3
IT254	Microprocessors Lab	(0-0-3) 2
IT255	Unix Lab	(0-0-3) 2
IT256	Computer Graphics Mini Project	(0-1-3) 3
IT300	Operating Systems	(3-1-0) 4
IT301	Database systems	(3-0-0) 3
IT302	Advanced Data Structures	(3-0-0) 3
IT303	Computer Networks	(3-1-0) 4
IT305	Operating System Lab	(0-0-3) 2
IT306	Database Mini Project	(0-1-3) 3
IT307	Advanced Data Structures Lab	(0-0-3) 2
IT350	Software Engineering	(3-1-0) 4
IT351	Internet Technologies and Applications	(3-1-0) 4
IT352	Compiler Design	(3-1-0) 4
IT353	Software Engineering Mini Project	(0-0-3) 2
IT354	Internet Technology and Application Lab	(0-0-3) 2
IT355	Network Lab	(0-0-3) 2
IT408	Advanced Database Systems	(3-0-0) 3
IT390	Professional Practice	1
IT440	Practical Training/Educational Tour	1
IT490	Seminar	(0-0-2) 1

Programme Specific Elective (PSE)

IT206	Object Oriented Programming	(3-1-0) 4
IT207	Information Systems	(3-1-0) 4
IT308	Object Oriented Systems	(3-0-0) 3
IT309	Theory of Computation	(3-0-0) 3
IT357	Design and Analysis of Algorithms	(3-0-0) 3
IT358	Information Retrieval	(3-0-0) 3
IT359	Advanced Computer Networks	(3-0-0) 3
IT360	Signals and Systems	(3-0-0) 3
IT401	Distributed Computing Systems	(3-0-0) 3
IT402	Embedded Systems	(3-1-0) 4
IT403	Performance Modelling	(3-1-0) 4
IT404	Bioinformatics	(3-1-0) 4
IT405	Pattern Recognition	(3-0-0) 3
IT406	Enterprise Resource Planning System	(3-0-0) 3
IT407	Multimedia and Virtual Reality	(3-0-0) 3
IT451	Mobile Communication	(3-0-0) 3
IT452	Information Security	(3-1-0) 4
IT453	Knowledge Management	(3-1-0) 4
IT454	Transaction Processing	(3-1-0) 4
IT455	Artificial Intelligence	(3-1-0) 4
IT456	Data Warehousing and Data Mining	(3-0-0) 3
IT457	Software Quality Assurance	(3-0-0) 3
IT458	Genetic Algorithms	(3-0-0) 3
IT459	Computer vision	(3-0-0) 3

Open Elective (OE)

IT402	Embedded Systems	(3-1-0) 4
IT406	Enterprise Resource Planning System	(3-0-0) 3
IT456	Data Warehousing and Data Mining	(3-0-0) 3
IT451	Mobile Communication	(3-0-0) 3
IT455	Artificial Intelligence	(3-1-0) 4

Programme Major Project (PMP)

IT449	Major Project –I	(0-0-6) 4
IT499	Major Project – II	(0-0-9) 6

Mandatory Learning Courses (MLC)

MLC1	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study:

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA151	IT201	IT250	IT300	IT350	IT408	Elective
2	CY151	PH103	IT202	IT251	IT301	IT351	Elective	Elective
3	EE101	EC150	IT203	IT252	IT302	IT352	Elective	Elective
4	AM100	ME100	IT204	IT253	IT303	IT353	Elective	IT490
5	ME151	CO100	IT205	IT254	IT305	IT354	IT440	IT499
6	CY105	PH105	IT208	IT255	IT306	IT355	IT449	
7	ME116	CO101	MA202	IT256	IT307	HU301		
8	HU100	MLC1	Elective	MA208	HU300	Elective		
9		MLC2		Elective	Elective	Elective		
10						IT390		

Degree Requirements:

Category of Courses	Minimum Credits to be Earned
Basic Science Core (BSC)	26
Engineering Science Core (ESC)	28
Humanities and Social Sciences Core (HSC)	10
Program Core (PC)	81
Programme-Specific Elective (PSE)	21
Open Elective (OE)	12
Major Project (MP)	10
Mandatory Learning Courses (MLC)	03
Total	**191**

Department of Chemical Engineering (CH)

Bachelor of Technology in Chemical Engineering

Basic Science Core (BSC)

MA101	Engg.Mathematics – I	(3-1-0) 4
PH102	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engg.Mathematics – II	(3-1-0) 4
CY101	Chemistry	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2
CY205	Organic Chemistry	(3-0-0) 3
CY305	Inorganic & Physcial Chemistry	(3-0-0) 3
CY355	Technical Analysis Lab	(0-0-3) 2

