1. CIVIL ENGINEERING

M. Tech. (Structural Engineering)

Core Courses (17 credits)

TCE-600	Master's Seminar	1
TCE-602	Theory of Elasticity	3(3-1-0)
TCE-606	Experimental Stress Analysis	3(2-0-1)
TCE-609	Theory of Plates andShells	4(4-1-0)
TCE-621	Limit State Design of Concrete Structures	3(3-1-0)
TCE-630	Matrix Methods in Structural Analysis	3(3-1-0)

Basic Supporting Courses (4 credits)

BPM-602	Special Functions and Integral Equation	2(2-1-0)
BPM-607	Transformations and Calculus of Variations	2(2-1-0)

Optional/Minor Courses (9 credits) **9**

Thesis Research(20 credits)

TCE-690	Master's Thesis Research	20
	Total	**50**

M. Tech. (Hydraulic Engineering)

Core Courses (18 credits)

TCE-541	Hydraulic Engineering Laboratory	1(0-0-1)
TCE-542	Open Channel Hydraulics	4(3-0-1)
TCE-543	Hydromechanics	4(3-0-1)
TCE-544	Advanced Fluid Mechanics	4(3-0-1)
TCE-550	Hydrologic Analysis and Design	4(3-0-1)
TCE-600	Master's Seminar	1

Basic Supporting Courses (4 credits)

BPM602	Special Functions and Integral Equation	2(2-1-0)
BPM-607	Transformations and Calculus of Variations	2(2-1-0)

Optional/Minor Courses (8 credits) **8**

Thesis Research(20 credits)

TCE-690	Master's Thesis Research	20
	Total	**50**

M. Tech. (Soil Mechanics and Foundation Engineering)

Core Courses (16 credits)

TCE-570	Strength Behaviour of Soils	3(3-0-0)
TCE-571	Foundation Engineering	3(3-0-0)
TCE-572	Soil Dynamics and Machine Foundations	3(3-0-0)
TCE-574	Earth Retaining Structures	3(3-0-0)
TCE-575	Soil Engineering Laboratory	3(1-0-2)
TCE-600	Master's Seminar	1

Basic Supporting Courses (4 credits)

BPM-602	Special Functions and Integral Equation	2(2-1-0)
BPM-607	Transformations and Calculus of Variations	2(2-1-0)

Optional/Minor Courses (10 credits) **10**

Thesis Research(20 credits)

TCE-690	Master's Thesis Research	20
	Total	**50**

Ph.D. (Civil Engineering)

Core Courses (12 credits)

TCE-701	Finite Element Methods in Structural Mechanics	2(2-1-0)
TCE-737	Ground Improvement Techniques	2(2-0-0)
TCE-738	Optimization Methods	3(2-0-1)
TCE-739	Engineering Mechanics	3(2-0-1)
TCE-788	Doctoral Seminar-I	1
TCE-789	Doctoral Seminar-II	1

Basic Supporting Courses (3 credits)

BPM-621	Numerical Techniques for Computers	3(3-2-0)

Optional Courses (5 credits) **5**

Minor Courses (10 credits) **10**

Thesis Research (45 credits)

TCE-790	Ph.D. Thesis Research	45
	Total	**75**

List of PG courses of the Department

TCE-500	Structural Analysis	2(2-1-0)
TCE-501	Structural Design	3(2-0-1)
TCE-502	Advanced Strength of Materials	2(2-1-0)
TCE-503	Advanced Structural Analysis	2(2-1-0)
TCE 540	Fluid Mechanics	3(2-0-1)
TCE-541	Hydraulic Engineering Laboratory	1(0-0-1)
TCE-542	Open Channel Hydraulics	4(3-0-1)
TCE-543	Hydromechanics	4(3-0-1)
TCE-544	Advanced Fluid Mechanics	4(3-0-1)
TCE-550	Hydrologic Analysis and Design	4(3-0-1)
TCE-570	Strength Behaviour of Soils	3(3-0-0)
TCE-571	Foundation Engineering	2(2-1-0)
TCE-572	Soil Dynamics and Machine Foundations	3(3-0-0)
TCE-574	Earth Retaining Structures	3(3-0-0)
TCE-575	Soil Engineering Laboratory	3(1-0-2)
TCE-600	Master's Seminar	1
TCE-601	Special Problem	1-2
TCE-602	Theory of Elasticity	3(3-1-0)
TCE-603	Mechanics of Continuous Media	2(2-1-0)
TCE-604	Theory of Plates	3(2-1-0)
TCE-605	Theory and Design of Shells	2(2-1-0)
TCE-606	Experimental Stress Analysis	3(2-0-1)
TCE-607	Theory of Elastic Stability	2(2-1-0)
TCE-608	Theory of Plasticity	2(2-1-0)

TCE-609	Theory of Plates and Shells	4(4-1-0)
TCE-610	Advanced Design of Metal Structures	2(2-1-0)
TCE-611	Plastic Design of Metal Structures	2(2-1-0)
TCE-612	Special Topics In Steel Construction	2(2-1-0)
TCE-613	Design of Steel Bridges	2(2-1-0)
TCE-620	Concrete Technology and Pre-Stressed Concrete	2(1-1-1)
TCE-621	Limit State Design of Concrete Structures	3(3-1-0)
TCE-622	Advanced Design of Pre-Stresses Concrete Structures	2(2-2-0)
TCE-623	Advanced Design of Concrete Structures	2(2-1-0)
TCE-630	Matrix Methods In Structural Analysis	3(3-1-0)
TCE-631	Tension Structures	2(2-1-0)
TCE-632	Numerical Methods in Civil Engineering	2(2-1-0)
TCE-633	Energy Methods In Structural Mechanics	2(2-1-0)
TCE-640	Hydraulics of Pumps and Turbines	2(1-0-1)
TCE-641	Fluvial Hydraulics	2(2-1-0)
TCE-650	Water Power Engineering	2(2-0-0)
TCE-651	Design of Rigid Dams	2(2-0-0)
TCE-652	Design of Embankment Dams	2(2-0-0)
TCE-653	Hydraulic Structures	2(2-0-0)
TCE-654	Flood Control Engineering	2(2-0-0)
TCE-655	Design of Hydraulic Structures	3(2-0-1)
TCE-670	Rock Mechanics	3(3-0-0)
TCE-671	Numerical Methods in Geotechnical Engineering	2(2-0-0)
TCE-672	Soil Structure Interaction	3(3-0-0)
TCE-673	Advanced Soil Mechanics	2(1-0-1)
TCE-674	Stability of Slopes	3(3-0-0)
TCE-675	Design of Pavements	3(3-0-0)
TCE-676	Transportation System and Traffic Engineering	2(2-0-0)
TCE-677	Theoretical Rheology	2(2-1-0)
TCE-690	Master's ThesisResearch	20
TCE-700	Structural Dynamics.	2(2-1-0)
TCE-701	Finite Element Methods in Structural Mechanics	2(2-1-0)
TCE-720	Design of Concrete Bridges	2(2-1-0)
TCE-730	Theory and Design of Shock Resisting Structures	2(2-2-0)
TCE-731	Optimum Design of Structures	2(2-1-0)
TCE-732	Reliability Design of Structures	2(2-1-0)
TCE-735	Foundation Analysis and Design	3(3-0-0)
TCE-736	Reinforced Earth Structures	2(2-0-0)
TCE-737	Ground Improvement Techniques	2(2-0-0)
TCE-738	Optimization Methods	3(2-0-1)
TCE-739	Engineering Mechanics	3(2-0-1)
TCE-740	Transient Flow Phenomenon	2(2-1-0)
TCE-744	Boundary Layer Theory	2(2-0-0)
TCE-788	Doctoral Seminar-I	1
TCE-789	Doctoral Seminar-II	1
TCE-790	Ph.D. Thesis Research	45

