



**APJ ABDUL KALAM TECHNOLOGICAL
UNIVERSITY**

**Curriculum
for
B.Tech Degree
Semesters III to VIII
2016**

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.TECH CURRICULUM FOR THIRD AND HIGHER SEMESTERS
APRIL 2016

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BRANCH: *Aeronautical Engineering***SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME211	Mechanics of Solids And Mechanics of Machines	3-1-0	4	B
ME200	Fluid Mechanics & Machinery	3-1-0	4	C
ME205	Thermodynamics	3-1-0	4	D
AO201	Aircraft Basics and Controls	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	S
CE230	Material Testing Lab	0-0-3	1	T

Total Credits = 24**Hours: 28/29****Cumulative Credits= 71****SEMESTER - 4**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
AO202	Aerodynamics I	3-1-0	4	B
AO204	Aircraft Structures I	4-0-0	4	C
AO206	Propulsion I	3-0-0	3	D
AO208	Aircraft Materials and Processes	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
AO232	Aerodynamics and Flight Mechanics Lab	0-0-3	1	S
AO234	CAD Lab	0-0-3	1	T

Total Credits = 23**Hours 28/27****Cumulative Credits= 94**

BRANCH: Aeronautical Engineering

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
AO301	Aerodynamics II	3-1-0	4	A
AO303	Aircraft Structures II	3-0-0	3	B
AO305	Flight Mechanics	3-0-0	3	C
AO307	A/C General Engineering and Maintenance Practices	3-0-0	3	D
AO309	Experimental Stress Analysis	3-0-0	3	E
	Elective 1	3-0-0	3	F
AO341	Design Project	0-1-2	2	S
AO331	Airframe Production and Maintenance Lab	0-0-3	1	T
AO333	Aircraft Structural Analysis Lab	0-0-3	1	U

Total Credits = 23 Hours: 28**Cumulative Credits= 117**

- Elective 1:-
1. AO361 Aircraft Fuels and Combustion
 2. AO363 Aircraft Modelling Fundamentals
 3. AO365 Wind Power Engineering
 4. ME367 Non-Destructive Testing
 5. AO367 Numerical Programming

BRANCH: *Aeronautical Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
AO302	Propulsion II	4-0-0	4	A
AO304	Vibration and Aero Elasticity	3-0-0	3	B
ME322	Heat Transfer	3-0-0	3	C
AO306	Avionics and Control Systems	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
AO332	Propulsion Lab	0-0-3	1	S
AO334	Avionics and Microprocessor Lab	0-0-3	1	T
AO352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. AO362 High Temperature Materials
2. AO364 Actuators and Controls in Aircraft
3. AO366 Aero Acoustics
4. AO368 Experimental Aerodynamics

BRANCH: *Aeronautical Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
AO401	Computational Fluid Dynamics	4-0-0	4	A
AO403	Aircraft System and Instruments	3-0-0	3	B
AO405	Finite Element Method	3-0-0	3	C
AO407	Composite Materials	3-0-0	3	D
AO409	Wind Tunnel Techniques	3-0-0	3	E
	Elective 3	3-0-0	3	F
AO451	Seminar and Project Preliminary	0-1-4	2	S
AO431	Analysis and Simulation Lab	0-0-3	1	T

**Total Credits = 22 Hours: 27
Cumulative Credits= 162**

Elective 3:-

1. AO461 Helicopter Theory
2. AO463 Cryogenics
3. AO465 Industrial Aerodynamics
4. AO467 Optimization Methods in Aircraft Design

BRANCH: *Aeronautical Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
AO402	Rocketry and Space Mechanics	3-0-0	3	A
AO404	Stability and Control	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
AO492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. AO462 Air Traffic Control and Management
2. AO464 Aerospace Guidance and Control
3. AO466 Aircraft Rules and Regulations
4. AO468 Airframe Maintenance and Repair
5. AO472 Air Transportation and Airline Management

BRANCH: Applied Electronics and Instrumentation/ Electronics and Instrumentation Engineering

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
EC201	Network Theory	3-1-0	4	B
EC203	Solid State Devices	3-1-0	4	C
EC205	Electronic Circuits	3-1-0	4	D
EC207	Logic Circuit Design	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EC231	Electronic Devices & Circuits Lab	0-0-3	1	S
EC233	Logic Circuit Design Lab	0-0-3	1	T

**Total Credits = 24 Hours: 28/29
Cumulative Credits= 71**

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA204	Probability, Random Processes and Numerical Methods	3-1-0	4	A
AE202	Computer Programming	2-2-0	4	B
EC204	Analog Integrated Circuits	4-0-0	4	C
AE204	Sensors and Transducers	3-0-0	3	D
EE216	Electrical Engineering	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EC232	Analog Integrated Circuits Lab	0-0-3	1	S
AE232	Transducers and Instrumentation Lab	0-0-3	1	T

**Total Credits = 23 Hours 28/27
Cumulative Credits= 94**

BRANCH: Applied Electronics and Instrumentation/ Electronics and Instrumentation Engineering

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
AE301	Control System	3-1-0	4	A
AE303	Electronic Measurements	3-0-0	3	B
AE305	Microcontrollers	3-0-0	3	C
AE307	Signals and Systems	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
AE341	Design Project	0-1-2	2	S
AE331	Microcontroller Lab	0-0-3	1	T
EE337	Electrical Engineering Lab	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. AE361 Virtual Instrument Design
 2. EC361 Digital System Design
 3. AE363 VLSI Circuit Design
 4. AE365 Instrumentation for Agriculture

BRANCH: *Applied Electronics and Instrumentation/ Electronics and Instrumentation Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
AE302	Process Control	4-0-0	4	A
AE304	Industrial Instrumentation II	3-0-0	3	B
AE306	Digital Signal Processing	3-0-0	3	C
AE300	Power Electronics	3-0-0	3	D
AE308	Advanced Microprocessors	3-0-0	3	E
	Elective 2	3-0-0	3	F
AE332	Process Control Lab	0-0-3	1	S
AE334	Power Electronics Lab	0-0-3	1	T
AE352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23

Hours: 27

Cumulative Credits= 140

Elective 2:-

1. EC360 Soft Computing
2. AE362 Industrial Psychology
3. AE364 MEMS/NEMS
4. AE366 Embedded System Design
5. AE368 Plastic Engineering

BRANCH: *Applied Electronics and Instrumentation/ Electronics and Instrumentation Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
AE401	Logic and Distributed Control System	4-0-0	4	A
AE403	Biomedical Instrumentation	3-0-0	3	B
AE405	Advanced Control Theory	3-0-0	3	C
AE407	Digital Control System	3-0-0	3	D
AE409	Optical Instrumentation	3-0-0	3	E
	Elective 3	3-0-0	3	F
AE451	Seminar & Project Preliminary	0-1-4	2	S
AE431	Control System and Signal Processing Lab	0-0-3	1	T

Total Credits = 22

Hours: 27

Cumulative Credits= 162

Elective 3:-

1. AE461 ARM System Architecture
2. AE463 Aerospace & Navigation Instrumentation
3. AE465 Information Security
4. AE467 CMOS Circuit Design
5. EC370 Digital Image Processing

BRANCH: Applied Electronics and Instrumentation/ Electronics and Instrumentation Engineering

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
AE402	Analytical Instrumentation	3-0-0	3	A
AE410	Power Plant Instrumentation	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
AE492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. AE462 Optimal Control System
2. AE464 Non-Linear Control System
3. AE466 Industrial Robotics
4. AE468 Nano Electronics
5. AE472 Petroleum Technology

BRANCH: Automobile Engineering**SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
ME200	Fluid Mechanics & Machinery	3-1-0	4	C
AU201	S I Engines & Combustion	3-1-0	4	D
AU203	Auto Chassis	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	S
CE230	Material Testing Lab	0-0-3	1	T

Total Credits = 24**Hours: 28/29****Cumulative Credits= 71****SEMESTER - 4**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distribution, Transforms and Numerical Methods	3-1-0	4	A
AU202	Advanced Thermodynamics	3-1-0	4	B
AU204	C I Engines & Combustion	4-0-0	4	C
AU206	Auto Transmission	3-0-0	3	D
AU208	Computer Programming	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
AU232	Computer Programming Lab	0-0-3	1	S
AU234	Vehicle Systems Lab	0-0-3	1	T

Total Credits = 23**Hours 28/27****Cumulative Credits= 94**

BRANCH: Automobile Engineering

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME307	Machine Design I	3-1-0	4	A
ME309	Metallurgy & Material Science	3-0-0	3	B
ME311	Manufacturing Processes	3-0-0	3	C
EE311	Electrical Drives & Control for Automation	3-0-0	3	D
AU307	Vehicle Body Engineering	3-0-0	3	E
	Elective 1	3-0-0	3	F
AU341	Design Project	0-1-2	2	S
ME333	Heat Engines Lab	0-0-3	1	T
ME335	Production Engineering Lab	0-0-3	1	U