Engineering Science Core (ESC)

EE105	Elements of Electrical Engineering	(3-1-0) 4
ME100	Elements of Mechanical Engineering	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
EC100	Elements of Electronics Engg.	(3-1-0) 4
AM100	Engineering Mechanics	(3-1-0) 4
ME151	Engineering Graphics	(1-3-0) 4
ME116	Workshop	(0-0-2) 1
ME220	Workshop Practice	(0-0-3) 2

Humanities and Social Science Core (HSC)

HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3

Programme Core (PC)

CH200	Process Calculations	(3-1-0) 4
CH201	Momentum Transfer	(3-1-0) 4
CH202	Particulate Technology	(3-1-0) 4
CH250	Chemical Engg. Thermodynamics-I	(3-1-0) 4
CH251	Heat Transfer	(3-1-0) 4
CH252	Mass Transfer – I	(3-1-0) 4
CH253	Chemical Reaction Engineering – I	(3-1-0) 4
CH254	Fluid and Fluid Particle Systems Lab	(0-0-3) 2
CH300	Chemical Engg. Thermodynamics-II	(3-1-0) 4
CH301	Chemical Reaction Engineering – II	(3-1-0) 4
CH302	Mass Transfer – II	(3-1-0) 4
CH303	Heat Transfer Operations Lab.	(0-0-3) 2
CH350	Transport Phenomena	(3-1-0) 4
CH351	Process Dynamics and Control	(3-1-0) 4
CH352	Simultaneous Heat and Mass Transfer	(3-0-0) 3
CH353	Biochemical Engineering	(3-1-0) 4
CH354	Mass Transfer Operations Lab	(0-0-3) 2
CH400	Chemical Process Industries	(3-0-0) 3
CH401	Pollution Control and Safety in Process Industries	(3-0-0) 3
CH402	Process Design of Chemical Equipments	(3-1-0) 4
CH403	C.R.E. and Process Control Lab	(0-0-3) 2
CH440	Practical Training / Educational Tour	2
CH490	Seminar	(0-0-3) 2

Programme Specific Elective (PSE)

CH362	Separation Processes	(3-1-0) 4
CH411	Computer Aided Process Design	(3-1-0) 4
CH412	Bioreactor Design	(3-1-0) 4
CH413	Fertilizer Technology	(3-0-0) 3
CH414	Fermentation Technology	(3-0-0) 3
CH415	Petroleum Engineering	(3-0-0) 3
CH416	Mechanical Design of Process Vessels	(3-0-0) 3
CH461	Process Modelling and Simulation	(3-1-0) 4
CH462	Chemical Process Optimization	(3-1-0) 4
CH463	EIA and EMP	(3-0-0) 3
CH464	Risk and Safety Management in Process Industries	(3-0-0) 3
CH465	Air Pollution Control and Design of Equipments	(3-0-0) 3
CH466	Solid Waste Management	(3-1-0) 4

Open Elective (OE)

CH261	Energy Technology	(3-0-0) 3
CH311	Process Instrumentation	(3-0-0) 3
CH415	Petroleum Engineering	(3-0-0) 3
CH465	Air Pollution Control and Design of Equipments	(3-0-0) 3

Programme Major Project (PMP)

CH449	Major Project - I	(0-0-3) 2
CH499	Major Project – II	(0-0-12) 8

Mandatory Learning Courses (MLC)

MLC1	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study:

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA151	CH200	CH250	CH300	CH350	CH400	*CH490*
2	PH102	CY101	CH201	CH251	CH301	CH351	CH401	*CH499*
3	EC100	EE105	CH202	CH252	CH302	CH352	CH402	*Elective*
4	ME100	AM100	CY205	CH253	CH303	CH353	CH403	*Elective*
5	CO100	ME151	ME220	CH254	CY305	CH354	CH440	*Elective*
6	PH105	CY105	Elective	*Elective*	HU301	CY355	CH449	*Elective*
7	CO101	ME116	*Elective*	*Elective*	*Elective*	HU300	*Elective*	Elective
8	MLC1	HU100	*Elective*	*Elective*	*Elective*	*Elective*	Elective	Elective
9	MLC2							
10								

Degree Requirements:

Category of Courses	Minimum Credits to be Earned
Basic Science Core (BSC)	28
Engineering Science Core (ESC)	29
Humanities and Social Sciences Core (HSC)	10
Programme Core (PC)	77
Programme Specific Elective (PSE)	19
Open Elective (OE)	15
Programme Major Project (PMP)	10
Mandatory Learning Courses (MLC)	03
Total	**191**