2. COMPUTER ENGINEERING

M.Tech. (Computer Engineering)

Core Courses (16 credits)

TCT-510	Advanced Operating Systems	3(2-0-1)
TCT-511	Advanced Computer Networks	3(2-0-1)
TCT-512	Advanced Database Management System	3(2-0-1)
TCT-513	Object Oriented Modeling, Analysis and Design	2(1-0-1)
TCT-520	Computer Modeling and Simulation	2(1-0-1)
TCT-521	Computer System Administration	2(1-0-1)
TCT-600	Master's Seminar	1

Basic Supporting Courses (5 credits)

BPM-621	Numerical Techniques for Computers	3(3-2-0)
TEC-603	Digital Computer Techniques and Design	2(2-0-0)

Optional/ Minor Courses (9 credits) **9**

Master's Thesis Research (20 credits)

TCT-690	Master's Thesis Research	20
	Total	**50**

List of Post Graduate Courses of the Department

TCT-510	Advanced Operating Systems	3(2-0-1)
TCT-511	Advanced Computer Networks	3(2-0-1)
TCT-512	Advanced Database Management System	3(2-0-1)
TCT-513	Object Oriented Modeling, Analysis and Design	2(1-0-1)
TCT-520	Computer Modeling and Simulation	2(1-0-1)
TCT-521	Computer System Administration	2(1-0-1)
TCT-600	Master's Seminar	1
TCT-601	Special Problem	2
TCT-610	Network Management and Security	3(2-0-1)
TCT-611	Digital Image Processing	3(2-0-1)
TCT-612	Human Computer Interface and Computer Vision	3(2-0-1)
TCT-613	Natural Language Processing	3(2-0-1)
TCT-614	Artificial Intelligence and Expert Systems	3(2-0-1)
TCT-615	Analysis and Design of Embedded Systems	3(2-0-1)
TCT-616	Wireless Communication and Mobile Computing	3(2-0-1)
TCT-617	VLSI Design	3(2-0-1)
TCT-618	High Performance Computing	3(2-0-1)
TCT-619	Advanced Algorithms: Design and Analysis	3(2-0-1)
TCT-620	Agent Based Computing	3(2-0-1)
TCT-621	Computational Intelligence and Soft Computing	3(2-0-1)
TCT-622	Internet Engineering	3(2-0-1)
TCT-623	Software Quality Management	3(2-0-1)
TCT-624	Advanced Data mining and Warehousing	3(2-0-1)
TCT-690	Master's Thesis Research	20

3. ELECTRICAL ENGINEERING

M. Tech. (Electrical Energy System)

Core Courses (17 credits)

TEE-527	Power System Dynamics Control	3(3-1-0)
TEE-541	Instrumentation and Power Electronics	3(2-0-1)
TEE-542	Non-Conventional Energy Sources and Energy Conservation	2(2-0-0)
TEE-572	Economics Operation and Management of Electric Energy Systems	2(2-1-0)
TEE-575	Power System Transients	2(2-1-0)
TEE-577	Power System Modelling and Analysis	4(3-1-1)
TEE-600	Master's Seminar	1

Basic Supporting Courses (5 credits)

BPM-607	Transformations and Calculus of Variations	2(2-1-0)
BPS-669	Operations Research	3(3-1-0)

Optional/ Minor Courses (8 credits) **8**

Thesis Research (20 credits)

TEE-690	Master's Thesis Research	20
	Total	**50**

Ph.D. (Electrical Engineering)

Core Courses (8 credits)

TEE-711	System Engineering	2(2-1-0)
TEE-721	Solid State Electronics	2(2-1-0)
TEE-730	Advanced Electromagnetic Theory	2(2-1-0)
TEE-788	Doctoral Seminar-I	1
TEE-789	Doctoral Seminar-II	1

Basic Supporting Courses (8 credits)

BPM-602	Special Functions and Integral Equations	2(2-1-0)
TEC-702	Neural Networks and Applications	3(2-0-1)
TEC-730	Computational Methods in Electromagnetics	3(3-1-0)

Optional courses (4 credits) 4

Minor Courses (10 credits) 10

Thesis Research (45 credits)

TEE-790	Ph.D. Thesis Research	45
	Total	**75**

List of Post Graduate Courses of the Department

TEE-527	Power System Dynamics and Control	3 (3-1-0)
TEE-541	Instrumentation and Power Electronics	3 (2-0-1)
TEE-542	Non-Conventional Energy Sources and Energy Conversion	2 (2-0-0)
TEE-572	Economics Operation and Management of Electrical Energy Systems	2 (2-1-0)
TEE-575	Power System Transients	2 (2-1-0)
TEE-577	Power System Modelling and Analysis	4 (3-1-1)
TEE-600	Master's Seminar	1
TEE-601	Special Problem	1-2