Total Credits = 23 Hours: 28
Cumulative Credits= 117

- Elective 1:-
1. AU361 Alternative Fuels and Energy Sources
 2. AU363 Plastics & Composites in Automobile
 3. AU365 Automotive Pollution and Testing
 4. ME367 Non-Destructive Testing
 5. ME369 Tribology

BRANCH: Automobile Engineering

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME302	Heat & Mass Transfer	3-1-0	4	A
ME304	Dynamics of Machinery	2-1-0	3	B
ME314	Machine Design II	3-0-0	3	C
AU302	Automotive Electrical and Electronics	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
ME332	Computer Aided Design & Analysis Lab	0-0-3	1	S
AU332	Auto Electrical & Electronics Lab	0-0-3	1	T
AU352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. AU362 Hybrid and Fuel Cell Vehicles
2. AU364 Vehicle Performance & Testing
3. AU366 Vehicle Aerodynamics
4. ME368 Marketing Management
5. ME374 Theory of Vibration

BRANCH: Automobile Engineering

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
AU401	Automotive System Design	4-0-0	4	A
AU403	Vehicle Dynamics	3-0-0	3	B
AU405	Automotive Refrigeration & Air Conditioning	3-0-0	3	C
AU407	Advanced IC Engines	3-0-0	3	D
AU409	Simulation & Analysis of Auto Components	3-0-0	3	E
	Elective 3	3-0-0	3	F
AU451	Seminar & Project Preliminary	0-1-4	2	S
AU431	Autotronics Lab	0-0-3	1	T

Total Credits = 22 Hours: 27**Cumulative Credits= 162**

Elective 3:-

1. AU461 Automotive Comfort & Safety Engineering
2. AU463 Operation Management in Auto Industry
3. AU465 Product Design & Life Cycle Management
4. AU410 Vehicle Transport & Fleet Management

BRANCH: *Automobile Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
AU402	Two and Three Wheelers	3-0-0	3	A
AU404	Engine & Vehicle Management Systems	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
AU492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. AU462 Vehicle Maintenance
2. AU464 Special Type of Vehicles
3. AU466 Automobile Manufacturing Technology
4. AU468 AGV and Autonomous Vehicles
5. AU472 Metrology and Instrumentation

BRANCH: *Biomedical engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
BM201	Basic Medical Sciences for Engineers	3-1-0	4	B
BM203	Network Analysis	3-1-0	4	C
BM207	Design of Electronic Circuits	3-1-0	4	D
IC207	Design of Logic Circuits	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
BM231	Electronic Devices & Circuits Lab	0-0-3	1	S
IC233	Logic Circuits Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29
Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distribution, Transforms and Numerical Methods	3-1-0	4	A
BM202	Biophysics	3-1-0	4	B
BM204	Integrated Circuits & Systems	4-0-0	4	C
IC206	Microcontrollers	3-0-0	3	D
BM206	Fundamentals of Computer Programming	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
BM232	Analog Circuits Lab	0-0-3	1	S
BM234	Computer Programming Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27
Cumulative Credits= 94

BRANCH: *Biomedical engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
BM301	Biomedical Signals & Systems	3-1-0	4	A
BM303	Biosensors & Transducers	3-0-0	3	B
BM305	Advanced Microprocessors & Microcontrollers	3-0-0	3	C
BM307	Hospital Engineering	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
BM341	Design Project	0-1-2	2	S
BM331	Medical Electronics Lab	0-0-3	1	T
BM333	Microprocessors & Microcontrollers Lab	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. BM361 Communication Techniques
 2. BM363 Principles of Ergonomic Design
 3. BM365 Bioinformatics
 4. IC365 Design of Digital Systems

BRANCH: *Biomedical engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
BM302	Analytical & Diagnostic Equipment	4-0-0	4	A
BM304	Biomedical Signal Processing	3-0-0	3	B
BM306	Biomaterials	3-0-0	3	C
BM308	Computational Methods in Biomedical Engineering	3-0-0	3	D
BM312	Control System Engineering	3-0-0	3	E
	Elective 2	3-0-0	3	F
BM332	Biomedical Signal Processing Lab	0-0-3	1	S
BM334	Advanced Microcontrollers & Virtual Instrumentation Lab	0-0-3	1	T
BM352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. BM362 Mechatronics
2. BM364 Artificial Organs & Implants
3. BM366 Telemedicine
4. BM372 Embedded System Design

BRANCH: *Biomedical engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
BM401	Medical Image Processing	4-0-0	4	A
BM403	Therapeutic Equipment	3-0-0	3	B
BM405	Artificial Neural Networks	3-0-0	3	C
BM407	Bio Photonics	3-0-0	3	D
BM409	Medical Imaging Techniques	3-0-0	3	E
	Elective 3	3-0-0	3	F
BM451	Seminar & Project Preliminary	0-1-4	2	S
BM431	Clinical Instrumentation Lab	0-0-3	1	T

Total Credits = 22

Hours: 27

Cumulative Credits= 162

Elective 3:-

1. BM461 Modelling of Physiological Systems
2. BM463 Power Electronics & Applications
3. BM467 Medical Robotics
4. EC467 Pattern Recognition

BRANCH: *Biomedical engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
BM402	Biomechanics & Design of Medical Devices	3-0-0	3	A
BM404	Principles of Radio Diagnosis & Radiotherapy	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
BM492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. BM462 VLSI Design
2. BM464 Reliability Engineering
3. BM466 Advanced Biomedical Signal Processing
4. BM468 Biomedical Transport Phenomena

BRANCH: *Biotechnology/Biotechnology & Biochemical Engineering***SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
BT201	Fluid Flow and Particle Technology	3-1-0	4	B
BT203	Concepts In Biochemical Engineering	4-0-0	4	C
BT205	Bioprocess Calculations	3-1-0	4	D
BT207	Microbiology	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
BT231	Microbiology Lab	0-0-3	1	S
BT233	Fluid Flow and Particle Technology Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29**Cumulative Credits= 71****SEMESTER - 4**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA206	Probability & Statistics and Numerical Methods	3-1-0	4	A
BT202	Bioprocess Heat Transfer	3-1-0	4	B
BT204	Industrial Bioprocessing	4-0-0	4	C
BT206	C++ Programming	3-0-0	3	D
BT208	Principles of Biochemistry	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
BT232	Biochemistry Lab	0-0-3	1	S
BT234	Instrumental Methods of Analysis Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27**Cumulative Credits= 94**

BRANCH: *Biotechnology/Biotechnology & Biochemical Engineering***SEMESTER - 5**

Course Code	Course Name	L-T-P	Credits	Exam Slot
BT301	Mass Transfer Operations	3-1-0	4	A
BT303	Chemical and Biological Reaction Engineering	3-0-0	3	B
BT305	Cellular and Molecular Biology	3-0-0	3	C
BT307	Bioprocess Instrumentation	3-0-0	3	D
BT309	Enzyme Engineering and Technology	3-0-0	3	E
	Elective 1	3-0-0	3	F
BT341	Design Project	0-1-2	2	S
BT331	Biochemical Engineering Lab	0-0-3	1	T
BT333	Software Lab	0-0-3	1	U

Total Credits = 23**Hours: 28****Cumulative Credits= 117**

- Elective 1:-
1. BT361 Animal and Plant Cell Biotechnology
 2. BT363 Metabolic Engineering and Synthetic Biology
 3. BT365 Proteomics and Protein Engineering
 4. BT367 Tissue Engineering and Stem Cells

BRANCH: *Biotechnology/Biotechnology & Biochemical Engineering***SEMESTER - 6**

<i>Course Code</i>	<i>Course Name</i>	<i>L-T-P</i>	<i>Credits</i>	<i>Exam Slot</i>
BT302	Transport Phenomena in Biological Systems	4-0-0	4	A
BT304	Downstream Processing	3-0-0	3	B
BT306	Bioprocess Engineering	3-0-0	3	C
BT308	Bioreactor Analysis and Design	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
BT332	Heat & Mass Transfer Lab	0-0-3	1	S
BT334	Downstream Processing Lab	0-0-3	1	T
BT352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. BT362 Sustainable Energy Processes
2. BT364 Bio refinery Engineering
3. BT366 Bioremediation Technology
4. BT368 Genetic Engineering

BRANCH: *Biotechnology/Biotechnology & Biochemical Engineering***SEMESTER - 7**

Course Code	Course Name	L-T-P	Credits	Exam Slot
BT401	Process Dynamics and Control	4-0-0	4	A
BT403	Bioinformatics	3-0-0	3	B
BT405	Environmental Engineering	3-0-0	3	C
BT407	Bioenergy Engineering	3-0-0	3	D
BT409	Environmental Biotechnology	3-0-0	3	E
	Elective 3	3-0-0	3	F
BT451	Seminar & Project Preliminary	0-1-4	2	S
BT431	Reaction Engineering and Process Control Lab	0-0-3	1	T

