NATIONAL INSTITUTE OF TECHNOLOGY DURGAPUR

CURRICULUM

OF

MASTER OF TECHNOLOGY

2021 ONWARD POSTGRADUATE ADMISSION BATCH

Recommended in PGAC	: 16/08/2021
Approved by the Senate	: 22/08/2021

DEPARTMENT OF BIOTECHNOLOGY

Program Name: Master of Technology in Biotechnology

CURRICULUM

DETAILED CURRICULUM

Semester - I							
Sl. No.	Code	Subject	L	T	P	C	H
1	BT1001	Molecular Biology & rDNA Technology	3	0	0	3	3
2	BT1002	Bioprocess Engineering	3	1	0	4	4
3	BT1003	Bio-separation Technology	3	1	0	4	4
4	BT90XX	Specialization Elective - I	3	0	0	3	3
5	BT90XX	Specialization Elective - II	3	0	0	3	3
6	BT1051	Bioprocess Engineering Lab.	0	0	4	2	4
7	BT1052	Bio-separation Technology Lab.	0	0	4	2	4
		TOTAL	**15**	**2**	**8**	**21**	**25**
Semester - II							
Sl. No.	Code	Subject	L	T	P	C	H
1	BT2001	Genomics, Proteomics & Bioinformatics	3	1	0	4	4
2	BT90XX	Specialization Elective - III	3	0	0	3	3
3	BT90XX	Specialization Elective - IV	3	0	0	3	3
4	BT90XX	Specialization Elective - V	3	0	0	3	3
5	BT90XX	Specialization Elective - VI	3	0	0	3	3
6	BT2051	Molecular Biology and rDNA Technology Lab.	0	0	4	2	4
7	BT2053	Omics and Bioinformatics Lab.	0	0	4	2	4
8	BT2054	Seminar	0	0	2	1	2
		TOTAL	**15**	**1**	**10**	**21**	**26**
Semester - III							
Sl. No.	Code	Subject	L	T	P	C	H
1	BT907X	Audit Lectures/Workshops	0	0	0	0	2
2	BT3051	Dissertation-I	0	0	24	12	24
3	BT3052	Seminar –Non Project/ Evaluation of Summer Training	0	0	4	2	4
		TOTAL	**0**	**0**	**28**	**14**	**30**
Semester - IV							
Sl. No.	Code	Subject	L	T	P	C	H
1	BT4051	Dissertation II/ Industrial Project	0	0	24	12	24
2	BT4052	Project Seminar	0	0	4	2	4
		TOTAL	**0**	**0**	**28**	**14**	**28**
		Grand Total	**30**	**3**	**74**	**70**	**109**

List of Specialization Electives

Sl. No.	Subject Code	Subject Name
1	BT9031	Human Molecular Genetics
2	BT9032	Cancer Biology
3	BT9033	Signal Transduction
4	BT9034	Molecular Cell Signalling
5	BT9035	Food Biotechnology
6	BT9036	Biopharmaceutical Technology
7	BT9037	Biomaterials
8	BT9038	Biomettalurgy
9	BT9039	BioEnergy
10	BT9040	Bioprocess & Plant Design
11	BT9041	Advanced rDna & Cellular Biotechnology
12	BT9042	Animal Biotechnology
13	BT9043	Immunotechnology
14	BT9044	Molecular Modelling & Drug Design
15	BT9045	Regenerative Medicine & Translational Research
16	BT9046	Microbial Biotechnology
17	BT9047	Environmental Biotechnology
18	BT9048	Protein structure,folding & misfolding
19	BT9049	Methods in Computational Biology
20	BT9050	Nanobiotechnology
21	BT9051	Plant Biotechnology
22	BT9052	Metabolic Engineering
23	BT9053	Nutraceuticals & Nutrigenomics
24	BT9054	Molecular Plant Pathogen Interactions
25	BT9055	Cell Biology of Human Diseases
26	BT9056	Infectious Diseases & Infection Control
27	BT9057	Project Engineering in Biotechnology
28	BT9058	Biological Computation
29	BT9059	Quality by Design for Biopharmaceuticals
30	BT9060	Medical Biotechnology
31	BT9061	Biological Chemistry
32	BT9062	BioEntreupreneurship

DEPARTMENT OF CHEMICAL ENGINEERING

Program Name: Master of Technology in Chemical Engineering

CURRICULUM

Sl. No.	Subject Code	Name of the Subject	L	T	S	C	H
Semester I							
1.	CH 1001	Fundamentals of Chemical Engineering	3	0	0	3	3
2.	CH 1002	Chemical Reactor Analysis and Design	3	1	0	4	4
3.	CH 1003	Advanced Mathematical Methods in Chemical Engineering	3	1	0	4	4
4.	CH 903*	Elective-I	3	0	0	3	3
5.	CH 903*	Elective-II	3	0	0	3	3
6.	CH 1051	Advanced Chemical Engineering Laboratory-1	0	0	4	2	4
7.	CH 1052	Process Modelling and Simulation Laboratory	0	0	4	2	4
		Total Credit				**21**	**25**
Semester II							
1.	CH 2001	Advanced Chemical Engineering Thermodynamics	3	1	0	4	4
2.	CH 2002	Advanced Transport Phenomena	3	1	0	4	4
3.	CH 903*	Elective-III	3	0	0	3	3
4.	CH 903*	Elective-IV	3	0	0	3	3
5.	CH 903*	Elective-V	3	0	0	3	3
6.	CH 2051	Advanced Chemical Engineering Laboratory-2	0	0	4	2	4
7.	CH 2052	Mini Project with Seminar	0	0	6	3	6
		Total Credit				**22**	**27**
Semester III							
1.	CH 9071	Audit Lectures / Workshops	0	0	0	0	2
2.	CH 3051	Dissertation - I	0	0	24	12	24
3.	CH 3052	Seminar – Non Project / Evaluation of Summer Training	0	0	4	2	4
		Total Credit				**14**	**30**
Semester IV							
1.	CH 4051	Dissertation - II	0	0	24	12	24
2.	CH 4052	Project Seminar	0	0	4	2	4
		Total Credit				**14**	**28**

Total Programme Credit Point: 71

Sl. No.	Subject Code	Name of the Subject
	List of Elective Subjects	
1.	CH9031	Biochemical and Bio Engineering
2.	CH9032	Advanced Process Dynamics and Control
3.	CH9033	Environmental Engineering
4.	CH9034	Non-conventional Energy Engineering
5.	CH9035	Chemical Process Optimization
6.	CH9036	Multiphase Flow
7.	CH9037	Process Intensification and Green Technology
8.	CH9038	Petroleum Refining and Petrochemical Engineering
9.	CH9039	Bioprocess and bioreactor Engineering
10.	CH9040	Mathematical Heat Transfer and Fluid Flow
11.	CH9041	Ethics in Engineering Profession
12.	CH9042	Combustion Engineering
13.	CH9043	CFD Applications in Chemical Engineering
14.	CH9044	Project Engineering and Management
15.	CH9045	Hazard Analysis and Risk Management in Chemical Industry
16.	CH9046	Nanotechnology
17.	CH9047	Computer Aided Process Engineering
18.	CH9048	Advanced Water and Wastewater Technology
19.	CH9049	Biofuel Technology
20.	CH9050	Colloids and Interface Engineering
21.	CH9051	Pinch Technology in Process Industry
22.	CH9052	Catalysis in Chemical Industry
23.	CH9053	Membrane Technology for Environment Protection