TEE-606	Microprocessors and its Application in Electric Energy Systems	3 (3-0-0)
TEE-615	Advanced Control Systems	3 (3-0-0)
TEE-627	Advanced Electromechanics	3 (3-0-0)
TEE-643	Field Analysis of Electrical Machines and Power Systems	3 (3-0-0)
TEE-644	Large Scale Systems	3 (3-0-0)
TEE-659	Computer Control and Protection of Power Systems	3 (3-1-0)
TEE-673	High Voltage Techniques	3 (3-1-0)
TEE-674	Extra High Voltage Direct Current Transmission	3 (3-0-0)
TEE-676	Power System Protection	3 (3-0-0)
TEE-678	Power System Planning	3 (3-0-0)
TEE-683	Direct Energy Conversion	3 (3-0-0)
TEE-684	Computer Aided Design of Electrical Machines	3 (3-0-0)
TEE-685	Special Electromechanical Devices	3 (3-0-0)
TEE-686	Advanced Topic in Electrical Energy Systems	3 (3-0-0)
TEE-687	Nuclear Power Engineering	3 (3-0-0)
TEE-688	MHD Power Generation	3 (3-0-0)
TEE/TEC-613	Non Linear and Sampled Data Control Systems	2 (2-1-0)
TEE/TEC-610	Control System Components	2 (2-1-0)
TEE/TEC-611	Modern Control Theory	2 (2-1-0)
TEE/TEC-612	Special Topics in Modern Control Theory	2 (2-1-0)
TEE/TEC-614	Computer Methods in Control Systems	2 (2-1-0)
TEE-656	Power System Stability	3 (3-1-0)
TEE-657	High Voltage Transients in Power System	3 (3-1-0)
TEE-658	Advanced Switchgear and Protection	3 (3-1-0)
TEE-660	Power Systems Economics	3 (3-1-0)
TEE-652	Transmission Lines and Sub Stations	3 (3-1-0)
TEE-653	High Voltage D.C. Transmission	3 (3-1-0)
TEE-654	Computer Methods in Power Systems	3 (3-1-0)
TEE-655	Power System Grids	3 (3-1-0)
TEE-661	Analysis of Electrical Machines	3 (3-1-0)
TEE-662	Electromechanical Dynamics-I	3 (3-1-0)
TEE-663	Transformation Techniques in Electrical Engineering	3 (3-1-0)
TEE-664	Electrical Drives and Controls	3 (3-1-0)
TEE-665	Electromechanical Dynamics-II	3 (3-1-0)
TEE-666	Special Machines	3 (3-1-0)
TEE-667	Advanced Electrical Machine Design	3 (3-1-0)
TEE-668	Machine and Components and Feedback Control Systems	3 (3-1-0)
TEE-690	Master's Thesis Research	20
TEE-711	Systems Engineering	2 (2-1-0)
TEE-721	Solid State Electronics	2 (2-1-0)
TEE-730	Advanced Electromagnetic Theory	2 (2-1-0)
TEE-788	Doctoral Seminar-I	1
TEE-789	Doctoral Seminar-II	1
TEE-790	Ph.D. Thesis Research	45

4. ELECTRONICS AND COMMUNICATION ENGINEERING

M. Tech. (Electronics and Communication Engineering)

Core Courses (15 credits)

TEC-530	Fields and Waves	2(2-0-0)
TEC-600	Master's Seminar	1
TEC-603	Digital Computer Techniques and Design	2(2-0-0)
TEC-621	Transistor Circuit Analysis and Design	2(2-0-0)
TEC-630	Antenna Engineering	2(2-0-0)
TEC-661	Special Topics in Electronics	2(2-0-0)
TEC-670	Communication Theory	2(2-0-0)
TEC-672	Information Theory	2(2-0-0)

Basic Supporting Courses (5 credits)

BPM-534	Complex Analysis	3(3-2-0)
BPM-607	Transformation and Calculus of Variations	2(2-1-0)

Optional/ Minor Courses (10 credits) **10**

Thesis Research (20 credits)

TEC-690	Master's Thesis Research	20
	Total	**50**

Ph.D. (Electronics and Communication Engineering)

Core Courses (13 credits)

TEC-701	Computer Networks	2(2-0-0)
TEC-702	Neural Networks and Applications	3(2-0-1)
TEC-730	Computational Methods in Electromagnetics	3(3-1-0)
TEC-770	Communication Systems	3(3-1-0)
TEC-788	Doctoral Seminar-I	1
TEC-789	Doctoral Seminar-II	1

Basic Supporting Courses (4 credits)

TEE-721	Solid State Electronics	2(2-1-0)
TEE-730	Advanced Electromagnetic Theory	2(2-1-0)

Optional courses (3 credits) 3

Minor Courses (10 credits) 10

Thesis Research (45 credits)

TEC-790	Ph.D. Thesis Research	45
	Total	**75**

List of Post Graduate Courses of the Department

TEC/ BPM-503	Discrete Mathematical Structures	3(3-2-0)
TEC-511	Advanced Control Systems	2(2-0-0)
TEC-520	Analysis and Synthesis of Networks	2(2-0-0)
TEC-530	Fields and Waves	2(2-0-0)
TEC-531	Advanced Electrical Engineering Materials Science	2(2-0-0)
TEC-540	Electrical and Electronics Instrumentation	2(2-0-0)

TEC-600	Master's Seminar	1
TEC-601	Special Problem	1-2
TEC-602	Methods and Applications of Analog Computers	2(2-0-0)
TEC-603	Digital Computer Techniques and Design	2(2-0-0)
TEC-604	Switching and Automata Theory	2(2-0-0)
TEC/TEE-610	Control System Components	2(2-0-0)
TEC/TEE-611	Modern Control Theory	2(2-1-0)
TEC/TEE-612	Special Topics in Modern Control Theory	2(2-0-0)
TEC/TEE-613	Non Linear Simplified Data Control Systems	2(2-0-0)
TEC/ TEE-614	Computer Methods in Control Systems	2(2-1-0)
TEC-620	Active Network Synthesis	2(2-0-0)
TEC-621	Transistor Circuit Analysis and Design	2(2-0-0)
TEC-630	Antenna Engineering	2(2-0-0)
TEC-660	Digital Electronics	2(2-0-0)
TEC-661	Special Topics in Electronics	2(2-0-0)
TEC-670	Communication Theory	2(2-0-0)
TEC/TIT-671	Advanced Communication Theory	2(2-1-0)
TEC-672	Information Theory	2(2-0-0)
TEC-690	Master's Thesis Research	20
TEC-701	Computer Networks	2(2-0-0)
TEC-702	Neural Network and Applications	3(2-0-1)
TEC-730	Computational Methods in Electromagnetics	3(3-1-0)
TEC-731	Advanced Solid State Microwave Devices	3(3-1-0)
TEC-732	Antenna Theory and Design	3(2-0-1)
TEC-733	Microwave Engineering	2(2-0-0)
TEC-734	Radar System	2(2-0-0)
TEC-770	Communication System	3(3-1-0)
TEC-771	Advanced Digital Signal Processing:	3(2-1-1)
TEC-772	Advanced Coding Theory	2(2-0-0)
TEC-788	Doctoral Seminar-I	1
TEC-789	Doctoral Seminar-II	1
TEC-790	Ph.D. Thesis Research	45