Total Credits = 22 Hours: 27**Cumulative Credits= 162**

Elective 3:-

1. BT461 Design of Biological Wastewater Treatment Systems
2. BT463 Bioprocess Optimization Modelling and Simulation
3. BT465 Advanced Separation Processes
4. BT467 Biopharmaceutical Technology

BRANCH: *Biotechnology/Biotechnology & Biochemical Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
BT402	Bioprocess Plant Design and Safety	3-0-0	3	A
BT404	Bioprocess Quality Control	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
BT492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. BT462 Biomaterials Engineering
2. BT464 Food Process Technology
3. BT466 Nano biotechnology
4. BT468 Entrepreneurship, IPR and Biosafety

BRANCH: Chemical Engineering**SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
CH201	Chemical Process Calculations	3-1-0	4	B
CH203	Particle Technology	3-1-0	4	C
CH205	Fluid and Particle Mechanics I	3-1-0	4	D
CH207	Chemistry for Process Engineering I	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
CH231	Chemistry Lab for Process Engineering	0-0-3	1	S
CH233	Chemistry Technology and Environmental Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29
Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
CH202	Process Heat Transfer	3-1-0	4	B
CH204	Chemical Engineering Thermodynamics	3-1-0	4	C
CH206	Fluid and Particle Mechanics II	3-0-0	3	D
CH208	Chemistry for Process Engineering II	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
CH232	Fluid and Particle Mechanics Lab	0-0-3	1	S
CH234	Particle Technology Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27
Cumulative Credits= 94

BRANCH: *Chemical Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
CH301	Environmental Engineering	3-1-0	4	A
CH303	Mass Transfer Operations I	3-0-0	3	B
CH305	Chemical Reaction Engineering I	3-0-0	3	C
CH307	Computer Programming in C++	2-1-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
CH341	Design Project	0-1-2	2	S
CH331	Heat Transfer Operations Lab	0-0-3	1	T
CH333	Chemical Reaction Engineering Lab	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. CH361 Energy Engineering
 2. CH363 Principles of Nano Materials and Nano Technology
 3. CH365 Polymer Technology
 4. CH367 Numerical Methods for Process Engineers
 5. CH369 Operations Research
 6. CH371 Novel Separation Process

BRANCH: *Chemical Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
CH302	Process Dynamics and Control	3-1-0	4	A
CH304	Inorganic Chemical Technology	3-0-0	3	B
CH306	Mass Transfer Operations II	3-0-0	3	C
CH308	Chemical Reaction Engineering II	3-0-0	3	D
CH312	Chemical Engineering Design I	3-0-0	3	E
	Elective 2	3-0-0	3	F
CH332	Mass Transfer Operations Lab	0-0-3	1	S
CH334	Programming and Process Simulation Lab	0-0-3	1	T
CH352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. CH362 Non-Conventional Petroleum Resources
2. CH364 Bioprocess Engineering
3. CH366 Corrosion Engineering
4. CH368 Computational Fluid Dynamics
5. CH372 Catalyst Science and Catalytic Processes
6. CH374 Process Design for Pollution Control

BRANCH: *Chemical Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
CH401	Transport Phenomena in Processes	3-1-0	4	A
CH403	Process Instrumentation	3-0-0	3	B
CH405	Chemical Engineering Design II	3-0-0	3	C
CH407	Biochemical Engineering	3-0-0	3	D
CH409	Organic Chemical Technology	3-0-0	3	E
	Elective 3	3-0-0	3	F
CH451	Seminar & Project Preliminary	0-1-4	2	S
CH431	Process Control Lab	0-0-3	1	T

Total Credits = 22 Hours: 27
Cumulative Credits= 162

Elective 3:-

1. CH461 Petroleum Refinery Engineering
2. CH463 Enzyme Engineering
3. CH465 Process Optimization
4. CH467 Process Modelling and Simulation
5. CH469 Mathematical Methods in Process Engineering
6. CH471 Solid Waste Management

BRANCH: *Chemical Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
CH402	Project Engineering and Process Plant Economics	3-0-0	3	A
CH404	Safety Engineering of Process Plants	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
CH492	Project		6	

Total Credits = 18 Hours: 30
Cumulative Credits= 180

Elective 4:-

1. CH462 Natural Gas Engineering
2. CH464 Water and Waste Water Engineering
3. CH466 Composite Materials
4. CH468 Food Processing and Technology
5. CH472 Process Integration

BRANCH: *Civil Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
CE201	Mechanics of Solids	3-1-0	4	B
CE203	Fluid Mechanics I	3-1-0	4	C
CE205	Engineering Geology	3-0-1	4	D
CE207	Surveying	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
CE231	Civil Engineering Drafting Lab	0-0-3	1	S
CE233	Surveying Lab	0-0-3	1	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
CE202	Structural Analysis I	3-1-0	4	B
CE204	Construction Technology	4-0-0	4	C
CE206	Fluid Mechanics II	3-0-0	3	D
CE208	Geotechnical Engineering I	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
CE232	Materials Testing Lab I	0-0-3	1	S
CE234	Fluid Mechanics Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

BRANCH: *Civil Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE301	Design of Concrete Structures I	3-1-0	4	A
CE303	Structural Analysis II	3-0-0	3	B
CE305	Geotechnical Engineering II	3-0-0	3	C
CE307	Geomatics	3-0-0	3	D
CE309	Water Resources Engineering	3-0-0	3	E
	Elective 1	3-0-0	3	F
CE341	Design Project	0-1-2	2	S
CE331	Materials Testing Lab II	0-0-3	1	T
CE333	Geotechnical Engineering Lab	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. CE361 Advanced Concrete Technology
 2. CE363 Geotechnical Investigation
 3. CE365 Functional Design of Buildings
 4. CE367 Water Conveyance Systems
 5. CE369 Disaster Management
 6. CE371 Environment and Pollution
 7. CE373 Advanced Mechanics of Materials

BRANCH: *Civil Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE302	Design of Hydraulic Structures	4-0-0	4	A
CE304	Design of Concrete Structures II	3-0-0	3	B
CE306	Computer Programming and Computational Techniques	3-0-0	3	C
CE308	Transportation Engineering I	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
CE332	Transportation Engineering Lab	0-0-3	1	S
CE334	Computer Aided Civil Engineering Lab	0-0-3	1	T
CE352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23

Hours: 27

Cumulative Credits= 140

Elective 2:-

1. CE362 Ground Improvement Techniques
2. CE364 Advanced Foundation Engineering
3. CE366 Traffic Engineering and Management
4. CE368 Prestressed Concrete
5. CE372 Engineering Hydrology
6. CE374 Air Quality Management

BRANCH: *Civil Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE401	Design of Steel Structures	4-0-0	4	A
CE403	Structural Analysis III	3-0-0	3	B
CE405	Environmental Engineering I	3-0-0	3	C
CE407	Transportation Engineering II	3-0-0	3	D
CE409	Quantity Surveying and Valuation	3-0-0	3	E
	Elective 3	3-0-0	3	F
CE451	Seminar & Project Preliminary	0-1-4	2	S
CE431	Environmental Engineering Lab	0-0-3	1	T

Total Credits = 22

Hours: 27

Cumulative Credits= 162

Elective 3:-

1. CE461 Water Hydrodynamics and Coastal Engineering
2. CE463 Bridge Engineering
3. CE465 Geo-Environmental Engineering
4. CE467 Highway Pavement Design
5. CE469 Environmental Impact Assessment
6. CE471 Advanced Structural Design
4. CE473 Advanced Computational Techniques and Optimization

BRANCH: *Civil Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
CE402	Environmental Engineering II	3-0-0	3	A
CE404	Civil Engineering Project Management	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
CE492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. CE462 Town and Country Planning
2. CE464 Reinforced Soil Structures and Geosynthetics
3. CE466 Finite Element Methods
4. CE468 Structural Dynamics and Earthquake Resistant Design
5. CE472 Transportation Planning
6. CE474 Municipal Solid Waste Management

BRANCH: **Computer Science & Engineering**

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
CS201	Discrete Computational Structures	3-1-0	4	B
CS203	Switching Theory and Logic Design	3-1-0	4	C
CS205	Data Structures	3-1-0	4	D
CS207	Electronics Devices & Circuits	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
CS231	Data Structures Lab	0-0-3	1	S
CS233	Electronics Circuits Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
CS202	Computer Organization and Architecture	3-1-0	4	B
CS204	Operating Systems	3-1-0	4	C
CS206	Object Oriented Design and Programming	2-1-0	3	D
CS208	Principles of Database Design	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
CS232	Free and Open Source Software Lab	0-0-3	1	S
CS234	Digital Systems Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27