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Department of Mechanical Engineering (ME)

Bachelor of Technology in Mechanical Engineering

Basic Science Core (BSC)

MA101	Engineering Mathematics – I	(3-1-0) 4
PH101	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engineering Mathematics – II	(3-1-0) 4
MA207	Numerical Methods	(3-0-0) 3
CY101	Chemistry	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2

Engineering Science Core (ESC)

EE105	Elements of Electrical Engg.	(3-1-0) 4
ME150	Mechanical Engineering Science	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
EC100	Elements of Electronics Engg.	(3-1-0) 4
AM100	Engineering Mechanics	(3-1-0) 4
ME102	Engineering Graphics	(1-3-0) 4
ME116	Workshop	(0-0-2) 1
AM201	Mechanics of Solids	(2-1-0) 3
AM217	Mechanics of Solids Lab	(0-0-2) 1
AM317	Fluid Mechanics and Machinery Lab	(0-0-2) 1

Humanities and Social Science Core (HSC)

HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3

Programme Core (PC)

ME201	Basic Engineering Thermodynamics	(3-1-0) 4
ME202	Fluid Mechanics and Machinery	(3-1-0) 4
ME203	Mechanics of Machines	(3-1-0) 4
ME204	Basic Manufacturing Processes	(3-1-0) 4
ME205	Material Science and Metallurgy	(3-0-0) 3
ME206	Engineering Drawing	(1-0-3) 3
ME207	Workshop Practice	(0-0-2) 1
ME250	Applied Thermodynamics	(3-1-0) 4
ME251	Analysis and Design of Machine Components	(3-1-0) 4
ME252	Computer Aided Engineering	(3-1-0) 4
ME253	Manufacturing Technology	(3-0-0) 3
ME254	Metrology and Quality Control	(3-1-0) 4
ME255	Machine Drawing	(1-0-3) 3
ME256	Mechanical Lab– I	(0-0-2) 1
ME300	Energy Engineering	(3-1-0) 4
ME301	Design of Mechanical Drives	(3-1-0) 4
ME302	Measurements, Instrumentation and Control	(3-0-0) 3
ME303	Metrology and CAD Lab	(0-0-2) 1
ME350	Heat Transfer	(3-1-0) 4
ME351	Machine Dynamics and Vibrations	(3-1-0) 4
ME352	Machine Shop – I	(0-0-3) 2
ME405	Mechanical Lab – II	(0-0-2) 1
ME406	Machine Shop – II	(0-0-3) 2
ME440	Practical Training / Educational Tour	2
ME490	Seminar	(0-0-2) 1

Programme Specific Elective (PSE)

ME310	Measurements In Thermal Systems	(3-0-0) 3
ME311	Fuels and Combustion	(3-0-0) 3
ME312	Mechanics of Metal Cutting and Press Working	(3-0-0) 3
ME313	Hydraulic and Pneumatic Control	(3-0-0) 3
ME314	Synthesis of Mechanisms	(3-0-0) 3
ME315	Internal Combustion Engines	(3-0-0) 3
ME316	Mechatronics	(3-0-0) 3
ME317	Turbomachines	(3-0-0) 3
ME362	Manufacturing Technology of Plastics	(3-0-0) 3
ME364	Pollution Control and Environmental Management	(3-0-0) 3
ME365	Advanced I.C Engines	(3-0-0) 3
ME366	Mechanics of Compressible Fluids	(3-0-0) 3
ME367	Automobile Engineering	(3-0-0) 3
ME375	Condition Monitoring and Predictive Maintenance	(3-0-0) 3
ME377	Quality Control	(3-0-0) 3
ME378	Automatic Control Engineering	(3-0-0) 3
ME380	Human factors in Engg. Design	(3-0-0) 3
ME410	Non Conventional Energy sources	(3-0-0) 3
ME411	Integrated Product Development and Prototyping	(3-0-0) 3
ME412	Operations Research	(3-0-0) 3
ME413	Microprocessors and PLC	(3-0-0) 3
ME415	MEMS and Nanotechnology	(3-0-0) 3
ME417	Pressure Vessel Design	(3-0-0) 3
ME418	Fracture Mechanics	(2-1-0) 3
ME419	Refrigeration Technology	(3-0-0) 3
ME420	Applied Finite Element Method	(3-0-0) 3
ME421	Composite Materials	(3-0-0) 3
ME422	Propulsion	(2-1-0) 3
ME423	Mechanical Vibration and Acoustics	(2-1-0) 3
ME430	Nuclear Energy	(3-0-0) 3
ME432	Industrial Tribology	(3-0-0) 3
ME433	Engineering Acoustics	(3-0-0) 3
ME452	Facilities Planning	(3-0-0) 3
ME453	Project Management	(3-0-0) 3
ME454	Applied Computational Methods in Mechanical Sciences	(2-1-0) 3
ME455	Data Base Management System	(3-0-0) 3
ME457	Air-conditioning Technology	(2-1-0) 3
ME459	Advanced Welding Technology	(3-0-0) 3
ME461	Production and Operation Management	(3-0-0) 3
ME462	Solar Energy	(2-1-0) 3
ME463	Cryogenics	(3-0-0) 3
ME464	Energy Audit and Management	(3-0-0) 3
ME465	Experimental Stress Analysis	(2-1-0) 3
ME466	Commercial and Industrial law	(3-0-0) 3