5. FARM MACHINERY AND POWER ENGINEERING

M. Tech. Agricultural Engineering (Farm Machinery and Power Engineering)

Core Courses (15 credits)

TMP-522	Design of Farm Power and Machinery Systems	3(2-1-1)
TMP-526	Tractor Design	3(2-1-1)
TMP-600	Master's Seminar	1
TMP-609	System Simulation and Computer Aided Problem Solving in Engineering	2(2-1-0)
TMP-642	Agro Energy Audit and Management	3(2-1-0)
TMP-666	Soil Dynamics in Tillage and Traction	3(2-1-1)

Basic Supporting Courses (6 credits)

TME-634	Advanced Machine Design	3(3-1-0)
BPS-561	Statistical Methods	3(2-0-1)

Optional/ Minor Courses (9 credits) **9**

Thesis Research (20 credits)

TMP-690	Master's Thesis Research	20
	Total	**50**

Ph.D. (Farm Machinery and Power Engineering)

Core Courses (11 credits)

TMP-712	Farm Machinery Dynamics Noise and vibration	3(2-1-1)
TMP-722	Simulation Modelling in Farm Machinery and Power Engineering	3(2-0-1)
TMP-711	Machinery for Natural Resource Management and Precision Farming	3(2-1-1)
TMP-788	Doctoral Seminar-I	1
TMP-789	Doctoral Seminar-II	1

Basic Supporting Courses (4 credits)

BPS-661	Experimental Statistics	4(3-0-1)

Optional courses (5 credits) 5

Minor Courses (10 credits) 10

Thesis Research (45 credits)

TMP-790	Ph.D. Thesis Research	45
	Total	**75**

List of Post Graduate Courses of the Department

TMP-515	Advances in Land Development Machinery	3(2-0-1)
TMP-522	Design of Farm Power and Machinery Systems	3(2-1-1)
TMP-526	Tractor Design	3(2-1-1)
TMP-600	Master's Seminar	1
TMP-604	Applied Instrumentation in Farm Machinery and Stress Analysis	3(2-0-1)
TMP-609	System Simulation and Computer Aided Problem Solving in Engineering	2(2-1-0)

TMP-610	Computer Aided Analysis and Design of Farm Machinery	2(1-0-1)
TMP-622	Testing and Evaluation of Tractors and Farm Equipment	2(1-0-1)
TMP-636	Ergonomics and Safety in Farm Operations	2(1-0-1)
TMP-642	Agro Energy Audit and Management	3(2-1-0)
TMP-646	Design and Analysis of Renewable Energy Conversion Systems	3(2-0-1)
TMP-666	Soil Dynamics in Tillage and Traction	3(2-1-1)
TMP-690	Master's Thesis Research	20
TMP-711	Machinery for Natural Resource Management and Precision Farming	3(2-1-1)
TMP-712	Farm Machinery Dynamics Noise and Vibration	3(2-1-1)
TMP-722	Simulation Modelling in Farm Machinery and Power Engineering	3(2-0-1)
TMP-723	Energy Conservation and Management in Farm Power Machinery	2(2-1-0)
TMP-732	Advances in Hydraulics and Electro Pneumatic Controls	2(1-1-1)
TMP-788	Doctoral Seminar-I	1
TMP-789	Doctoral Seminar-II	1
TMP-601	Special Problem	2
TMP-790	Ph.D. Thesis Research	45

6. INFORMATION TECHNOLOGY

M.Tech. (Information Technology)

Core Courses (16 credits)

TIT-510	Advanced Software Engineering	3(2-0-1)
TIT-511	Advanced Computer Networks	3(2-0-1)
TIT-512	Cloud Computing	2(2-0-0)
TIT-513	Telecommunication Switching System and Networks	2(2-0-0)
TIT-520	Wireless Mobile Networks	3(2-0-1)
TIT-521	Cryptography and Network Security	2(2-0-0)
TIT-600	Master's Seminar	1

Basic Supporting Courses (5 credits)

TEC/BPM-503	Discrete Mathematical Structure	3(3-2-0)
TEC-603	Digital Computer Techniques & Design	2(2-0-0)

Optional/ Minor Courses (9 credits) **9**

Thesis Research (20 credits)

TIT-690	Master's Thesis Research	20
	Total	**50**

List of Post Graduate Courses of the Department

TIT-510	Advanced Software Engineering	3(2-0-1)
TIT-511	Advanced Computer Networks	3(2-0-1)
TIT-512	Cloud Computing	2(2-0-0)
TIT-513	Telecommunication Switching System and Networks	2(2-0-0)
TIT-520	Wireless Mobile Networks	3(2-0-1)
TIT-521	Cryptography and Network Security	2(2-0-0)
TIT-600	Master's Seminar	1
TIT-601	Special Problem	1
TIT-610	Network Management and Security	3(2-0-1)
TIT-611	Adhoc and Sensor Networks	3(2-0-1)
TIT-612	Intellectual Property Rights	2(2-0-0)
TIT-613	Advanced Distributed Computing	3(2-0-1)
TIT-614	Advanced Multimedia Technology	3(2-0-1)
TIT-615	Software Reusability	2(2-0-0)
TIT-616	Software Testing	2(1-0-1)
TIT-617	Advanced Database Technology	2(2-0-0)
TIT-618	Web Technologies	2(1-0-1)
TIT-619	Cyber Crime and Information War	2(2-0-0)
TIT-620	Information Storage and Management	2(2-0-0)
TIT-622	Bioinformatics	2(2-0-0)
TIT-623	Information Theory	2(2-0-0)
TIT-624	Advanced Data mining & Warehousing	3(2-0-1)
TIT/TEC-671	Advanced Communication Theory	2(2-0-0)
TIT-690	Master's Thesis Research	20