DEPARTMENT OF CIVIL ENGINEERING

Program Name: Master of Technology in Structural Engineering

CURRICULUM

FIRST SEMESTER

Sl. No	Sub. Code	Subject	L-T-P	Credits
1	CE 1001	Advanced Analysis of Structures	4-0-0	4
2	CE 1002	Advanced RC Structure	4-0-0	4
3	CE 1003	Introduction to Finite Element Method in Structural Engineering	4-0-0	4
4	CE	Elective I	3-0-0	3
5	9011-30	Elective II	3-0-0	3
6	CE 1051	Laboratory I: Structural Lab-I	0-0-4	2
7	CE 1052	Laboratory II: Computational Lab	0-0-4	2
		TOTAL	18-0-8	22

SECOND SEMESTER

Sl. No	Sub. Code	Subject	L-T-P	Credits
1	CE 2001	Advanced Steel Structure	4-0-0	4
2	CE	Elective III	3-0-0	3
3	9031-50	Elective IV	3-0-0	3
4		Elective V	3-0-0	3
5	CE 9051-60	Elective VI	3-0-0	3
6	CE 2051	Laboratory III: Structural Lab-II	0-0-4	2
7	CE 2052	Mini Project with Seminar	0-0-8	4
		TOTAL	16-0-12	22

THIRD SEMESTER

Sl. No	Sub. Code	Subject	L-T-P	Credits
1	XX907X	Audit Lectures /Workshop	0-0-2	0
2	CE 3051	Dissertation -I	0-0-24	12
3	CE 3052	Non-Project Seminar / Evaluation of Summer Training	0-0-4	2
		TOTAL	0-0-30	14

FOURTH SEMESTER

Sl. No	Sub. Code	Subject	L-T-P	Credits
1	CE 4051	Dissertation –II /Industrial Project	0-0-24	12
2	CE 4052	Project Seminar	0-0-4	2
		TOTAL	0-0-28	14

Sub Discipline: DEPTH ELECTIVES

FIRST SEMESTER: Specialization Elective-I & II

SUBJECT CODE	SUBJECT	L-T-P	CREDIT
CE 9011	Advanced Concrete Technology	3-0-0	3
CE 9012	Design of Pre-stressed Concrete Structure	3-0-0	3
CE9013	Advanced Structural Mechanics	3-0-0	3
CE 9014	Reliability Methods in Structural Engineering	3-0-0	3
CE 9015	Space Structures and Suspended Structures	3-0-0	3
CE 9016	Applied Probability and Statistics in Civil Engineering	3-0-0	3
CE 9017	Offshore Structural Engineering	3-0-0	3
CE 9018	Wind Analysis and Design of Structures	3-0-0	3
CE 9019	Foundation Engineering	3-0-0	3

SECOND SEMESTER: Specialization Elective-III to V

SUBJECT CODE	SUBJECT	L-T-P	CREDIT
CE9031	Plate and Shell Structures	3-0-0	3
CE9032	Theory of Elastic Stability	3-0-0	3
CE9033	Advanced Bridge Engineering	3-0-0	3
CE9034	Structural Dynamics	3-0-0	3
CE9035	Soil Structure Interaction	3-0-0	3
CE9036	Advanced Theory of Vibration	3-0-0	3
CE9037	Mechanics of Composite and Smart Structures	3-0-0	3
CE9038	Analysis and Design of Tall Structures	3-0-0	3
CE9039	Soil Dynamics & Machine Foundation	3-0-0	3
CE9040	Repair and Rehabilitation of Structures	3-0-0	3
CE9041	Engineering Elasticity and Plasticity	3-0-0	3
CE9042	Retrofitting and Strengthening of Structures	3-0-0	3

Specialization Elective-VI

SUBJECT CODE	SUBJECT	L-T-P	CREDIT
CE9051	Advanced Finite Element Method in Structural Engineering	3-0-0	3
CE9052	Applied Numerical Methods	3-0-0	3
CE9053	Machine Learning in Civil Engineering	3-0-0	3
CE9054	Structural Optimization	3-0-0	3

DEPARTMENT OF CIVIL ENGINEERING

Program Name: Master of Technology in Geotechnical Engineering

CURRICULUM

FIRST SEMESTER

Sl. No	Sub. Code	Subject	L-T-P	Credits
1	CE1011	Foundation Engineering	3-1-0	4
2	CE1012	Advanced Soil Mechanics	3-1-0	4
3	CE1013	Geotechnical Earthquake Engineering	3-1-0	4
4	CE9061-	Specialization Elective I	3-0-0	3
5	CE9067	Specialization Elective II	3-0-0	3
6	CE1061	Geotechnical Lab-I	0-0-4	2
7	CE1062	Computational Lab	0-0-4	2
		TOTAL	15-3-8	**22**

SECOND SEMESTER

Sl. No	Sub. Code	Subject	L-T-P	Credits
1	CE2011	Ground Improvement	3-1-0	4
2	CE9081-	Specialization Elective III	3-0-0	3
3	CE9090	Specialization Elective IV	3-0-0	3
4		Specialization Elective V	3-0-0	3
5	CE9095- CE9097	Specialization Elective VI	3-0-0	3
6	CE2061	Geotechnical Lab-II	0-0-4	2
7	CE2062	Mini Project with Seminar	0-0-8	4
		TOTAL	**15-1-12**	**22**

THIRD SEMESTER

Sl. No	Sub. Code	Subject	L-T-P	Credits
1	XX907X	Audit Lectures/Workshops	0-0-2	0
2	CE3061	Dissertation-I	0-0-24	12
3	CE3062	Seminar - Non-Project / Evaluation of Summer Training	0-0-4	2
		TOTAL	0-0-30	**14**

FOURTH SEMESTER

Sl. No	Sub. Code	Subject	L-T-P	Credits
1	CE4061	Dissertation - II / Industrial Project	0-0-24	12
2	CE4062	Project Seminar	0-0-4	2
		TOTAL	0-028	**14**

Sub Discipline: DEPTH ELECTIVES

FIRST SEMESTER: Specialization Elective-I & II

SL. NO.	SUBJECT CODE	SUBJECTS
1	CE9061	Applied Probability and Statistics in Civil Engineering
2	CE9062	Geo-environmental Engineering
3	CE9063	Groundwater Hydrology
4	CE9064	Finite Element Method
5	CE9065	Offshore Geotechnical Engineering
6	CE9066	Design of Reinforced Concrete Foundation
7	CE9067	Advanced Analysis of Structures