Open Elective (OE)

ME313	Hydraulic and Pneumatic Control	(3-0-0) 3
ME316	Mechatronics	(3-0-0) 3
ME364	Pollution Control and Environmental Management	(3-0-0) 3

ME375	Condition Monitoring and Predictive Maintenance	(3-0-0) 3
ME411	Integrated product development & Prototyping	(3-0-0) 3
ME415	MEMS and Nanotechnology	(3-0-0) 3
ME430	Nuclear Energy	(3-0-0) 3
ME462	Solar Energy	(2-1-0) 3
ME464	Energy Audit and Management	(3-0-0) 3

Programme Major Project (PMP)

ME449	Major Project - I	(0-0-3) 3
ME499	Major Project – II	(0-0-7) 7

Mandatory Learning Courses (MLC)

MLC1	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study:

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA151	ME201	ME250	ME300	ME350	ME405	ME490
2	PH101	CY101	ME202	ME251	ME301	ME351	ME406	ME499
3	EC100	EE105	ME203	ME252	ME302	ME352	ME440	*Elective*
4	ME150	AM100	ME204	ME253	ME303	HU300	ME449	*Elective*
5	CO100	ME102	ME205	ME254	AM317	*Elective*	*Elective*	*Elective*
6	PH105	CY105	ME206	ME255	HU301	*Elective*	*Elective*	*Elective*
7	CO101	ME116	ME207	ME256	*Elective*	*Elective*	*Elective*	*Elective*
8	MLC1	HU100	*AM201*	AM217	*Elective*	*Elective*	*Elective*	*Elective*
9	MLC2			*MA207*	*Elective*	*Elective*		

Degree Requirements:

Category of Courses	Minimum Credits to be earned
Basic Science Core (BSC)	23
Engineering Science Core (ESC)	32
Humanities and Social Sciences Core (HSC)	10
Programme Core (PC)	74
Programme Specific Elective (PSE)	27
Open Elective (OE)	12
Programme Major Project (PMP)	10
Mandatory Learning Courses (MLC)	03
Total	**191**

Department of Metallurgical and Materials Engineering (MT)

Bachelor of Technology in Metallurgical and Materials Engineering

Basic Science Core (BSC)

MA101	Engineering Mathematics – I	(3-1-0) 4
PH102	Physics	(3-1-0) 4
PH105	Physics Lab	(0-0-3) 2
MA151	Engineering Mathematics – II	(3-1-0) 4
CY101	Chemistry	(3-1-0) 4
CY105	Chemistry Lab	(0-0-3) 2

Engineering Science Core (ESC)

AM100	Engineering Mechanics	(3-1-0) 4
EE105	Elements of Electrical Engg.	(3-1-0) 4
ME100	Elements of Mechanical Engg.	(3-1-0) 4
CO100	Computer Programming	(3-1-0) 4
CO101	Computer Programming Lab	(0-0-3) 2
EC100	Elements of Electronics Engg.	(3-1-0) 4
ME151	Engineering Graphics	(1-3-0) 4
AM200	Mechanics of Materials	(3-1-0) 4
CY206	Instrumental Analysis Lab	(0-0-4) 2
ME116	Workshop	(0-0-2) 1
ME225	Machine Design	(3-1-0) 4
CH262	Mineral Dressing	(3-0-0) 3
CH263	Mineral Dressing Lab	(0-0-3) 2

Humanities and Social Science Core (HSC)

HU100	Professional Communication	(3-1-0) 4
HU300	Engineering Economics	(3-0-0) 3
HU301	Management Theory and Practice	(3-0-0) 3