Cumulative Credits= 94

BRANCH: **Computer Science & Engineering**

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
CS301	Theory of Computation	3-1-0	4	A
CS303	System Software	2-1-0	3	B
CS305	Microprocessors and Microcontrollers	2-1-0	3	C
CS307	Data Communication	3-0-0	3	D
CS309	Graph Theory and Combinatorics	2-0-2	3	E
	Elective 1	3-0-0	3	F
CS341	Design Project	0-1-2	2	S
CS331	System Software Lab	0-0-3	1	T
CS333	Application Software Development Lab	0-0-3	1	U

Total Credits = 23

Hours: 29

Cumulative Credits= 117

- Elective 1:-
1. CS361 Soft Computing
 2. CS363 Signals and Systems
 3. CS365 Optimization Techniques
 4. CS367 Logic for Computer Science
 5. CS369 Digital System Testing & Testable Design

BRANCH: **Computer Science & Engineering**

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
CS302	Design and Analysis of Algorithms	3-1-0	4	A
CS304	Compiler Design	3-0-0	3	B
CS306	Computer Networks	3-0-0	3	C
CS308	Software Engineering and Project Management	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
CS332	Microprocessor Lab	0-0-3	1	S
CS334	Network Programming Lab	0-0-3	1	T
CS352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. CS362 Computer Vision
2. CS364 Mobile Computing
3. CS366 Natural Language Processing
4. CS368 Web Technologies
5. CS372 High Performance Computing

BRANCH: **Computer Science & Engineering**

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
CS401	Computer Graphics	4-0-0	4	A
CS403	Programming Paradigms	3-0-0	3	B
CS405	Computer System Architecture	3-0-0	3	C
CS407	Distributed Computing	3-0-0	3	D
CS409	Cryptography and Network Security	3-0-0	3	E
	Elective 3	3-0-0	3	F
CS451	Seminar & Project Preliminary	0-1-4	2	S
CS431	Compiler Design Lab	0-0-3	1	T

Total Credits = 22 Hours: 27
Cumulative Credits= 162

Elective 3:-

1. CS461 Computational Geometry
2. CS463 Digital Image Processing
3. CS465 Bio Informatics
4. CS467 Machine Learning
5. CS469 Computational Complexity

BRANCH: **Computer Science & Engineering**

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
CS402	Data Mining and Ware Housing	3-0-0	3	A
CS404	Embedded Systems	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
CS492	Project		6	

Total Credits = 18 Hours: 30
Cumulative Credits= 180

Elective 4:-

1. CS462 Fuzzy Set Theory and Applications
2. CS464 Artificial Intelligence
3. CS466 Data Science
4. CS468 Cloud Computing
5. CS472 Principles of Information Security

BRANCH: *Electrical & Electronics Engineering***SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
EE201	Circuits and Networks	3-1-0	4	B
EE203	Analog Electronic Circuits	3-1-0	4	C
EE205	DC Machines and Transformers	3-1-0	4	D
EE207	Computer Programming	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EE231	Electronic Circuits Lab	0-0-3	1	S
EE233	Programming Lab	0-0-3	1	T

Total Credits = 24**Hours: 28/29****Cumulative Credits= 71****SEMESTER - 4**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
EE202	Synchronous and Induction Machines	3-1-0	4	B
EE204	Digital Electronics and Logic Design	2-1-0	3	C
EE206	Material Science	3-0-0	3	D
EE208	Measurements and Instrumentation	3-1-0	4	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EE232	Electrical Machines Lab I	0-0-3	1	S
EE234	Circuits and Measurements Lab	0-0-3	1	T

Total Credits = 23**Hours 28/27****Cumulative Credits= 94**

BRANCH: *Electrical & Electronics Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
EE301	Power Generation, Transmission and Protection	3-1-0	4	A
EE303	Linear Control Systems	2-1-0	3	B
EE305	Power Electronics	3-0-0	3	C
EE307	Signals and Systems	3-0-0	3	D
EE309	Microprocessor and Embedded Systems	2-1-0	3	E
	Elective 1	3-0-0	3	F
EE341	Design Project	0-1-2	2	S
EE331	Digital Circuits and Embedded Systems Lab	0-0-3	1	T
EE333	Electrical Machines Lab II	0-0-3	1	U

Total Credits = 23 Hours: 28
Cumulative Credits= 117

- Elective 1:-
1. EE361 Object Oriented Programming
 2. EE363 Computer Organization and Architecture
 3. EE365 Digital System Design
 4. EE367 New and Renewable Energy Systems
 5. EE369 High Voltage Engineering

BRANCH: *Electrical & Electronics Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
EE302	Electromagnetics	2-1-0	3	A
EE304	Advanced Control Theory	3-1-0	4	B
EE306	Power System Analysis	3-0-0	3	C
EE308	Electric Drives	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
EE332	Systems and Control Lab	0-0-3	1	S
EE334	Power Electronics & Drives Lab	0-0-3	1	T
EE352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. EE362 Data Structures and Algorithms
2. EE364 Switched Mode Power Converters
3. EE366 Illumination Technology
4. EE368 Soft Computing
5. EE372 Biomedical Instrumentation

BRANCH: *Electrical & Electronics Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
EE401	Electronic Communication	2-1-0	3	A
EE403	Distributed Generation and Smart Grids	3-0-0	3	B
EE405	Electrical System Design	3-1-0	4	C
EE407	Digital Signal Processing	3-0-0	3	D
EE409	Electrical Machine Design	3-0-0	3	E
	Elective 3	3-0-0	3	F
EE451	Seminar & Project Preliminary	0-1-4	2	S
EE431	Power System Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. EE461 Modern Operating Systems
2. EE463 Computer Aided Power Systems Analysis
3. EE465 Power Quality
4. EE467 Nonlinear Control Systems
5. EE469 Electric and Hybrid Vehicles

BRANCH: *Electrical & Electronics Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
EE402	Special Electric Machines	3-0-0	3	A
EE404	Industrial Instrumentation & Automation	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
EE492	Project		6	

Total Credits = 18 Hours: 30
Cumulative Credits= 180

Elective 4:-

1. EE462 Design of Digital Control Systems
2. EE464 FACTS
3. EE466 Digital Image Processing
4. EE468 Computer Networks
5. EE472 Internet of Things
6. EE474 Energy Management and Auditing

BRANCH: *Electronics & Biomedical Engineering***SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
BM201	Basic Medical Sciences for Engineers	3-1-0	4	B
BM205	Electrical Technology	3-1-0	4	C
BM207	Design of Electronic Circuits	3-1-0	4	D
IC207	Design of Logic Circuits	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
BM231	Electronic Devices & Circuits Lab	0-0-3	1	S
IC233	Logic Circuits Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29
Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
BM202	Biophysics	3-1-0	4	B
BM204	Integrated Circuits & Systems	4-0-0	4	C
IC206	Microcontrollers	3-0-0	3	D
BM206	Fundamentals of Computer Programming	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
BM232	Analog Circuits Lab	0-0-3	1	S
BM234	Computer Programming Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27
Cumulative Credits= 94

BRANCH: *Electronics & Biomedical Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
BM301	Biomedical Signals & Systems	3-1-0	4	A
BM303	Biosensors & Transducers	3-0-0	3	B
BM305	Advanced Microprocessors & Microcontrollers	3-0-0	3	C
BM307	Hospital Engineering	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
BM341	Design Project	0-1-2	2	S
BM331	Medical Electronics Lab	0-0-3	1	T
BM333	Microprocessors & Microcontrollers Lab	0-0-3	1	U

Total Credits = 23 Hours: 28
Cumulative Credits= 117

- Elective 1:-
1. BM361 Communication Techniques
 2. BM363 Principles of Ergonomic Design
 3. BM365 Bioinformatics
 3. BM369 Biomedical Optics & Bio photonics

BRANCH: *Electronics & Biomedical Engineering***SEMESTER - 6**

Course Code	Course Name	L-T-P	Credits	Exam Slot
BM302	Analytical & Diagnostic Equipment	4-0-0	4	A
BM304	Biomedical Signal Processing	3-0-0	3	B
IC365	Design of Digital Systems	3-0-0	3	C
BM308	Computational Methods in Biomedical Engineering	3-0-0	3	D
BM312	Control System Engineering	3-0-0	3	E
	Elective 2	3-0-0	3	F
BM332	Biomedical Signal Processing Lab	0-0-3	1	S
BM336	Bioengineering Lab	0-0-3	1	T
BM352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. BM362 Mechatronics
2. BM366 Telemedicine
3. BM368 Computer Communications
4. BM372 Embedded System Design