Master of Computer Applications (M.C.A)

Compulsory Courses (64 Credits)

MCA-600	Master's Seminar	1
MCA-610	Elements of Computer Operating Systems	3(2- 0-1)
MCA-611	Computer and Programming Concepts	3(2 -0-1)
MCA-612	Data Structure	3(3-1-0)
MCA-613	Foundation of Theoretical Computer Science	3(3-1-0)
MCA-614	Structured Programming Languages	3(2-0-1)
MCA-615	Computer Organization and Architecture	3(2-0-1)
MCA-616	RDBMS	3(2-0-1)
MCA-617	Numerical Techniques for Computers	3(3-1-0)
MCA-618	Discrete Mathematical Structures	3(3-1 -0)
MCA-619	Accounting and Financial Management	3(3-1-0)
MCA-620	Software Engineering	3(3-1-0)
MCA-621	Computer Communication Networks	3(2-0-1)
MCA-622	Object Oriented Programming	3(2-0-1)
MCA-623	Design and Analysis of Algorithm	3(3-1-0)
MCA-624	Visual Programming	3(2-0-1)
MCA-625	Operations Research	3(3-1-0)
MCA-627	Micro Computer and Microprocessor	3(2-0-1)
MCA-629	Internet nd Java Programming	3(2-0-1)
MCA-631	Management Information Systems	3(2-0-1)
MCA-633	Computer Graphics and Animation	3(2-0-1)
MCA-635	Expert System	3(3-1-0)

Optional Courses (12 Credits)

MCA-601	Special Problem	1-2
MCA-641	Communication Theory	3(3-1-0)
MCA-642	Principle of Compiler Design	3(3-1-0)
MCA-643	Analog And Digital Electronics	3(2-0-1)
MCA-644	Programming Language Concepts	3(3-1-0)
MCA-646	Current Trends in Programming	3(2-0-1)
MCA-647	Computer System Security	3(2-0-1)
MCA-648	Advanced DBMS	3(2-0-1)
MCA-649	Electronic Commerce	3(2-0-1)
MCA-651	Data Mining and Warehousing	3(2-0-1)
MCA-652	Modeling and Simulation	3(2-0-1)

Industrial Training/Project (15 Credits)

MCA-699	Industrial Training/Project		15
		Total	**91**

List of Post Graduate Courses of the Department

MCA-600	Master's Seminar	1
MCA-601	Special Problem	1-2
MCA-610	Elements of Computer Operating Systems	3(2-0-1)
MCA-611	Computer and Programming Concepts	3(2-0-1)
MCA-612	Data Structure	3(3-1-0)
MCA-613	Foundation of Theoretical Computer Science	3(3-1-0)
MCA-614	Structured Programming Languages	3(2-0-1)
MCA-615	Computer Organization and Architecture	3(2-0-1)
MCA-616	RDBMS	3(2-0-1)
MCA-617	Numerical Techniques for Computers	3(3-1-0)
MCA-618	Discrete Mathematical Systems	3(3-1-0)
MCA-619	Accounting and Financial Management	3(3-1-0)
MCA-620	Software Engineering	3(3-1-0)
MCA-621	Computer Communication Networks	3(2-0-1)
MCA-622	Object Oriented Programming	3(2-0-1)
MCA-623	Design and Analysis of Algorithm	3(3-1-0)
MCA-624	Visual Programming	3(2-0-1)
MCA-625	Operations Research	3(3-1-0)
MCA-627	Micro Computer and Microprocessor	3(2-0-1)
MCA-629	Internet and Java Programming	3(2-0-1)
MCA-631	Management Information Systems	3(2-0-1)
MCA-633	Computer Graphics and Animation	3(2-0-1)
MCA-635	Expert System	3(3-1-0)
MCA-641	Communication Theory	3(3-1-0)
MCA-642	Principle of Compiler Design	3(3-1-0)
MCA-643	Analog and Digital Electronics	3(2-0-1)
MCA-644	Programming Language Concepts	3(3-1-0)
MCA-646	Current Trends in Programming	3(2-0-1)
MCA-647	Computer System Security	3(2-0-1)
MCA-648	Advanced DBMS	3(2-0-1)
MCA-649	Electronic Commerce	3(2-0-1)
MCA-651	Data Mining and Warehousing	3(2-0-1)
MCA-652	Modeling and Simulation	3(2-0-1)
MCA-699	Industrial Training/Project	15

7. IRRIGATION AND DRAINAGE ENGINEERING

M.Tech. Agricultural Engineering (Irrigation and Drainage Engineering)

Core Courses (15 credits)

TID-531	Agricultural Drainage Systems	3(2-0-1)
TID-541	Design of Farm Irrigation Systems	3(2-0-1)
TID-551	Crop Environmental Engineering	3(2-0-1)
TID-561	Ground Water Engineering	3(2-0-1)
TID-600	Master's Seminar	1
TID-612	Flow through Porous Media	2(2-0-0)

Basic Supporting Courses (5 credits)

BPM-607	Transformation and Calculus of Variations	2(2-1-0)
TCE-540	Fluid Mechanics	3(2-0-1)

Optional/Minor Courses (10 credits) **10**

Thesis Research (20credits)

TID-690	Masters' Thesis Research	20
	Total	**50**

Ph.D. (Irrigation and Drainage Engineering)

Core Courses (10 credits)

TID-641	Water Resources System Engineering	3(2-0-1)
TID-711	Advances in Irrigation and Drainage	2(2-0-0)
TID-712	Advanced Hydro-Mechanics in Soil Aquifer System	3(2-0-1)
TID-788	Doctoral. Seminar-I	1
TID-789	Doctoral. Seminar-II	1

Basic Supporting Courses (5 credits)

BPM-602	Special function and Integral equations	2(2-1-0)
BPS-681	Data Analysis and Forecasting	3(3-1-0)

Optional Courses (5 credits) 5

Minor Courses (10 credits) **10**

Thesis Research (45 credits)

TID-790	Ph.D. Thesis Research	45
	Total	**75**

Compulsory Courses Minor For Other Disciplines

TID-531	Agricultural Drainage Systems	3(2-0-1)
TID-561	Ground Water Engineering	3(2-0-1)