Programme Core (PC)

MT200	Mechanical Testing	(2-0-0) 2
MT201	Met. Thermodynamics	(3-1-0) 4
MT202	Non Destructive Testing	(2-0-0) 2
MT240	Introduction to Materials	(1-0-0) 1
MT250	Physical Metallurgy	(3-1-0) 4
MT251	Phase Diagrams	(3-1-0) 4
MT252	Principles of Extractive Metallurgy	(3-1-0) 4
MT253	X-rays and Electron Metallography	(3-1-0) 4
MT299	Testing of Materials Lab	(0-0-3) 2
MT301	Process Engineering	(3-1-0) 4
MT302	Production of Iron and Ferro Alloys	(3-0-0) 3
MT303	Heat Treatment	(3-0-0) 3
MT304	Polymer Science and Technology	(3-0-0) 3
MT348	Physical Metallurgy Lab	(0-0-3) 2
MT349	Extractive metallurgy Lab	(0-0-3) 2
MT350	Production of Steel	(3-0-0) 3
MT353	Joining of Metals	(3-0-0) 3
MT354	Ceramics and Refractories	(3-0-0) 3
MT390	Professional Practice	1
MT397	Metallographic Lab	(0-0-3) 2
MT398	Ceramics and Polymers Lab	(0-0-3) 2
MT399	Heat Treatment Lab	(0-0-3) 2
MT400	Phase Transformations	(3-0-0) 3
MT402	Foundry Technology	(3-0-0) 3
MT440	Practical Training/Educational Tour	2
MT448	Foundry Technology Lab	(0-0-3) 2
MT403	Corrosion Engineering	(3-0-0) 3
MT498	Metal Processing Lab	(0-0-3) 2
MT490	Seminar	(0-0-2) 1

Programme Specific Electives (PSE)

MT300	Electronic Properties of Material	(3-0-0) 3
MT305	Instrumental Methods of Analysis	(3-0-0) 3
MT351	Fatigue, Fracture and Creep	(3-0-0) 3
MT352	Powder Metallurgy	(3-0-0) 3
MT355	Aerospace Materials	(3-0-0) 3
MT401	Metal Forming	(3-0-0) 3
MT406	Extraction of Nonferrous Metals	(3-0-0) 3
MT407	Secondary Refining of Steels	(3-0-0) 3
MT450	Advanced Engineering Materials	(3-0-0) 3
MT451	Composite Materials	(3-0-0) 3
MT452	Advanced Welding Technology	(3-0-0) 3
MT453	Surface Engineering	(3-0-0) 3
MT454	Modelling and Simulation in Material Processes	(3-0-0) 3

Open Electives (OE)

MT405	Process Plant Materials	(3-0-0) 3
MT408	Nuclear Materials	(3-0-0) 3
MT409	Fracture of Engineering Materials	(3-0-0) 3
MT455	Smart Materials and Sensors	(3-0-0) 3

Programme Major Project (PMP)

MT449	Major Project – I	(0-0-6) 4
MT499	Major Project – II	(0-0-9) 6

Mandatory Learning Courses (MLC)

MLC1	Environmental Studies	(2-0-0) 2
MLC2	Professional Ethics and Human Values	(1-0-0) 1

Suggested Plan of Study:

Semester →	I	II	III	IV	V	VI	VII	VIII
1	MA101	MA 151	MT200	MT250	MT301	MT350	MT400	MT498
2	PH102	CY101	MT201	MT251	MT302	MT353	MT402	MT490
3	EC100	HU100	MT202	MT252	MT303	MT354	MT403	MT499
4	ME100	AM100	MT240	MT253	MT304	MT390	MT440	Elective
5	CO100	EE105	AM200	MT299	MT348	MT397	MT448	Elective
6	PH105	ME151	ME225	CH262	MT349	MT398	MT449	Elective
7	CO101	CY105	CY206	CH263	HU301	MT399	Elective	Elective
8	MLC1	ME116	Elective	Elective	Elective	HU300	Elective	Elective
9	MLC2				Elective	Elective	Elective	
10						Elective	Elective	

Degree Requirements:

Category of Courses	Minimum credits to be Earned
Basic Science Core (BSC)	20
Engineering Science Core (ESC)	42
Humanities and Social Science Core (HSC)	10
Programme Core (PC)	76
Programme Specific Electives (PSE)	18
Open Elective (OE)	13
Programme Major Project (PMP)	10
Mandatory Learning Courses (MLC)	03
Total	**192**