SECOND SEMESTER: Specialization Elective-III to V

SL. NO.	SUBJECT CODE	SUBJECTS
1	CE9081	Soil Dynamics and Machine Foundation
2	CE9082	Soil Structure Interaction
3	CE9083	Constitutive Modelling in Soil Mechanics
4	CE9084	Rock Mechanics
5	CE9085	Slope Stability and Earth Dams
6	CE9086	Pavement Analysis and Design
7	CE9087	Reinforced Earth and Geotextiles
8	CE9088	Remote Sensing and GIS
9	CE9089	Forensic Geotechnical Engineering
10	CE9090	Tunnelling Technology

Specialization Elective-VI

SL. NO.	SUBJECT CODE	SUBJECTS
1	CE9095	Applied Numerical Methods
2	CE9096	Machine Learning in Civil Engineering
3	CE9097	Modelling, Simulations and Computer Applications in Geotechnical Engineering

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Program Name: Master of Technology in Computer Science and Engineering

CURRICULUM

First Semester

Sl. No.	Sub. Code	Subject	L-T-P	Credits	Hours
1	CS1001	Foundations of Computing Science	3-1-0	4	4
2	CS1002	Advanced Algorithms	3-1-0	4	4
3	CS1003	Distributed System	3-1-0	4	4
4	CS1004	AI & Machine Learning	3-1-0	4	4
5	CS90XX	Elective-I	3-0-0	3	3
6	CS1051	Advanced Computing Lab I	0-0-6	3	6
TOTAL				**22**	**24**

Second Semester

Sl. No.	Sub. Code	Subject	L-T-P	Credits	Hours
1	CS90XX	Elective-II	3-0-0	3	3
2	CS90XX	Elective-III	3-0-0	3	3
3	CS90XX	Elective-IV	3-0-0	3	3
4	CS90XX	Elective-V	3-0-0	3	3
5	CS90XX	Elective-VI	3-0-0	3	3
6	CS2051	Advanced Computing Lab 2	0-0-6	3	6
7	CS2052	Mini Project with Seminar	0-0-6	3	6
TOTAL				**21**	**27**

Third Semester

Sl. No.	Sub. Code	Subject	L-T-P	Credits	Hours
1	XX907X	Audit Lectures/ Workshops	0-0-0	0	2
	CS3051	Dissertation – I	0-0-24	12	24
2	CS3052	Seminar – Non-Project/Evaluation of Summer Training	0-0-4	2	4
TOTAL				**14**	**30**

Fourth Semester

Sl. No.	Sub. Code	Subject	L-T-P	Credits	Hours
1	CS4051	Dissertation – II/Industrial Project	0-0-24	12	24
2	CS4052	Project Seminar	0-0-4	2	4
TOTAL				**14**	**28**
Total Program Credit				**70**	**109**

LIST OF ELECTIVES

Pool –I (General Elective)

CS9011	Semantic Web and Linked Data Engineering	3-0-0	3
CS9012	Digital Image Processing	3-0-0	3
CS9013	Information & Coding Theory	3-0-0	3
CS9014	Advanced Optimization Techniques	3-0-0	3
CS9015	Mathematical Programming	3-0-0	3
CS9016	Quantum Information and Computing	3-0-0	3
CS9017	Cellular Automata	3-0-0	3
CS9018	Advanced DBMS	3-0-0	3
CS9019	Advanced Software Engineering	3-0-0	3
CS9020	Ethics, Society and Computer Science	3-0-0	3

Pool –II (Networks and Systems)

CS9021	Optical Networks	3-0-0	3
CS9022	Optical and Wireless Communication	3-0-0	3
CS9023	Wireless Networks & Mobile Computing	3-0-0	3
CS9024	Smartphone Computing	3-0-0	3
CS9025	High Performance Computing	3-0-0	3
CS9026	Wireless Ad Hoc and Sensor Networks	3-0-0	3
CS9027	Basics of IoT and Applications	3-0-0	3
CS9028	Cloud Computing	3-0-0	3

Pool –III (Data Sciences)

CS9029	Data Warehousing	3-0-0	3
CS9030	Data Mining	3-0-0	3
CS9031	Big Data Analytics	3-0-0	3
CS9032	Big Data Modelling and Management	3-0-0	3
CS9033	Statistical Learning for Data Science	3-0-0	3
CS9034	Business Process Modelling & Analysis	3-0-0	3
CS9035	Time Series Analysis	3-0-0	3
CS9036	Complex Network Theory	3-0-0	3

Pool –IV (AI & ML)

CS9037	Soft Computing Techniques	3-0-0	3
CS9038	Pattern Recognition	3-0-0	3
CS9039	Bio-Medical Signal and Image Processing	3-0-0	3
CS9040	Applied AI	3-0-0	3
CS9041	Introduction to Cognitive Computing	3-0-0	3
CS9042	Speech Processing	3-0-0	3
CS9043	Knowledge Based System Engineering	3-0-0	3
CS9044	Natural Language Processing	3-0-0	3
CS9045	Deep Learning	3-0-0	3
CS9046	Deep Learning for Image Processing	3-0-0	3
CS9047	Information Retrieval	3-0-0	3
CS9048	Human Activity Recognition	3-0-0	3

Pool –V (Computer Security)

CS9051	Foundations of Cryptography	3-0-0	3
CS9052	Cryptology and Cryptanalysis	3-0-0	3
CS9053	Biometrics	3-0-0	3
CS9054	Information and System Security	3-0-0	3
CS9055	Secure Multiparty Computation	3-0-0	3
CS9056	Digital Forensics	3-0-0	3
CS9057	Cyber Security	3-0-0	3
CS9058	Hardware Security	3-0-0	3
CS9059	Blockchain Technology and its Applications	3-0-0	3

Pool –VI (Software and Systems)

CS9061	Business Process Management in Software Science	3-0-0	3
CS9062	Ontology Engineering	3-0-0	3
CS9063	Software Testing	3-0-0	3
CS9064	Software Project and Quality Management	3-0-0	3
CS9065	Cloud Computing	3-0-0	3
CS9066	Software Architectures	3-0-0	3
CS9067	Agent based Systems	3-0-0	3
CS9068	Service-Oriented Systems	3-0-0	3

Pool –VII (Algorithms)

CS9071	Game Theory and its Applications	3-0-0	3
CS9072	Randomized Algorithms	3-0-0	3
CS9073	Computational Geometry	3-0-0	3
CS9074	Computability Theory	3-0-0	3
CS9075	Approximate Algorithms	3-0-0	3
CS9076	Computational Complexity Theory	3-0-0	3
CS9077	Computational Number Theory	3-0-0	3
CS9078	Data Stream Algorithms	3-0-0	3
CS9079	Online Algorithms	3-0-0	3
CS9080	Algorithmic Mechanism Design	3-0-0	3
CS9081	Theory of Parallel Systems	3-0-0	3
CS9082	Complex Network Theory	3-0-0	3
CS9083	Advanced Graph Theory	3-0-0	3