List of Post Graduate Courses of the Department

TID-502	Aquacultural Engineering	3(2-0-1)
TID-531	Agricultural Drainage Systems	3(2-0-1)
TID-541	Design of Farm Irrigation Systems	3(2-0-1)
TID-551	Crop Environmental Engineering	3(2-0-1)

TID-561	Ground Water Engineering	3(2-0-1)
TID-600	Master’s Seminar	1
TID-601	Special Problem	1
TID/TSW-612	Flow through Porous Media	2(2-0-0)
TID/TSW-621	Open Channel Flow	3(2-0-1)
TID-625	Design of Pumps for Irrigation and Drainage	3(2-0-1)
TID/TSW-631	GIS and Remote Sensing for Land and Water Resources Management	3(2-0-1)
TID/TSW-641	Water Resources System Engineering	3(2-0-1)
TID-690	Master's Thesis Research	20
TID-711	Advances in Irrigation and Drainage	2(2-0-0)
TID-712	Advanced Hydro-Mechanics in Soil Aquifer System	3(2-0-1)
TID-714	Plant Growth Modeling and Simulation	2(2-0-0)
TID/TSW-741	Hydro-Chemical Modeling and Pollutant Management	3(2-0-1)
TID-788	Doctoral. Seminar-I	1
TID-789	Doctoral. Seminar-II	1
TID-790	Ph.D. Thesis Research	45

8. MECHANICAL ENGINEERING

M. Tech. Mechanical Engineering (Design & Production Engineering)

Core Courses (11 credits)

TME-542	Vibration Analysis	2(2-1-0)
TME-600	Master's Seminar	1
TME-635	Computer Aided Mechanical Design	3(3-1-0)
TME-651	Advance Material Science	3(3-1-0)
TME-652	Stress Analysis	2(2-1-0)

Basic Supporting Courses (11 credits)

BPC-512	Radioisotopic Techniques in Mechanical Engineering	1(0-0-1)
TPE-541	Machine Tool Technology	2(2-1-0)
BPM-621	Numerical Techniques for Computer	3(3-2-0)
BPM-622	Numerical Solution for Partial Differential Equation	3(3-2-0)
TPE-670	Numerical Control in Machine Tools	2(2-1-0)

Optional /Minor Courses (8 credits) **8**

Thesis Research (20 credits)

TME-690	Master's Thesis Research	20
	Total	**50**

M. Tech. Mechanical Engineering (Thermal Engineering)

Core Courses (13 credits)

TME-502	Advanced Heat Transfer-I	2(2-1-0)
TME-503	Advanced Heat Transfer-II	2(2-1-0)
TME-504	Principles of Combustion	2(2-1-0)
TME-511	Fluid Dynamics	2(2-1-0)
TME-512	Gas Dynamics	2(2-1-0)
TME-505	Advanced Thermodynamics	2(2-1-0)
TME-600	Master's Seminar	1

Basic Supporting Courses (7 credits)

BPC-512	Radioisotopic Techniques in Mechanical Engineering	1(0-0-1)
BPM-621	Numerical Techniques for Computers	3(3-2-0)
BPM-622	Numerical Solution for Partial Differential Equation	3(3-2-0)

Optional /Minor Courses (10 credits) **10**

Thesis Research (20 credits)

TME-690	Master's Thesis Research	20
	Total	**50**

Ph.D. (Mechanical Engineering)

Core Courses (10 credits)

TME-731	Industrial Instrumentation	3(2-0-1)
TME-771	Optimization Techniques in Engineering	2(2-1-0)
TME-773	Finite Element Methods in Engineering	3(2-0-1)
TME-788	Doctoral Seminar-I	1
TME-789	Doctoral Seminar-II	1

Basic Supporting Courses (6 credits)

BPM-622	Numerical Solution of Partial Differential Equations	3(3-1-0)
BPM-711	Mathematical Modelling	3(3-2-0)

Optional/ Minor Courses (4 credits)			**4**
Minor Courses (10 credits)			**10**
Thesis Research (45 credits)			
TME-790	Ph.D. Thesis Research		45
		Total	**75**

Compulsory courses for Minor for Other Disciplines

TME-502	Advanced Heat Transfer I	2(2-1-0)
TME-503	Advanced Heat Transfer II	2(2-1-0)
	Above package OR below package	
TME-652	Stress Analysis	2(2-1-0)
TME-635	Computer Aided Mechanical Design	3(3-1-0)

List of Post Graduate Courses of the Department

TME-502	Advanced Heat Transfer-I	2(2-1-0)
TME-503	Advanced Heat Transfer-II	2(2-1-0)
TME-504	Principles of Combustion	2(2-1-0)
TME-511	Fluid Dynamics	2(2-1-0)
TME-512	Gas Dynamics	2(2-1-0)
TME-531	Mechanical Handling	2(2-1-0)
TME-542	Vibration Analysis	2(2-1-0)
TME-582	Instrumentation and Automatic Controls	2(2-1-0)
TME-600	Master's Seminar	1
TME-601	Special Problem	1
TME-605	I.C.Engines-I	2(2-1-0)
TME-606	I.C.Engines-II	2(2-1-0)
TME-607	Refrigeration	2(2-1-0)
TME-608	Air Conditioning	2(2-1-0)
TME-609	Industrial Heat Transfer	2(2-1-0)
TME-612	Fluid Dynamics of Turbo-Machines	2(2-1-0)
TME-613	Design of Rotodynamic Machine	2(2-1-0)
TME-621	Solar Energy	2(2-1-0)
TME-633	Friction Wear and Lubrication	2(2-1-0)
TME-634	Advanced Machine Design	3(3-1-0)
TME-635	Computer Aided Mechanical Design	3(3-1-0)
TME-651	Advanced Material Science	3(3-1-0)
TME-652	Stress Analysis	2(2-1-0)
TME-653	Engineering Fracture Mechanics	3(3-1-0)
TME-654	Theory of Elasticity and Plasticity	3(3-1-0)
TME-661	Metal Cutting	2(2-1-0)
TME-690	Master's Thesis Research	20
TME-702	Numerical Methods in Heat Transfer	3(2-0-1)
TME-711	Theory of Compressible Flow	3(2-0-1)
TME-721	Solar Energy Thermal Processes	3(2-0-1)
TME-722	Design of Thermal Systems	3(2-0-1)
TME-723	Power Generated Pollution	3(2-0-1)
TME-731	Industrial Instrumentation	3(2-0-1)
TME-753	Mechanics of Composite Materials	3(2-01)
TME-771	Optimization Techniques in Engineering	2(2-1-0)
TME-772	Reliability Engineering	3(2-0-1)
TME-773	Finite Element Methods in Engineering	3(2-0-1)
TME-788	Doctoral Seminar-I	1
TME-789	Doctoral Seminar-II	1
TME-790	Ph.D. Thesis Research	45