BRANCH: *Electronics & Biomedical Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
BM401	Medical Image Processing	4-0-0	4	A
BM403	Therapeutic Equipment	3-0-0	3	B
BM405	Artificial Neural Networks	3-0-0	3	C
BM411	Modelling of Physiological Systems	3-0-0	3	D
BM409	Medical Imaging Techniques	3-0-0	3	E
	Elective 3	3-0-0	3	F
BM451	Seminar & Project Preliminary	0-1-4	2	S
BM433	Medical Systems Lab	0-0-3	1	T

Total Credits = 22 Hours: 27**Cumulative Credits= 162**

Elective 3:-

1. BM463 Power Electronics & Applications
2. EC467 Pattern Recognition
3. BM467 Medical Robotics
4. BM469 Bio MEMS & Nanotechnology

BRANCH: *Electronics & Biomedical Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
BM402	Biomechanics & Design of Medical Devices	3-0-0	3	A
BM404	Principles of Radio Diagnosis & Radiotherapy	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
BM492	Project		6	

Total Credits = 18 Hours: 30
Cumulative Credits= 180

Elective 4:-

1. BM462 VLSI Design
2. BM464 Reliability Engineering
3. BM466 Advanced Biomedical Signal Processing
4. BM472 Biomaterials

BRANCH: Electronics & Communication Engineering**SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
EC201	Network Theory	3-1-0	4	B
EC203	Solid State Devices	3-1-0	4	C
EC205	Electronic Circuits	3-1-0	4	D
EC207	Logic Circuit Design	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EC231	Electronic Devices & Circuits Lab	0-0-3	1	S
EC223	Electronic Design Automation Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29**Cumulative Credits= 71****SEMESTER - 4**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA204	Probability, Random Processes and Numerical Methods	3-1-0	4	A
EC202	Signals & Systems	3-1-0	4	B
EC204	Analog Integrated Circuits	4-0-0	4	C
EC206	Computer Organization	3-0-0	3	D
EC208	Analog Communication Engineering	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EC232	Analog Integrated Circuits Lab	0-0-3	1	S
EC230	Logic Circuit Design Lab	0-0-3	1	T

Total Credits = 23 Hours 27/28**Cumulative Credits= 94**

BRANCH: *Electronics & Communication Engineering***SEMESTER - 5**

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC301	Digital Signal Processing	3-1-0	4	A
EC303	Applied Electromagnetic Theory	3-0-0	3	B
EC305	Microprocessors & Microcontrollers	3-0-0	3	C
EC307	Power Electronics & Instrumentation	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
EC341	Design Project	0-1-2	2	S
EC333	Digital Signal Processing Lab	0-0-3	1	T
EC335	Power Electronics & Instrumentation Lab	0-0-3	1	U

Total Credits = 23 Hours: 28
Cumulative Credits= 117

- Elective 1:-
1. EC361 Digital System Design
 2. EC363 Optimization Techniques
 3. EC365 Biomedical Engineering
 4. EC360 Soft Computing

BRANCH: *Electronics & Communication Engineering***SEMESTER - 6**

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC302	Digital Communication	4-0-0	4	A
EC304	VLSI	3-0-0	3	B
EC306	Antenna & Wave Propagation	3-0-0	3	C
EC308	Embedded Systems	3-0-0	3	D
EC312	Object Oriented Programming	3-0-0	3	E
	Elective 2	3-0-0	3	F
EC332	Communication Engg Lab (Analog & Digital)	0-0-3	1	S
EC334	Microcontroller Lab	0-0-3	1	T
EC352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. EC362 Modelling & Simulation of Communication Systems
2. EC364 Computer Vision
3. EC366 Real Time Operating Systems
4. EC368 Robotics
5. EC370 Digital Image Processing

BRANCH: *Electronics & Communication Engineering***SEMESTER - 7**

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC401	Information Theory & Coding	4-0-0	4	A
EC403	Microwave & Radar Engineering	3-0-0	3	B
EC405	Optical Communication	3-0-0	3	C
EC407	Computer Communication	3-0-0	3	D
EC409	Control Systems	3-0-0	3	E
	Elective 3	3-0-0	3	F
EC451	Seminar & Project Preliminary	0-1-4	2	S
EC431	Communication Systems Lab (Optical & Microwave)	0-0-3	1	T

Total Credits = 22 Hours: 27**Cumulative Credits= 162**

Elective 3:-

1. EC461 Microwave Devices and Circuits
2. EC463 Speech and Audio Processing
3. EC465 MEMS
4. EC467 Pattern Recognition
5. EC469 Opto Electronic Devices

BRANCH: *Electronics & Communication Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
EC402	Nano electronics	3-0-0	3	A
EC404	Advanced Communication Systems	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
EC492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. EC462 Mixed Signal Circuit Design
2. EC464 Low Power VLSI Design
3. EC466 Cyber Security
4. EC468 Secure Communication
5. EC472 Integrated Optics & Photonic Systems

BRANCH: *Food Technology*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
FT201	Food Microbiology	3-1-0	4	B
FT203	Food Chemistry	3-1-0	4	C
FT205	Fundamentals of Heat and Mass Transfer	3-1-0	4	D
FT207	Introductory Food Technology	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
FT231	Food Microbiology Lab I	0-0-3	1	S
FT233	Food Chemistry Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA206	Probability & Statistics and Numerical Methods	3-1-0	4	A
FT202	Principles of Chemical Engineering	3-1-0	4	B
FT204	Engineering Properties of Biological Materials	4-0-0	4	C
FT206	Food Biotechnology	3-0-0	3	D
FT208	Engineering Thermodynamics and Reaction Kinetics	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
FT232	Engineering Properties Lab	0-0-3	1	S
FT234	Food Microbiology Lab II	0-0-3	1	T

Total Credits = 23 Hours 28/27

Cumulative Credits= 94

BRANCH: *Food Technology*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
FT301	Cereals & Legume Technology	3-1-0	4	A
FT303	Unit Operations in Food Processing	3-0-0	3	B
FT305	Food Process Engineering	3-0-0	3	C
FT307	Food Analysis	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
FT341	Design Project	0-1-2	2	S
FT331	Unit Operations in Food Lab	0-0-3	1	T
FT333	Food Analysis and Quality Evaluation Lab I	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. FT361 Modelling and Simulation in Food Processing
 2. FT363 Bioprocess Engineering
 3. FT365 Food Product Design and Development
 4. FT367 Nanotechnology in Food
 5. FT369 Non Thermal Processing of Food

BRANCH: *Food Technology*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
FT302	Dairy Technology	4-0-0	4	A
FT304	Fat and Oil Processing Technology	3-0-0	3	B
FT306	Bakery and Confectionary Technology	3-0-0	3	C
FT308	Fruits and Vegetable Processing	3-0-0	3	D
FT312	Spices and Plantation Crop Processing	3-0-0	3	E
	Elective 2	3-0-0	3	F
FT332	Food Processing and Preservation Lab I	0-0-3	1	S
FT334	Food Analysis and Quality Evaluation Lab II	0-0-3	1	T
FT352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. FT362 Fermentation and Enzyme Technology
2. FT364 Food Additives and Flavourings
3. FT366 Food Toxicology
4. FT368 Biologically Active Phytochemicals in Food
5. FT372 Post-Harvest Physiology and Spoilage in Food

BRANCH: *Food Technology*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
FT401	Food Process Equipment and Design	4-0-0	4	A
FT403	Bye-Product Utilization in Food Industry	3-0-0	3	B
FT405	Meat and Poultry Processing	3-0-0	3	C
FT407	Food Quality, Safety and Regulations	3-0-0	3	D
FT409	Food Packaging Technology	3-0-0	3	E
	Elective 3	3-0-0	3	F
FT451	Seminar & Project Preliminary	0-1-4	2	S
FT431	Food Processing and Preservation Lab II	0-0-3	1	T

Total Credits = 22 Hours: 27
Cumulative Credits= 162

Elective 3:-

1. FT461 Nutraceuticals and Functional Foods
2. FT463 Cane Sugar Technology
3. FT465 Beverage Processing
4. FT467 Fish Preservation and Processing Technology
5. FT469 Snack Food Technology

BRANCH: *Food Technology*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
FT402	Food Plant Layout and Design	3-0-0	3	A
FT404	Food Laws and Legislation	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
FT492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. FT462 Food Plant Utilities, Maintenance, Safety and Sanitation
2. FT464 Entrepreneurship Development for Food Technology
3. FT466 Automation in Food Processing
4. FT468 Food Informatics
5. FT472 Extension and Transfer of Technology in Food Processing