Pool –VIII (Architecture and Hardware Design)

CS9091	CAD for VLSI	3-0-0	3
CS9092	Cyber Physical Systems	3-0-0	3
CS9093	Advanced Computer Architecture	3-0-0	3
CS9094	Testing and Verification of Digital Circuits	3-0-0	3
CS9095	Hardware Security	3-0-0	3
CS9096	Embedded System Design	3-0-0	3
CS9097	High Performance Computing	3-0-0	3

DEPARTMENT OF EARTH AND ENVIRONMENTAL STUDIES

Program Name: Master of Technology in Environmental Science and Technology

CURRICULUM

Sl. No	Code	Subject	L	T	S	C	H
Semester - I							
1	ES1001	Fundamentals of Environment	3	0	0	3	3
2	ES1002	Environmental Chemistry	3	1	0	4	4
3	ES1003	Treatment of Water and Wastewater	3	1	0	4	4
4	XX903X	SPECIALIZATION ELECTIVE - I	3	0	0	3	3
5	XX903X	SPECIALIZATION ELECTIVE - II	3	0	0	3	3
6	ES1051	Environmental Analysis (Sessional)	0	0	4	2	4
7	ES1052	Microbiology and Wastewater Engineering Practical	0	0	4	2	4
		TOTAL	**15**	**2**	**8**	**21**	**25**
Semester - II							
1	ES2001	Air and Noise pollution Quality and Control	3	1	0	4	4
2	ES2002	Solid Waste Management	4	0	0	4	4
3	XX903X	SPECIALIZATION ELECTIVE - IV	3	0	0	3	3
4	XX903X	SPECIALIZATION ELECTIVE - V	3	0	0	3	3
5	XX903X	SPECIALIZATION ELECTIVE - VI	3	0	0	3	3
6	ES2051	Air and Noise monitoring and analysis	0	0	4	2	4
7	ES2053	Remote Sensing & GIS Practical	0	0	4	2	4
		TOTAL	**16**	**1**	**8**	**21**	**25**
Semester - III							
1	XX907X	AUDIT LECTURES / WORKSHOPS	0	0	0	0	2
2	ES3051	DISSERTION - I / INDUSTRIAL PROJECT	0	0	24	12	24
3	ES3052	SEMINAR - NON-PROJECT	0	0	4	2	4
		TOTAL	**0**	**0**	**28**	**14**	**30**
Semester - IV							
1	ES4051	DISSERTION - II / INDUSTRIAL PROJECT	0	0	24	12	24
2	ES4052	PROJECT SEMINAR	0	0	4	2	4
		TOTAL	**0**	**0**	**28**	**14**	**28**
		Grand Total	31	3	72	70	108

ELECTIVES FOR SEMESTER – I

Sl No	Subject Code	Subject
1.	ES9011	Mining and the Environment
2.	ES9012	Environmental Geology
3.	ES9013	Remote sensing and GIS
4.	ES9014	Green Chemistry / Technology

ELECTIVES FOR SEMESTER II

Sl No	Subject Code	Subject
1.	ES9015	Hydrogeology and Watershed Management
2.	ES9016	Natural Hazards and Disaster Management
3.	ES9017	Environmental Management
4.	ES9018	Noise control Engineering
5.	ES9019	Mathematical Modelling in Environmental Engineering
6.	ES9020	Environmental Radio-chemistry
7.	ES9021	Environmental Biotechnology
8.	ES9022	Hydro-geochemistry, Contamination and Remediation

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Program Name: Master of Technology in Telecommunication Engineering

CURRICULUM

SEMESTER I

Sl. No	Code	Subject	L	T	S	C	H
1	EC1001	Probability, Random Variables & Stochastic Processes	3	0	0	3	3
2	EC1002	Advanced Digital Communication	3	1	0	4	4
3	EC1003	Information Theory &Coding	3	0	0	3	3
4	EC 903X	Specialization Elective - I	3	1	0	4	4
5	EC 903X	Specialization Elective - II	3	1	0	4	4
6	EC1051	Telecommunication System Simulation Laboratory	0	0	4	2	4
7	EC1052	Telecommunication Hardware Laboratory	0	0	4	2	4
		TOTAL	**15**	**3**	**8**	**22**	**26**

SEMESTER II

Sl. No	Code	Subject	L	T	S	C	H
1	EC2001	Telecommunication Networks	3	0	0	3	3
2	EC2002	Wireless Communication	3	1	0	4	4
3	EC 903X	Specialization Elective - III	3	1	0	4	4
4	EC 903X	Specialization Elective - IV	3	1	0	4	4
5	EC 903X	Specialization Elective - V	3	1	0	4	4
6	EC2051	Telecommunication Design and Measurement Laboratory	0	0	4	2	4
7	EC2052	Term Project/Lab-Based Project	0	0	6	3	6
		TOTAL	**15**	**4**	**10**	**24**	**29**

SEMESTER III

Sl. No	Code	Subject	L	T	S	C	H
1	XX 907x	Audit Lectures / Workshops**	0	0	0	0	2
2	EC3051	Project - I	0	0	24	12	24
3	EC3052	Seminar - Non-Project / Evaluation of Summer Training	0	0	4	2	4
		TOTAL	0	0	28	14	30

SEMESTER IV

Sl. No	Code	Subject	L	T	S	C	H
1	EC4051	Project - II	0	0	24	12	24
1	EC4052	Project Seminar	0	0	4	2	4
		TOTAL	0	0	28	14	28

Note: (i) Project I & II may be done independently or completed in continuation,
(ii) Project I and/or II may be done in collaboration with Industry/other academic/R&D Organization