9. POST HARVEST PROCESS AND FOOD ENGINEERING

M.Tech. Agricultural Engineering (Process and Food Engineering)

Core Courses (19 credits)

TPF-600	Master's Seminar	1
TPF-636	Mass Transfer Operations	3(2-0-1)
TPF-641	Transport Phenomena in Food Processing	3 (2-0-1)
TPF-643	Advanced Food Process Engineering	3 (2-0-1)
TPF-644	Unit Operations in Food Process Engineering	3 (2-0-1)
TPF-645	Food Processing Equipment and Plant Design	3 (2-0-1)
TPF-683	Mathematical Models in Food Processing	3 (2-0-1)

Basic Supporting Course (3 credits)

AFS-521	Fundamentals of Food Chemistry	3(2-0-1)

Optional/ Minor Courses (8 credits) **8**

Thesis Research (20 credits)

TPF-690	Master's Thesis Research	20
	Total	**50**

Compulsory courses for Minor for Other Disciplines

TPF-643	Advanced Food Process Engineering	3 (2-0-1)
TPF-645	Food Processing Equipment and Plant Design	3 (2-0-1)

M. Tech. Agricultural Engineering (Food Biotechnology Engineering)

Core Courses (14 credits)

TPF-643	Advanced Food Process Engineering	3(2-0-1)
TPF-645	Food Processing Equipment and Plant Design	3 (2-0-1)
TPF-660	Bioprocess Engineering	3(2-0-1)
TPF-662	Food Biotechnology	2(2-0-0)
TPF-667	Analytical Techniques in Biotechnology	2(0-0-1)
TPF-600	Master's Seminar	1

Basic Supporting Course (6 credits)

BBM-500	General Microbiology	3(3-0-0)
BBC-501	General Biochemistry	3(3-0-0)

Optional/ Minor Courses (8 credits) **8**

Thesis Research (20 credits)

TPF-690	Master's Thesis Research	20
	Total	**50**

Compulsory courses for Minor for Other Disciplines

TPF-660	Bioprocess Engineering	3(2-0-1)
TPF-662	Food Biotechnology	2(2-0-0)

Ph.D. (Process and Food Engineering)

Core Courses (11 credits)

TPF-777	Instrumentation and Process Control in Food Engineering	3 (2-0-1)
TPF-781	Textural and Rheological Characteristics of Food Materials	3 (2-0-1)

TPF-782	Advances in Food Processing	3 (2-0-1)
TPF-788	Doctoral Seminar-I	1 (0-0-1)
TPF-789	Doctoral Seminar-II	1 (0-0-1)
Basic Supporting Courses (3 credits)		
BPM-621	Numerical Techniques for Computers	3(3-2-0)
Optional Courses (5 credits)		5
Minor Courses (10 credits)		10
Thesis Research (45 credits)		
TPF-790	Ph.D. Thesis Research	45
	Total	**75**

List of Post Graduate Courses of the Department

TPF-600	Master's Seminar	1
TPF-601	Special Problem	1-2
TPF-636	Mass Transfer Operations	3(2-0-1)
TPF-641	Transport Phenomena in Food Processing	3 (2-0-1)
TPF-642	Engineering Properties of Food Materials	3(2-0-1)
TPF-643	Advanced Food Process Engineering	3 (2-0-1)
TPF-644	Unit Operations in Food Process Engineering	3(2-0-1)
TPF-645	Food Processing Equipment and Plant Design	3(2-0-1)
TPF-650	Biochemical and Process Engineering	3(2-0-1)
TPF-651	Food Quality and Safety Engineering	3(2-0-1)
TPF-652	Farm Structures and Environmental Control	2(2-0-1)
TPF-653	Storage Engineering and Handling of Agricultural Products	3(2-0-1)
TPF-655	Energy Management in Food Processing industries	3(2-0-1)
TPF-656	Processing of Cereals, Pulses and Oilseeds	3(2-0-1)
TPF-658	Fruits and Vegetables process Engineering	3(2-0-1)
TPF-659	Food Packaging	3(2-0-1)
TPF-660	Bio-Process Engineering	3(2-0-1)
TPF-662	Food Biotechnology	2(2-0-0)
TPF-664	Fermented Food Products	2(2-0-0)
TPF-666	Flavour Technology	2(2-0-0)
TPF-667	Analytical Techniques in Biotechnology	2(0-0-1)
TPF-683	Mathematical Models in Food Processing	3(2-0-1)
TPF-684	Advances in Drying of Food Materials	3(2-0-1)
TPF-685	Agricultural Waste and By-Products Utilization	3(2-0-1)
TPF-690	Master's Thesis Research	20
TPF-777	Instrumentation and Process Control in Food Engineering	3(2-0-1)
TPF-781	Textural and Rheological Characteristics of Food Materials	3(2-0-1)
TPF-782	Advances in Food Processing	3(2-0-1)
TPF-788	Doctoral Seminar-I	1
TPF-789	Doctoral Seminar-II	1
TPF-790	Ph.D. Thesis Research	45

10. PRODUCTION ENGINEERING

M. Tech. Manufacturing Engineering and Management

Core Courses (15 credits)

TPE-550	Computer Application in Production Engineering	2(1-1-1)
TPE-600	Master's Seminar	1
TPE-663	Advanced Foundry Technology	3(2-0-1)
TPE-666	Advanced Welding Technology	3(2-0-1)
TPE-667	Industrial Inspection and Process Control	2(2-2-0)
TPE-668	Manufacturing Management	2(2-2-0)
TPE-669	Metal Cutting and Metal Forming	2(2-1-0)

Basic Supporting Courses (6 credits)

BPM-621	Numerical Techniques for Computers	3(3-2-0)
BPS-669	Operations Research	3(3-1-0)

Optional Courses (9 credits) **9**

Thesis Research (20 credits)

TPE-690	Master's Thesis Research	20
	Total	**50**

Ph.D. Degree (Production Engineering)

Core Course (11 credits)