BRANCH: *Industrial Engineering***SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME207	Thermal Engineering I	3-1-0	4	B
ME200	Fluid Mechanics & Machinery	3-1-0	4	C
ME209	Mechanical Properties of Structural Materials	3-1-0	4	D
ME213	Theory of Machines	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	S
ME235	Machine Dynamics and Material Testing Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29
Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA208	Introduction to Stochastic Models	3-1-0	4	A
ME218	Elements of Machine Design	3-1-0	4	B
ME222	Thermal Engineering II	4-0-0	4	C
IE202	Object Oriented Programming & Numerical Methods	3-0-0	3	D
ME220	Manufacturing Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
ME232	Thermal Engineering Lab	0-0-3	1	S
IE232	Object Oriented Programming Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27
Cumulative Credits= 94

BRANCH: *Industrial Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
IE301	Operation Management	3-1-0	4	A
ME303	Machine Tools & Digital manufacturing	3-0-0	3	B
IE303	Operations Research	3-0-0	3	C
IE305	Work Study & Ergonomics	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
IE341	Design Project	0-1-2	2	S
ME337	Machine Tools Lab	0-0-3	1	T
IE331	Work Study & Ergonomics Lab	0-0-3	1	U

Total Credits = 23 Hours: 28
Cumulative Credits= 117

- Elective 1:-
1. IE361 Management of Projects
 2. IE363 Human Resource Management & Organizational Behaviour
 3. IE365 Financial Reporting & Analysis
 4. ME367 Non-Destructive Testing

BRANCH: *Industrial Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
IE302	Data Analysis	4-0-0	4	A
IE304	Advanced Operations Research	3-0-0	3	B
IE306	Supply Chain and Logistics Management	3-0-0	3	C
IE308	Quality Engineering	3-0-0	3	D
IE312	System Simulation	3-0-0	3	E
	Elective 2	3-0-0	3	F
IE332	Data Analysis and Optimization Lab	0-0-3	1	S
IE334	Quality Control and Non – Destructive Testing Lab	0-0-3	1	T
IE352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours:27

Cumulative Credits= 140

Elective 2:-

1. IE362 Group Technology and Flexible Manufacturing System
2. IE364 Management Information Systems
3. IE366 Financial Management
4. IE368 Facilities Layout and Material Handling

BRANCH: *Industrial Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
IE401	Reliability Engineering	4-0-0	4	A
IE403	Heuristic Solution Techniques	3-0-0	3	B
IE405	System Dynamics	3-0-0	3	C
IE407	Enterprise Resource Planning	3-0-0	3	D
IE409	Applied Ergonomics	3-0-0	3	E
	Elective 3	3-0-0	3	F
IE451	Seminar & Project Preliminary	0-1-4	2	S
IE431	System Simulation and Enterprise Resource Planning Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. IE461 Financial Engineering
2. IE463 Inventory Control
3. IE465 Data Analytics Using R and Python
4. IE467 Predictive Modelling

BRANCH: *Industrial Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
IE402	Industrial Scheduling	3-0-0	3	A
IE404	Manufacturing Automation	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
IE492	Project		6	

Total Credits = 18 Hours: 30
Cumulative Credits= 180

Elective 4:-

1. IE462 Marketing Management
2. IE464 Time Series Analysis
3. IE466 Occupational Safety and Health Engineering
4. IE468 Multi – Criteria Decision Making

BRANCH: *Information Technology*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
CS201	Discrete Computational Structures	3-1-0	4	B
IT201	Digital System Design	3-1-0	4	C
CS205	Data Structures	3-1-0	4	D
IT203	Data Communication	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
CS231	Data Structures Lab	0-0-3	1	S
IT231	Digital Circuits Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29
Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
CS202	Computer Organization and Architecture	3-1-0	4	B
IT202	Algorithm Analysis & Design	4-0-0	4	C
IT204	Object Oriented Techniques	3-0-0	3	D
CS208	Principles of Data Base Design	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
IT232	Object Oriented Programming Lab	0-0-3	1	S
IT234	Algorithm Design Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27
Cumulative Credits= 94

BRANCH: *Information Technology*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
IT301	Software Architecture & Design Patterns	3-1-0	4	A
IT303	Theory of Computation	3-0-0	3	B
CS305	Microprocessors & Microcontrollers	2-1-0	3	C
IT305	Operating Systems	3-0-0	3	D
IT307	Computer Networks	3-0-0	3	E
	Elective 1	3-0-0	3	F
IT341	Design Project	0-1-2	2	S
IT331	Microcontroller Lab	0-0-3	1	T
IT333	Database Lab	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. IT361 Graph Theory
 2. IT363 UNIX Shell Programming
 3. IT365 Computer Architecture & Parallel Processing
 4. IT367 Computer Graphics & Multimedia
 5. MA361 Random Process and Queuing Theory

BRANCH: *Information Technology*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
IT302	Internet Technology	4-0-0	4	A
CS304	Compiler Design	2-1-0	3	B
IT304	Information Retrieval	3-0-0	3	C
IT306	Distributed Systems	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
IT332	Internet Technology Lab	0-0-3	1	S
IT334	Computer Networks Lab	0-0-3	1	T
IT352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23

Hours: 27

Cumulative Credits= 140

Elective 2:-

1. IT362 Data Warehousing & Mining
2. IT364 Software Testing & Quality Assurance
3. IT366 Advanced DBMS
4. IT368 Information Theory & Coding
5. MA362 Abstract Algebra and Number Theory

BRANCH: *Information Technology*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
IT401	Embedded Systems	4-0-0	4	A
IT403	Mobile Computing	3-0-0	3	B
IT405	Internet Working with TCP/IP	3-0-0	3	C
IT407	Knowledge Engineering	3-0-0	3	D
IT409	Web Application Development	3-0-0	3	E
	Elective 3	3-0-0	3	F
IT451	Seminar & Project Preliminary	0-1-4	2	S
IT431	Web Application Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. IT461 Software Project Management
2. IT463 Semantic Web
3. IT465 Cyber Forensics
4. CS467 Machine Learning

BRANCH: *Information Technology*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
IT402	Cryptography & Cyber Security	3-0-0	3	A
IT404	Data Analytics	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
IT492	Project		6	

Total Credits = 18 Hours: 30
Cumulative Credits= 180

Elective 4:-

1. IT462 Internet of Things
2. CS468 Cloud Computing
3. IT464 Evolutionary Computing
4. IT466 Adhoc & Sensor Networks
5. IT468 Service Oriented Architecture

BRANCH: Instrumentation & Control Engineering

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
IC201	Basic Instrumentation Engineering and Transducers	3-1-0	4	B
IC203	Electrical and Electronics Measurements	3-1-0	4	C
BM207	Design of Electronic Circuits	3-1-0	4	D
IC207	Design of Logic Circuits	3-0-0	3	E
HS200/ HS210	Business Economics/ Life Skills	3-0-0/ 2-0-2	3	F
BM231	Electronic Devices & Circuits Lab	0-0-3	1	S
IC233	Logic Circuits Lab	0-0-3	1	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
IC202	Linear Systems and Networks	3-1-0	4	B
BM204	Integrated Circuits & Systems	4-0-0	4	C
IC206	Microcontrollers	3-0-0	3	D
IC208	Mechanical Instrumentation	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
BM232	Analog Circuits Lab	0-0-3	1	S
IC234	Electrical and Electronics Measurements Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

BRANCH: Instrumentation & Control Engineering

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
IC301	Control Engineering I	3-1-0	4	A
IC303	Microprocessors	3-0-0	3	B
IC305	Signals and Systems	3-0-0	3	C
IC307	Industrial Instrumentation I	3-0-0	3	D
IC309	Machines and Drives	3-0-0	3	E
	Elective 1	3-0-0	3	F
IC341	Design Project	0-1-2	2	S
IC331	Microcontrollers Lab	0-0-3	1	T
IC333	Fluid Measurements Lab	0-0-3	1	U

Total Credits = 23 Hours: 28
Cumulative Credits= 117

- Elective 1:-
1. IC361 Numerical Methods
 2. IC363 Environmental Instrumentation and Safety
 3. IC365 Design of Digital Systems
 4. IC367 Automobile Instrumentation
 5. AE365 Instrumentation for Agriculture

BRANCH: Instrumentation & Control Engineering

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
IC302	Control Engineering II	4-0-0	4	A
IC304	Discrete Time Signal Processing	3-0-0	3	B
IC306	Industrial Instrumentation II	3-0-0	3	C
IC308	Process Control Instrumentation	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
IC332	System Simulation Lab	0-0-3	1	S
IC334	Industrial Instrumentation Lab	0-0-3	1	T
IC352	Comprehensive Exam	0-1-1	2	U

**Total Credits = 23 Hours: 27
Cumulative Credits= 140**

Elective 2:-

1. IC362 Industrial Robotics
2. BM372 Embedded System Design
3. IC364 Total Quality Management
4. IC366 MEMS and Nanotechnology
5. IC360 Computational Intelligence in Control Engineering