List of Common Pool Electives

Sl. No.	SUBJECT CODE	SUBJECT	L-T-S	CREDIT
1.	EC 9030	Error Control Coding	3-1-0	4
2.	EC 9031	Digital Signal Processing & its applications	3-1-0	4
3.	EC 9032	Detection & Estimation Theory	3-1-0	4
4.	EC 9033	Statistical Signal Processing	3-1-0	4
5.	EC 9034	Image Processing	3-1-0	4
6.	EC9035	Queuing Theory for Telecommunication	3-1-0	4
7.	EC9036	Microwave & Millimeter Wave Systems	3-1-0	4
8.	EC 9037	Optical Communication	3-1-0	4
9.	EC 9038	Antenna Analysis & Synthesis	3-1-0	4
10.	EC 9039	Satellite Communication	3-1-0	4
11.	EC 9040	Artificial Intelligence & Soft Computing	3-1-0	4
12.	EC 9041	RF IC DESIGN	3-1-0	4
13.	EC 9042	SoC Design	3-1-0	4
14.	*EC 9043	*FPGA based design	3-0-2	4
15.	EC 9044	MEMS & Microsystem Technology	3-1-0	4
16.	EC 9045	Embedded Systems	3-1-0	4
17.	EC 9046	Internet of Things (IoT)	3-1-0	4
18.	EC 9047	Nanoelectronics	3-1-0	4
19.	EC 9048	*ASIC Design using Verilog/VHDL	3-0-2	4
20.	EC 9049	Mixed Signal IC Design	3-1-0	4
21.	EC 9050	Low Power Circuits and Systems	3-1-0	4
22.	EC 9051	Testing and Verification of VLSI Circuits	3-1-0	4
23.	EC 9052	Computer Architecture	3-1-0	4
24.	EC 9053	Physical System Analysis and Modeling	3-1-0	4
25.	EC 9054	Cyber Physical Electronic System Design	3-1-0	4
26.	EC 9055	Electronic Measurements and System Design	3-1-0	4
27.	EC9056	DSP Architectures in VLSI	3-1-0	4
28.	EC9057	Power Management IC Design	3-1-0	4
29.	EC9058	Smart Materials based Electronic Devices	3-1-0	4

Note: Other than the above-mentioned courses, any course including core and elective offered by another PG program of the Department / Institute can be opted as an elective subject without any constraint.

*The Lecture, Tutorial and Sessional distribution of FPGA Based Design (EC9043) and ASIC Design using Verilog/VHDL are 3, 0 and 2, respectively.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Program Name: Master of Technology in Microelectronics and VLSI

CURRICULUM

Sl. No	Code	Subject	L	T	S	C	H
		SEMESTER I					
1	EC1011	Semiconductor Device & Modelling	3	0	0	3	3
2	EC1012	Analog IC Design	3	1	0	4	4
3	EC1013	Digital IC Design	3	0	0	3	3
4	EC90XX	SPECIALIZATION ELECTIVE - I	3	1	0	4	4
5	EC90XX	SPECIALIZATION ELECTIVE - II	3	1	0	4	4
6	EC1061	Analog IC Design Lab	0	0	4	2	4
7	EC1062	Digital IC Design Lab	0	0	4	2	4
		TOTAL	**15**	**3**	**8**	**22**	**26**

Sl. No	Code	Subject	L	T	S	C	H
		SEMESTER II					
1	EC2011	VLSI Technology	3	0	0	3	3
2	EC2012	VLSI System Design	3	1	0	4	4
3	EC90XX	SPECIALIZATION ELECTIVE - III	3	1	0	4	4
4	EC90XX	SPECIALIZATION ELECTIVE - IV	3	1	0	4	4
5	EC90XX	SPECIALIZATION ELECTIVE - V	3	1	0	4	4
6	EC2061	VLSI System Design Lab	0	0	4	2	4
7	EC2062	Term Project/ Lab-Based Project	0	0	6	3	6
		TOTAL	**15**	**4**	**10**	**24**	**29**

Sl. No	Code	Subject	L	T	S	C	H
		SEMESTER III					
1	XX90XX	AUDIT LECTURES / WORKSHOPS	0	0	0	0	2
2	EC3061	Project - I	0	0	24	12	24
3	EC3062	SEMINAR - NON-PROJECT / EVALUATION OF SUMMER TRAINING	0	0	4	2	4
		TOTAL	0	0	28	14	30

Sl. No	Code	Subject	L	T	S	C	H
		SEMESTER IV					
1	EC4061	Project - II	0	0	24	12	24
1	EC4062	PROJECT SEMINAR	0	0	4	2	4
		TOTAL	0	0	28	14	28

Note: (i) Project I & II may be done independently or completed in continuation,
(ii) Project I and/or II may be done in collaboration with Industry/other academic/R&D Organization

List of Common Pool Electives:

Sl. No.	SUBJECT CODE	SUBJECT	L-T-S	CREDIT
1.	EC9030	Error Control Coding	3-1-0	4
2.	EC9031	Digital Signal Processing & its applications	3-1-0	4
3.	EC9032	Detection & Estimation Theory	3-1-0	4
4.	EC9033	Statistical Signal Processing	3-1-0	4
5.	EC9034	Image Processing	3-1-0	4
6.	EC9035	Queuing Theory for Telecommunication	3-1-0	4
7.	EC9036	Microwave & Millimeter Wave Circuits	3-1-0	4
8.	EC9037	Optical Communication	3-1-0	4
9.	EC9038	Antenna Analysis & Synthesis	3-1-0	4
10.	EC9039	Satellite Communication	3-1-0	4
11.	EC9040	Artificial Intelligence & Soft Computing	3-1-0	4
12.	EC9041	RF IC DESIGN	3-1-0	4
13.	EC9042	SoC Design	3-1-0	4
14.	EC9043	*FPGA based design	3-0-2	4
15.	EC9044	MEMS & Microsystem Technology	3-1-0	4
16.	EC9045	Embedded Systems	3-1-0	4
17.	EC9046	Internet of Things (IoT)	3-1-0	4
18.	EC9047	Nanoelectronics	3-1-0	4
19.	EC9048	*ASIC Design using Verilog/VHDL	3-0-2	4
20.	EC9049	Mixed Signal IC Design	3-1-0	4
21.	EC9050	Low Power Circuits and Systems	3-1-0	4
22.	EC9051	Testing and Verification of VLSI Circuits	3-1-0	4
23.	EC9052	Computer Architecture	3-1-0	4
24.	EC9053	Physical System Analysis and Modeling	3-1-0	4
25.	EC9054	Cyber Physical Electronic System Design	3-1-0	4
26.	EC9055	Electronic Measurements and System Design	3-1-0	4
27.	EC9056	DSP Architectures in VLSI	3-1-0	4
28.	EC9057	Power Management IC Design	3-1-0	4
29.	EC9058	Smart Materials based Electronic Devices	3-1-0	4

Note: Other than the above-mentioned courses, any course including core and elective offered by another PG program of the Department / Institute can be opted as an elective subject without any constraint.

*The Lecture, Tutorial and Laboratory/Sessional distribution of FPGA Based Design (EC9043) and ASIC Design using Verilog/ VHDL (EC9048) are 3, 0 and 2, respectively.