TPE-761	Advanced Manufacturing Engineering	3(3-1-0)
TPE-771	Advanced Production/Operations Management	3(3-1-0)
TPE-772	Production Systems	3(3-1-0)
TPE-788	Doctoral Seminar-I	1
TPE-789	Doctoral Seminar-II	1

Basic Supporting Courses (6 credits)

BPM-622	Numerical Solution of Partial Differential Equations	3(3-2-0)
BPM-711	Mathematical Modeling	3(3-2-0)

Optional Courses (3 credits) **3**

Minor Courses (10 credits) **10**

Thesis Research (45 credits)

TPE-790	Ph.D. Thesis Research	45
	Total	**75**

List of Post Graduate Courses of the Department

TPE-541	Machine Tool Technology	2(2-1-0)
TPE-550	Computer application in Production Engineering	2(1-1-1)
TPE-600	Master's Seminar	1
TPE-601	Special Problem	1-2
TPE-661	Metal Cutting	2(2-1-0)

TPE-662	Metal Forming	2(2-1-0)
TPE-663	Advanced Foundry Technology	3(2-0-1)
TPE-664	Automation	2(2-1-0)
TPE-665	Computer Integrated Manufacturing Systems	3(2-0-1)
TPE-666	Advanced Welding Technology	3(2-0-1)
TPE-667	Industrial inspection and Process Control	2(2-2-0)
TPE-668	Manufacturing Management	2(2-2-0)
TPE-669	Metal Cutting and Metal Forming	2(2-1-0)
TPE-670	Numerical control in Machine Tools	2(2-1-0)
TPE-671	Production System Control	2(2-1-0)
TPE-672	Statistical Quality Control	2(2-1-0)
TPE-673	Production System Design	3(3-1-0)
TPE-674	Group Technology and Production Strategy	3(3-2-0)
TPE-675	Long range Planning	2(2-1-0)
TPE-676	Project Management	3(3-2-0)
TPE-677	Facility Planning and Plant Engineering	2(2-1-0)
TPE-678	Materials Management	2(2-1-0)
TPE-679	Robotics	3(2-0-1)
TPE-680	Supply Chain Management	2(2-1-0)
TPE-681	Spare Parts Management	2(2-1-0)
TPE-682	3D Modeling and Simulation	3(2-0-1)
TPE-690	Master’s Thesis Research	20
TPE-761	Advanced Manufacturing Engineering	3(3-1-0)
TPE-771	Advanced Production/Operations Management	3(3-1-0)
TPE-772	Production Systems	3(3-1-0)
TPE-781	Advanced Manufacturing Management	3(2-0-1)
TPE-782	Numerical Control of Machine Tools	3(2-0-1)
TPE-783	Advanced Topics in Group Technology	3(2-0-1)
TPE-784	Qualitative Techniques of Managerial Systems	3(3-1-0)
TPE-788	Doctoral Seminar-I	1
TPE-789	Doctoral Seminar-II	1
TPE-790	Ph.D. Thesis Research	45

11. SOIL AND WATER CONSERVATION ENGINEERING

M. Tech. Agricultural Engineering (Soil and Water Conservation Engineering)

Core Courses (19 credits)

TSW-531	Watershed Hydrology	3(2-0-1)
TSW-541	Soil and Water Conservation Engineering	3(2-0-1)
TSW-551	Sediment Transport	3(2-0-1)
TSW-561	Water Quality and Environment	3(2-0-1)
TSW-571	Planning and Management of Watershed	3(2-0-1)
TSW-600	Master's Seminar	1
TSW-621	Open Channel Flow	3(2-0-1)

Basic Supporting Courses (3 credits)

BPS-561	Statistical Methods	3(2-0-1)

Optional /Minor Courses (8 credits) **8**

Thesis Research (20 credits)

TSW-690	Master's Thesis Research	20
	Total	**50**

Ph.D. (Soil and Water Conservation Engineering)

Core Courses (11 credits)

TSW-711	Advanced Hydrology	3(2-0-1)
TSW-721	Modeling Soil Erosion Process	3(2-0-1)
TSW-731	Soil and Water Systems Simulation and Modelling	3(2-0-1)
TSW-788	Doctoral Seminar -I	1
TSW-789	Doctoral Seminar - II	1

Basic Supporting Courses (5 credits)

BPM-607	Transformation and Calculus of Variations	2(2-1-0)
BPS-681	Data Analysis and Forecasting	3(3-1-0)

Optional Courses (4 credits) **4**

Minor Courses (10 credits) **10**

Thesis Research (45 credits)

TSW-790	Ph.D. Thesis Research	45
	Total	**75**

Compulsory courses for Minor for Other Disciplines

TSW-531	Watershed Hydrology	3(2-0-1)
TSW-551	Sediment Transport	3(2-0-1)

List of Post Graduate Courses of the Department

TSW/TMP-521	Land Development and Earth Moving Machinery	3(2-0-1)
TSW-531	Watershed Hydrology	3(2-0-1)
TSW-541	Soil and Water Conservation Engineering	3(2-0-1)
TSW-551	Sediment Transport	3(2-0-1)
TSW-561	Water Quality and Environment	3(2-0-1)
TSW-571	Planning and Management of Watershed	3(2-0-1)

TSW-600	Master’s Seminar	1
TSW-601	Special Problem	1-2
TSW/ TID-612	Flow Through Porous Media	2(2-0-0)
TSW/ TID-621	Open Channel Flow	3(2-0-1)
TSW/ TID-631	GIS and Remote Sensing for Land and Water Resource Management	3(2-0-1)
TSW/ TID-641	Water Resources System Engineering	3(2-0-1)
TSW-651	Mathematical Models in Hydrology	3(2-0-1)
TSW-661	Advanced Computing Techniques in Hydrology	3(2-0-1)
TSW-690	Master's Thesis Research	20
TSW-711	Advanced Hydrology	3(2-0-1)
TSW-721	Modelling Soil Erosion Processes	3(2-0-1)
TSW-731	Soil and Water Systems’ Simulation and Modelling	3(2-0-1)
TSW/ TID-741	Hydro-Chemical Modelling and Pollutant Management	3(2-0-1)
TSW-751	Watershed Management and Modelling	3(2-0-1)
TSW-761	Snow and Glacier Hydrology	3(2-0-1)
TSW-788	Doctoral Seminar-I	1
TSW-789	Doctoral Seminar-II	1
TSW-790	Ph.D. Thesis Research	45