BRANCH: Instrumentation & Control Engineering

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
IC401	Industrial Process Control	4-0-0	4	A
IC403	Process Automation	3-0-0	3	B
IC405	Communication Engineering	3-0-0	3	C
IC407	Biomedical Instrumentation	3-0-0	3	D
IC409	Analytical Instruments	3-0-0	3	E
	Elective 3	3-0-0	3	F
IC451	Seminar & Project Preliminary	0-1-4	2	S
IC431	Process Control Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. IC461 Digital Control
2. IC463 Aerospace Engineering and Navigation Instrumentation
3. IC465 System Identification and Adaptive Control Systems
4. AE410 Power Plant Instrumentation
5. EC370 Digital Image Processing

BRANCH: Instrumentation & Control Engineering

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
IC402	Instrumentation System Design	3-0-0	3	A
IC404	Optoelectronic Instrumentation	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
IC492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. AE462 Optimal Control Systems
2. BM464 Reliability Engineering
3. IC462 Non Linear Dynamics and Chaos
4. IC464 Instrumentation in Petrochemical Industries
5. IC466 Biomedical Signal Processing

BRANCH: *Mechanical Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
ME203	Mechanics of Fluids	3-1-0	4	C
ME205	Thermodynamics	3-1-0	4	D
ME210	Metallurgy and Materials Engineering	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME231	Computer Aided Machine Drawing Lab	0-0-3	1	S
CE230	Material Testing Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
ME202	Advanced Mechanics of Solids	3-1-0	4	B
ME204	Thermal Engineering	3-1-0	4	C
ME206	Fluid Machinery	2-1-0	3	D
ME220	Manufacturing Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
ME232	Thermal Engineering Lab	0-0-3	1	S
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27

Cumulative Credits= 94

BRANCH: *Mechanical Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME301	Mechanics of Machinery	3-1-0	4	A
ME303	Machine Tools & Digital Manufacturing	3-0-0	3	B
ME305	Computer Programming & Numerical Methods	2-0-1	3	C
EE311	Electrical Drives & Control for Automation	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
ME341	Design Project	0-1-2	2	S
EE335	Electrical and Electronics Lab	0-0-3	1	T
ME331	Manufacturing Technology Lab I	0-0-3	1	U

Total Credits = 23 Hours: 28
Cumulative Credits= 117

- Elective 1:-
1. ME361 Advanced Fluid Mechanics
 2. ME363 Composite Materials and Mechanics
 3. ME365 Advanced Metal Casting
 4. ME367 Non-Destructive Testing
 5. ME369 Tribology
 6. ME371 Nuclear Engineering
 7. ME373 Human Relations Management

BRANCH: *Mechanical Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME302	Heat & Mass Transfer	3-1-0	4	A
ME304	Dynamics of Machinery	2-1-0	3	B
ME306	Advanced Manufacturing Technology	3-0-0	3	C
ME308	Computer Aided Design and Analysis	3-0-0	3	D
ME312	Metrology and Instrumentation	3-0-0	3	E
	Elective 2	3-0-0	3	F
ME332	Computer Aided Design & Analysis Lab	0-0-3	1	S
ME334	Manufacturing Technology Lab II	0-0-3	1	T
ME352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. ME362 Control System Engineering
2. ME364 Turbo Machinery
3. ME366 Advanced Metal Joining Technology
4. ME368 Marketing Management
5. ME372 Operations Research
6. ME374 Theory of Vibration
7. ME376 Maintenance Engineering

BRANCH: *Mechanical Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME401	Design of Machine Elements I	3-1-0	4	A
ME403	Advanced Energy Engineering	3-0-0	3	B
ME405	Refrigeration and Air Conditioning	2-1-0	3	C
ME407	Mechatronics	3-0-0	3	D
ME409	Compressible Fluid Flow	2-1-0	3	E
	Elective 3	3-0-0	3	F
ME451	Seminar & Project Preliminary	0-1-4	2	S
ME431	Mechanical Engineering Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. ME461 Aerospace Engineering
2. ME463 Automobile Engineering
3. ME465 Industrial Hydraulics
4. IE306 Supply Chain and Logistics Management
5. ME467 Cryogenic Engineering
6. ME469 Finite Element Analysis
7. ME471 Optimization Techniques

BRANCH: *Mechanical Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME402	Design of Machine Elements II	3-0-0	3	A
ME404	Industrial Engineering	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
ME492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. ME462 Propulsion Engineering
2. ME464 Robotics and Automation
3. ME466 Computational Fluid Dynamics
4. ME468 Nanotechnology
5. ME472 Failure Analysis and Design
6. ME474 Micro and Nano Manufacturing
7. ME476 Material Handling & Facilities Planning

BRANCH: Mechanical (Automobile) Engineering**SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
AU205	Automotive Chassis	3-1-0	4	C
ME205	Thermodynamics	3-1-0	4	D
ME210	Metallurgy & Materials Engineering	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
AU231	Computer Aided M/c & Auto Components Drafting Lab	0-0-3	1	S
CE230	Material Testing Lab	0-0-3	1	T

Total Credits = 24**Hours: 28/29****Cumulative Credits= 71****SEMESTER - 4**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
ME212	Fluid Mechanics	3-1-0	4	B
ME214	Theory of Machines	4-0-0	4	C
AU212	Automobile Power Plant	3-0-0	3	D
ME220	Manufacturing Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
ME236	Machine Shop	0-0-3	1	S
AU234	Vehicle Systems Lab	0-0-3	1	T

Total Credits = 23**Hours 28/27****Cumulative Credits= 94**

BRANCH: *Mechanical (Automobile) Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
AU301	Auto Transmission	3-1-0	4	A
AU303	Fuels and Combustion	3-0-0	3	B
ME305	Computer Programming & Numerical Methods	3-0-0	3	C
AU305	Vehicle Maintenance	3-0-0	3	D
AU309	Heating, Ventilating & Air Conditioning (HVAC)	3-0-0	3	E
	Elective 1	3-0-0	3	F
AU341	Design Project	0-1-2	2	S
ME333	Heat Engines Lab	0-0-3	1	T
AU333	Computer Programming Lab	0-0-3	1	U

Total Credits = 23 Hours: 28
Cumulative Credits= 117

- Elective 1:-
1. AU363 Plastics & Composites in Automobiles
 2. AU367 Vehicle Body Engineering
 3. AU369 Manufacturing of Automotive Components
 4. AU402 Two and Three Wheelers

BRANCH: *Mechanical (Automobile) Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME302	Heat & Mass Transfer	3-1-0	4	A
ME316	Principle of Machine Design	3-0-0	3	B
EE312	Electrical and Electronics Engineering	3-0-0	3	C
ME308	Computer Aided Design and Analysis	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
ME332	Computer Aided Design & Analysis Lab	0-0-3	1	S
AU334	Vehicle Testing Lab	0-0-3	1	T
AU352	Comprehensive Exam	0-1-1	2	U

**Total Credits = 23 Hours: 27
Cumulative Credits= 140**

Elective 2:-

1. AU364 Vehicle Performance & Testing
2. AU368 Tractors and Farm Equipment
3. AU372 Automotive Test Equipment
4. MP403 Computer Integrated Manufacturing

BRANCH: Mechanical (Automobile) Engineering**SEMESTER - 7**

Course Code	Course Name	L-T-P	Credits	Exam Slot
AU411	Engine and Drive Line Design	4-0-0	4	A
AU403	Vehicle Dynamics	3-0-0	3	B
AU413	Automotive Mechatronics	3-0-0	3	C
AU407	Advanced IC Engines	3-0-0	3	D
AU415	Automotive Pollution & Control	3-0-0	3	E
	Elective 3	3-0-0	3	F
AU451	Seminar & Project Preliminary	0-1-4	2	S
AU433	Automotive Mechatronics Lab	0-0-3	1	T

Total Credits = 22 Hours: 27**Cumulative Credits= 162**

Elective 3:-

1. AU461 Automotive Comfort & Safety Engineering
2. AU469 Earth Moving Equipment
3. AU471 Embedded System in Automobile Engineering
4. AU473 Computer Simulation and Analysis of Automotive Components
5. AU475 Automotive Aerodynamics

BRANCH: *Mechanical (Automobile) Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
AU406	Modern Automotive Technology	3-0-0	3	A
AU410	Vehicle Transport & Fleet Management	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
AU492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. AU474 Electric and Hybrid Vehicles
2. AU476 Noise, Vibration and Harshness
3. AU478 Automotive Navigation and Control
4. AU482 Automobile Ergonomics & Styling
5. AU468 AGV and Autonomous Vehicles

BRANCH: *Mechanical (Production) Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
ME200	Fluid Mechanics & Machinery	3-1-0	4	C
ME205	Thermodynamics	3-1-0	4	D
ME210	Metallurgy & Materials Engineering	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	S
MP231	Production Engineering Drawing	0-0-3	1	T