DEPARTMENT OF ELECTRICAL ENGINEERING

Program Name: Master of Technology in Power Systems

CURRICULUM

		Semester - I					
Sl.No.	Code	Subject	L	T	S	C	H
1	EE1001	EHV Transmission	3	1	0	4	4
2	EE1002	Power System Operation and Control	3	1	0	4	4
3	EE1003	High Voltage Engineering	3	1	0	4	4
4	EE90XX	Specialization Elective – I	3	0	0	3	3
5	EE90XX	Specialization Elective – II	3	0	0	3	3
6	EE1051	High Voltage Engineering Lab	0	0	4	2	4
7	EE1052	Computational Laboratory	0	0	4	2	4
		Total	15	3	8	22	26
		Semester - II					
Sl. o.	Code	Subject	L	T	S	C	H
1	EE2001	Power System Protection and Transients	3	1	0	4	4
2	EE90XX	Specialization Elective – III	3	1	0	4	4
3	EE90XX	Specialization Elective – IV	3	0	0	3	3
4	EE90XX	Specialization Elective – V	3	0	0	3	3
5	EE2051	Advanced Power System Laboratory	0	0	4	2	4
6	EE2052	Power System Simulation Laboratory	0	0	4	2	4
7	EE2053	Mini Project with Seminar	0	0	6	3	6
		Total	12	2	14	21	28
		Semester - III					
1	EE907X	Audit Lectures/Workshops					2
2	EE3051	Dissertation – I	0	0	24	12	24
3	EE3052	Seminar – Non-Project / Evaluation of Summer Training	0	0	4	2	4
		Total	0	0	28	14	30
		Semester - IV					
1	EE4051	Dissertation – II / Industrial Project	0	0	24	12	24
2	EE4052	Project Seminar	0	0	4	2	4
		Total	0	0	28	14	28

Electives I and II

Subject Code	Subject Name
EE9011	Soft Computing Techniques
EE9014	Advanced Control system-I
EE9015	Power System Modelling
EE9016	Machine Learning & Expert System
EE9020	Electric Vehicles

Elective III

Subject Code	Subject Name
EE9027	Power System Dynamics and Control
EE9028	Power System Control and Instrumentation
EE9030	Distributed Generation System and Microgrid

Electives IV and V

Subject Code	Subject Name
EE9017	Renewable Energy Systems
EE9018	Embedded System
EE9019	FACTS Devices
EE9021	Digital Signal Processing
EE9022	Estimation of signals and Systems
EE9023	Process Instrumentation and Control
EE9024	Power System Optimization
EE9025	Power System Reliability and Planning
EE9026	Biomedical Instrumentation

DEPARTMENT OF ELECTRICAL ENGINEERING

Program Name: Master of Technology in Power Electronics and Machine Drives

CURRICULUM

		Semester – I					
Sl. No.	Code	Subject	L	T	S	C	H
1	EE1011	Advanced Power Electronics – I	3	1	0	4	4
2	EE1012	Machine Drives – I	3	1	0	4	4
3	EE1013	Advanced Control System – I	3	1	0	4	4
4	EE90XX	Specialization Elective – I	3	0	0	3	3
5	EE90XX	Specialization Elective – II	3	0	0	3	3
6	EE1061	Advanced Power Electronics	0	0	4	2	4
7	EE1062	Computational Laboratory	0	0	4	2	4
		Total	**15**	**3**	**8**	**22**	**26**
		Semester – II					
Sl. No.	Code	Subject	L	T	S	C	H
1	EE2011	Advanced Power Electronics – II	3	1	0	4	4
2	EE90XX	Specialization Elective – III	3	1	0	4	4
3	EE90XX	Specialization Elective – IV	3	0	0	3	3
4	EE90XX	Specialization Elective – V	3	0	0	3	3
5	EE2061	Machine Drives Laboratory	0	0	4	2	4
6	EE2062	Advanced Control Laboratory	0	0	4	2	4
7	EE2063	Mini Project with Seminar	0	0	6	3	6
		Total	**12**	**2**	**14**	**21**	**28**
		Semester – III					
1	EE907X	Audit Lectures/Workshops					2
2	EE3061	Dissertation – I	0	0	24	12	24
3	EE3062	Seminar – Non-Project / Evaluation of Summer Training	0	0	4	2	4
		Total	**0**	**0**	**28**	**14**	**30**
		Semester – IV					
1	EE4061	Dissertation – II / Industrial Project	0	0	24	12	24
2	EE4062	Project Seminar	0	0	4	2	4
		Total	**0**	**0**	**28**	**14**	**28**

Electives I and II

Subject Code	Subject Name
EE9032	Machine Analysis
EE9020	Electric Vehicles
EE9011	Soft Computing Techniques
EE9016	Machine Learning and Expert System

Elective III

Subject Code	Subject Name
EE9012	Machine Drives – II
EE9021	Digital Signal Processing
EE9030	Distributed Generation System and Microgrid

Electives IV and V

Subject Code	Subject Name
EE9029	Advanced Control System – II
EE9017	Renewable Energy Systems
EE9018	Embedded System
EE9019	FACTS Devices
EE9022	Estimation of signals and Systems
EE9026	Biomedical Instrumentation
EE9031	Special Electrical Machines

DEPARTMENT OF MECHANICAL ENGINEERING
Program Name: Master of Technology in Machine Design

CURRICULUM

Sl. No.	Subject Code	Name of the Subject	L	T	S	C	H
		Semester I					
1.	ME 1001	Machine Dynamics and Control	3	0	2	4	5
2.	ME 1002	Advanced Mechanics of Solids	3	0	2	4	5
3.	ME 1003	Analysis and Synthesis of Mechanisms	3	0	2	4	5
4.	ME 90XX	Elective-I	3	0	0	3	3
5.	ME 1051	Computational Laboratory	1	0	4	3	5
		Total Credit				**18**	**23**
		Semester II					
1.	ME 2001	Machine Design	3	0	2	4	5
2.	ME 2002	Mechanical Vibrations	3	0	2	4	5
3.	ME 90XX	Elective-II	3	0	0	3	3
4.	ME 90XX	Elective-III	3	0	0	3	3
5.	ME 90XX	Elective-IV	3	0	0	3	3
6.	ME 2051	Machine Design Laboratory	0	0	3	1.5	3
7.	ME 2052	Computer Aided Design Laboratory	0	0	3	1.5	3
8.	ME 2053	Mini Project with Seminar	0	0	4	2	4
		Total Credit				**22**	**29**
		Semester III					
1.	ME907X	Audit Lectures / Workshops/ Special Topics in Machine Design	1	0	0	0	1
2.	ME 3051	Dissertation - I	0	0	24	12	24
3.	ME 3052	Seminar - Non-Project / Evaluation of Summer Training	0	0	4	2	4
		Total Credit				**14**	**30**
		Semester IV					
1.	ME 4051	Dissertation - II / Industrial Project	0	0	24	12	24
2.	ME 4052	Project Seminar	0	0	4	2	4
		Total Credit				**14**	**28**
TOTAL CREDIT POINT : 68, TOTAL CONTACT HOURS: 110							

LIST OF SUBJECTS FOR ELECTIVE I AND II

Sl. No.	Subject Code	Name of the Subject
1.	ME 9011	Applied Computational Methods
2.	ME 9014	Operations Research
3.	ME 9016	Mechatronics
4.	ME 9018	Finite Element Methods
5.	ME 9019	Robotics
6.	ME 9022	Modern Manufacturing Processes
7.	ME 9023	Computer Aided Design
8.	ME 9026	Tribology
9.	ME 9028	Material Handling Equipment
10.	ME 9029	Optimization in Engineering Design
11.	ME 9030	Design of Machine Tools
12.	ME 9044	Fluid Power Systems and Control

LIST OF SUBJECTS FOR ELECTIVE III AND IV

Sl. No.	Subject Code	Name of the Subject
1.	ME 9012	Introduction to Non-linear Dynamic Systems and Control
2.	ME 9013	Theory of Plates and Shells
3.	ME 9015	Theory of Elasticity and Plasticity
4.	ME 9017	Microsystem Design
5.	ME 9020	Knowledge Based Systems
6.	ME 9024	Mechanics of Composite and Functionally Graded Material
7.	ME 9025	Modelling and Simulation of Mechanical Systems
8.	ME 9050	Mathematical Methods in Engineering
9.	ME9063	Lubrication Engineering

DEPARTMENT OF MECHANICAL ENGINEERING

Program Name: Master of Technology in Fluid Mechanics and Heat Transfer

CURRICULUM

Sl. No.	Subject Code	Name of the Subject	L	T	S	C	H
Semester I							
1.	ME 1011	Advanced Fluid Mechanics	3	1	0	4	4
2.	ME 1012	Mathematical Methods in Engineering	3	1	0	4	4
3.	ME 1013	Convective Heat and Mass Transfer	3	1	0	4	4
4.	ME 90**	Specialization Elective - I	3	0	0	3	3
5.	ME 90**	Specialization Elective - II	3	0	0	3	3
6.	ME 1061	Thermo-Fluids Laboratory	0	0	4	2	4
7.	ME 1062	Numerical Simulation Laboratory	0	0	4	2	4
		Total Credit				**22**	**26**
Semester II							
1.	ME 2011	Microfluidics	3	1	0	4	4
2.	ME 2012	Computational Fluid Flow and Heat Transfer	3	1	0	4	4
3.	ME 2013 / ME2014	Core- Elective	3	1	0	4	4
4.	ME 90**	Elective-III	3	0	0	3	3
5.	ME 90**	Elective-IV	3	0	0	3	3
6.	ME 2061	CFD Laboratory	0	0	4	2	4
7.	ME 2062	Mini Project with Seminar	0	0	6	3	6
		Total Credit				**23**	**28**
Semester III							
1.	XX90XX	AUDIT LECTURES / WORKSHOPS	0	0	0	0	2
2.	ME 3061	DISSERTATION - I	0	0	24	12	24
3.	ME 3062	SEMINAR - NON-PROJECT / EVALUATION OF SUMMER TRAINING	0	0	4	2	4
		Total Credit				**14**	**30**
Semester IV							
1.	ME 4061	DISSERTATION - II / INDUSTRIAL PROJECT	0	0	24	12	24
2.	ME 4062	PROJECT SEMINAR	0	0	4	2	4
		Total Credit				**14**	**28**
		TOTAL CREDIT POINT: 73					

LIST OF ELECTIVE SUBJECTS

Sl. No.	Subject Code	Name of the Subject
1.	ME 9041	Experimental Methods in Thermal Science
2	ME 9042	Dynamical Systems
3	ME 9043	Fundamentals of Combustion
4	ME 9044	Fluid Power Systems and Control
5	ME 9045	Advanced Theory of Turbomachinery
6.	ME 9046	Lubrication Engineering
7.	ME 9047	Multi-Phase Flow and Heat Transfer
8.	ME 9048	Advanced Computational Fluid Dynamics
9.	ME 9049	Turbulence and Turbulent Flows
10.	ME 9050	Introduction to Aerodynamics
11	ME 9051	Microsystem Design
12	ME 9052	Gas Turbines and Jet Propulsion
13	ME 9053	Theory of Combustion
14	ME 9054	Renewable Energy Sources
15	ME 9055	Power Plant Engineering
16	ME 9056	Heat and Fluid Flow in Porous Media

LIST OF CORE- ELECTIVE SUBJECTS

SL NO	Subject Code	Name of the Subject
1.	ME2013	Conduction and Radiation Heat Transfer
2.	ME2014	Compressible Flow

DEPARTMENT OF MECHANICAL ENGINEERING

Program Name: Master of Technology in Thermal Engineering

<u>CURRICULUM</u>

Semester - I

Sl. No	Code	Subject	L	T	S	C	H
1	ME1021	Advanced Thermodynamics	3	1	0	4	4
2	ME1022	Advanced Heat Transfer	3	1	0	4	4
3	ME1023	Advanced Fluid Mechanics	3	1	0	4	4
4	ME90XX	SPECIALIZATION ELECTIVE - I	3	0	0	3	3
5	ME90XX	SPECIALIZATION ELECTIVE - II	3	0	0	3	3
6	ME1071	HEAT TRANSFER LABORATORY	0	0	4	2	4
7	ME1072	COMPUTATIONAL LABORATORY	0	0	4	2	4
		TOTAL	**15**	**3**	**8**	**22**	**26**

Semester - II

Sl. No	Code	Subject	L	T	S	C	H
1	ME2021	Experimental Methods in Thermal Science	3	1	0	4	4
2	ME2022	Computational Methods in Thermal Science	3	1	0	4	4
3	ME2023	Mathematical Methods in Thermal Science	3	1	0	4	4
4	ME90XX	SPECIALIZATION ELECTIVE - III	3	0	0	3	3
5	ME90XX	SPECIALIZATION ELECTIVE - IV	3	0	0	3	3
6	ME2071	THERMAL ENGINEERING LABORATORY	0	0	4	2	4
7	ME2072	MINI PROJECT WITH SEMINAR	0	0	6	3	6
		TOTAL	**15**	**3**	**10**	**23**	**28**

Semester - III

Sl. No	Code	Subject	L	T	S	C	H
1	XX90XX	AUDIT LECTURES / WORKSHOPS	0	0	2	0	2
2	ME3071	DISSERTION - I	0	0	24	12	24
3	ME3072	SEMINAR - NON-PROJECT / EVALUATION OF SUMMER TRAINING	0	0	4	2	4
		TOTAL	**0**	**0**	**30**	**14**	**30**

Semester - IV

Sl. No	Code	Subject	L	T	S	C	H
1	ME4071	DISSERTION - II / INDUSTRIAL PROJECT	0	0	24	12	24
1	ME4072	PROJECT SEMINAR	0	0	4	2	4
		TOTAL	**0**	**0**	**28**	**14**	**28**
		GRAND TOTAL	**30**	**6**	**76**	**73**	**112**

LIST OF ELECTIVES

Sl. No.	Course Code	Course Title
1	ME9011	Applied Computational Methods
2	ME9014	Operations Research
3	ME9018	Finite Element Methods
4	ME9020	Knowledge Based Systems
5	ME9025	Modelling and Simulation of Mechanical Systems
6	ME9029	Optimization in Engineering Design
7	ME9045	Advanced Theory of Turbomachinery
8	ME9047	Multiphase Flow and Heat Transfer
9	ME9053	Theory of Combustion
10	ME9054	Renewable Energy Sources
11	ME9055	Power Plant Engineering
12	ME9071	Advanced Energy Conversion
13	ME9072	Advanced I. C. Engine
14	ME9073	Biofluid Mechanics
15	ME9074	Microscale Transport Phenomena
16	ME9075	Solar Thermal Systems
17	ME9076	Thermodynamics of Complex Systems
18	ME9077	Advanced Refrigeration and Air-Conditioning
19	ME9078	Design of Thermal Systems
20	ME9079	Heat Transfer Equipment Design
21	ME9080	Design with Constructal Law
22	ME9081	Analysis of Thermal Power Cycles

DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING

Program Name: Master of Technology in Metallurgy and Materials and Technology

CURRICULUM

SEMESTER-I

Sl. No.	Subject Code	Subject	L - T - P	Credit
1	MT1001	Thermodynamics and Kinetics of Materials	3 - 0 - 0	3
2	MT1002	Advanced Physical Metallurgy	3 - 1 - 0	4
3	MT1003	Advanced Process Metallurgy	3 - 1 - 0	4
4	MT903X	Elective - I	3 - 0 - 0	3
5	MT903X	Elective - II	3 - 0 - 0	3
6	MT1051	Advanced Physical Metallurgy Laboratory	0 - 0 - 4	2
7	MT1052	Process Metallurgy Laboratory	0 - 0 - 4	2
		TOTAL	**15-2-8**	**21**

SEMESTER-II

Sl. No.	Subject Code	Name of the Subject	L - T - P	Credit
1	MT2001	Principles and Techniques of Materials Characterisation	3 - 1 - 0	4
2	MT903X	Elective - III	3 - 0 - 0	3
3	MT903X	Elective - IV	3 - 0 - 0	3
4	MT903X	Elective - V	3 - 0 - 0	3
5	MT903X	Elective - VI	3 - 0 - 0	3
6	MT2051	Principles and Techniques of Materials Characterisation Laboratory	0 - 0 - 4	2
8	MT2053	Minor Project with Seminar	0 - 0 - 6	3
		TOTAL	**15-1-10**	**21**

SEMESTER-III

Sl. No.	Subject Code	Name of the Subject	L-T-P	Credit
1	MT9071	Audit Lectures/Workshop	0-0-2	0
2	MT3051	Dissertation-I	0-0-24	12
3	MT3052	Seminar – Non-Project / Evaluation of Summer Training	0-0-4	2
		TOTAL	**0-0-30**	**14**

SEMESTER-IV

Sl. No.	Subject Code	Name of the Subject	L-T-P	Credit
1	MT4051	Dissertation – II / Industrial Project	0-0-24	12
2	NT4052	Project Seminar	0-0-4	02
			0-0-28	**14**
		TOTAL	**30-3-76**	**70**

LIST OF ELECTIVE PAPERS

Sl. No.	Subject Code	Name of the Subject
1	MT9031	Advances in Production of Non-Ferrous Metals
2	MT9032	Advances in Agglomeration Processes
3	MT9033	Secondary Steel Making
4	MT9034	Surface Engineering
5	MT9035	Materials Modelling and Simulation
6	MT9036	Advanced Welding Metallurgy
7	MT9037	Advanced Metal Forming Processes
8	MT9038	Mechanical Behaviour of Materials
9	MT9039	Composite Material and its Development
10	MT9040	Advanced Ceramic Materials
11	MT9041	Advanced Powder Metallurgy
12	MT9042	Nano-Materials and Nano-Technology
13	MT9043	Human Behavior and Management
14	MT9044	Electron Microscopy
15	MT9045	Strengthening Mechanisms of Materials
16	MT9046	Environmental Degradation of Materials
17	MT9047	Advanced Casting Processes
18	MT9048	Physical and Finite Difference Based Modelling Approaches in Metallurgy
19	MT9049	Plasma Technology for Metallurgical Applications
20	MT9050	Technology of Advanced Materials
21	MT9051	Severe Plastic Deformation
22	MT9052	Finite Element Method for Metallurgy and Materials
23	MT9053	Solidification Phenomena
24	MT9054	Environmental Management in Metallurgical Industries
25	MT9055	Corrosion Engineering

DEPARTMENT OF PHYSICS

Program Name: Master of Technology in Advanced Materials Science & Technology

CURRICULUM

SEMESTER-I

Sl. No.	Subject Code	Subject	L - T - P	Credit
1	PH1001	Fundamentals of Materials Science	3 - 0 - 0	3
2	PH1002	Materials for Engineering Applications	3 - 1 - 0	4
3	PH1003	Engineering Mathematics & Numerical Analysis for Material Science	3 - 1 - 0	4
4	PH903X	Elective - I	3 - 0 - 0	3
5	PH903X	Elective - II	3 - 0 - 0	3
6	PH1051	General Materials Science Lab	0 - 0 - 4	2
7	PH1052	Materials Synthesis & Characterization Lab	0 - 0 - 4	2
		TOTAL		**21**

SEMESTER-II

Sl. No.	Subject Code	Name of the Subject	L - T - P	Credit
1	PH2001	Techniques of Materials Characterization	3 - 1 - 0	4
2	PH903X	Elective - III	3 - 0 - 0	3
3	PH903X	Elective - IV	3 - 0 - 0	3
4	PH903X	Elective - V	3 - 0 - 0	3
5	PH903X	Elective - VI	3 - 0 - 0	3
6	PH2051	Computational Lab	0 - 0 - 4	2
8	PH2053	Minor Project with Seminar	0 - 0 - 6	3
		TOTAL		**21**

SEMESTER-III

Sl. No.	Subject Code	Name of the Subject	Credit
1	PH9071	Audit Lectures/Workshop	0
2	PH3051	Dissertation - I	12
3	PH3052	Seminar – Non-Project / Evaluation of Summer Training	2
		TOTAL	**14**

SEMESTER-IV

Sl. No.	Subject Code	Name of the Subject	Credit
1	PH4051	Dissertation – II / Industrial Project	12
2	PH4052	Project Seminar	02
			14
		TOTAL	**69-71**

LIST OF ELECTIVE PAPERS

Sl. No.	Subject Code	Name of the Subject
1	PH9030	X-ray Diffraction & Structure of Materials
2	PH9031	Optoelectronic Materials and Devices
3	PH9032	Nanomaterials – Science & Technology
4	PH9033	Mechanical Behavior of Materials
5	PH9034	Semiconductor Materials and Device Technology
6	PH9035	Materials for Energy Applications
7	PH9036	Nuclear Reactor Materials
8	PH9037	Thin-film Materials Technology
9	PH9038	Biomaterials
10	PH9039	Non-Destructive Testing
11	NPTEL	Fundamentals and Applications of Dielectric Ceramics
12	NPTEL	Scanning Electron / Ion / Probe Microscopy in Materials Characterization

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