Total credits = 24

Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
MP212	Machine Tools	3-1-0	4	B
ME216	Mechanical Technology	4-0-0	4	C
MP206	Foundry Technology	3-0-0	3	D
MP208	Metal Joining Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
MP232	Machine Tools Lab I	0-0-3	1	S
CE230	Material Testing Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

BRANCH: *Mechanical (Production) Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME301	Mechanics of Machinery	3-1-0	4	A
MP301	Metal Forming Technology	3-0-0	3	B
ME305	Computer Programming & Numerical Methods	3-0-0	3	C
MP305	Theory of Metal Cutting	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
MP341	Design Project	0-1-2	2	S
MP331	Machine Tools Lab II	0-0-3	1	T
ME339	Mechanical Engineering Lab	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. ME361 Advanced Fluid Mechanics
 2. ME363 Composite Materials and Mechanics
 3. ME367 Non-Destructive Testing
 4. MP361 Facilities Planning and Plant Layout
 5. ME369 Tribology

BRANCH: Mechanical (Production) Engineering

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
MP302	Advanced Materials & Manufacturing Systems	3-1-0	4	A
ME304	Dynamics of Machinery	2-1-0	3	B
EE312	Electrical and Electronics Engineering	3-0-0	3	C
ME308	Computer Aided Design and Analysis	3-0-0	3	D
ME312	Metrology and Instrumentation	3-0-0	3	E
	Elective 2	3-0-0	3	F
ME332	Computer Aided Design & Analysis Lab	0-0-3	1	S
EE336	Electrical and Electronics Lab	0-0-3	1	T
MP352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. MP362 Precision Engineering
2. MP364 Rapid Prototyping, Tooling and Manufacture
3. MP366 Modern Manufacturing Concepts
4. MP374 Industrial Hydraulics
5. MP376 Artificial Intelligence in Manufacturing

BRANCH: Mechanical (Production) Engineering

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME401	Design of Machine Elements I	3-1-0	4	A
MP403	Computer Integrated Manufacturing	3-0-0	3	B
MP405	Tool Engineering	3-0-0	3	C
ME407	Mechatronics	3-0-0	3	D
MP407	Total Quality Management	3-0-0	3	E
	Elective 3	3-0-0	3	F
MP451	Seminar & Project Preliminary	0-1-4	2	S
MP431	Production Engineering Lab	0-0-3	1	T

Total Credits = 22 Hours: 27**Cumulative Credits= 162**

Elective 3:-

1. IE364 Management Information Systems
2. ME469 Finite Element Analysis
3. ME461 Aerospace Engineering
4. MP463 Micromachining Methods
5. MP469 Industrial Psychology and Organizational Behaviour

BRANCH: *Mechanical (Production) Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME402	Design of Machine Elements II	3-0-0	3	A
MP404	Productions and Operations Management	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
MP492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. ME462 Propulsion Engineering
2. ME464 Robotics and Automations
3. ME466 Computational Fluid Dynamics
4. ME468 Nanotechnology
5. MP462 Project Management

BRANCH: *Mechatronics***SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
MR201	C Programming	3-1-0	4	B
EE218	Electrical Technology	3-1-0	4	C
EC216	Analog Electronics	3-1-0	4	D
MR205	Science of Measurements	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
EE235	Electrical Technology Lab	0-0-3	1	S
EC235	Analog Electronics Lab	0-0-3	1	T

Total Credits = 24 Hours: 28/29
Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
EC212	Linear Integrated Circuits and Digital Electronics	4-0-0	4	B
ME200	Fluid Mechanics & Machinery	3-1-0	4	C
MR202	Sensors and Actuators	3-0-0	3	D
ME210	Metallurgy & Materials Engineering	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EC234	Linear Integrated Circuits and Digital Electronics Lab	0-0-3	1	S
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	T

Total Credits = 23 Hours 28/27
Cumulative Credits= 94

BRANCH: *Mechatronics*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
MR301	Linear Control Systems	3-1-0	4	A
MR303	Microprocessors and Microcontrollers	3-0-0	3	B
MR305	PLC and Data Acquisition Systems	3-0-0	3	C
MR307	Thermodynamics	3-0-0	3	D
ME220	Manufacturing Technology	3-0-0	3	E
	Elective 1	3-0-0	3	F
MR341	Design Project	0-1-2	2	S
MR331	Microprocessors and Microcontrollers Lab	0-0-3	1	T
MR333	Metrology and PLC Lab	0-0-3	1	U

Total Credits = 23 Hours: 28**Cumulative Credits= 117**

- Elective 1:-
1. MR361 Reliability Engineering
 2. MR363 Object Oriented Programming
 3. ME369 Tribology
 4. MR371 Open Elective (Certified Online Courses)

BRANCH: *Mechatronics*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
MR302	Robotics Engineering	4-0-0	4	A
MR304	Digital Image Processing and Machine Vision	3-0-0	3	B
MR306	Mechanics of Solids	3-0-0	3	C
MR308	Digital Manufacturing	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
MR332	Manufacturing Engineering Lab	0-0-3	1	S
MR334	Advanced Instrumentation Lab	0-0-3	1	T
MR352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27**Cumulative Credits= 140**

Elective 2:-

1. MR362 Digital Signal Processing
2. MR364 Energy Engineering Management
3. AE403 Biomedical Instrumentation
4. ME368 Marketing Management

BRANCH: *Mechatronics*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
MR401	Advanced Automation Systems	4-0-0	4	A
MR403	Nanotechnology	3-0-0	3	B
MR405	Embedded Systems	3-0-0	3	C
MR407	Autotronics	3-0-0	3	D
MR409	Micro Electro Mechanical Systems	3-0-0	3	E
	Elective 3	3-0-0	3	F
MR451	Seminar & Project Preliminary	0-1-4	2	S
MR431	Mechatronics Lab	0-0-3	1	T

Total Credits = 22 Hours: 27
Cumulative Credits= 162

Elective 3:-

1. MR461 Fuzzy Logic Controllers
2. MR463 Bio Mechatronics
3. MR365 Entrepreneurship
4. ME469 Finite Element Analysis
5. MR467 My Own Elective

BRANCH: *Mechatronics*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
MR402	Soft Computing Techniques	3-0-0	3	A
MR404	Power Electronics and Drives	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
MR492	Project		6	

Total Credits = 18 Hours: 30
Cumulative Credits= 180

Elective 4:-

1. MR462 Industrial Electronics and Applications
2. MR464 Agile Manufacturing Systems
3. MR466 Special Electrical Machines and Applications
4. MR468 Research Methodology

BRANCH: Metallurgy**SEMESTER - 3**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
MT201	Metallurgical Thermodynamics and Kinetics	3-1-0	4	C
MT203	Mineral Beneficiation	3-1-0	4	D
MT205	Computer Programming in C	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
MT231	Mineral Dressing Lab	0-0-3	1	S
MT233	Computer Programming in C Lab	0-0-3	1	T

Total Credits = 24**Hours: 28/29****Cumulative Credits= 71****SEMESTER - 4**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA206	Probability & Statistics and Numerical Methods	3-1-0	4	A
MT202	Physical Metallurgy	3-1-0	4	B
MT204	Heat, Mass and Momentum Transport	4-0-0	4	C
MT206	Metallurgical Heat Treatments	3-0-0	3	D
MT208	Mechanical Behaviour and Testing	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
MT232	Metallography and Heat Treatment Lab	0-0-3	1	S
MT234	Mechanical Testing Lab	0-0-3	1	T

Total Credits = 23**Hours 28/27****Cumulative Credits= 94**

BRANCH: Metallurgy

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
MT301	Metal Joining Technology	3-1-0	4	A
MT303	Iron and Steel Making	3-0-0	3	B
MT305	Non-Ferrous Extractive Metallurgy	3-0-0	3	C
MT307	Foundry Technology	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
MT341	Design Project	0-1-2	2	S
MT331	Welding Lab	0-0-3	1	T
MT333	Foundry Lab	0-0-3	1	U

Total Credits = 23**Hours: 28****Cumulative Credits= 117**

- Elective 1:-
1. MT361 Special Steels and Cast Irons
 2. MT363 Design and Selection of Materials
 3. ME375 Mechanical Technology
 4. MT365 Electrical, Electronic, Optical and Magnetic Materials
 5. MT367 Measurements and Control

BRANCH: Metallurgy

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
MT302	Corrosion Engineering	4-0-0	4	A
MT304	Advanced and Secondary Steel Making	3-0-0	3	B
MT306	Non-Ferrous Physical Metallurgy	3-0-0	3	C
MT308	Fuels, Furnace and Refractories	3-0-0	3	D
MT312	Materials Characterisation	3-0-0	3	E
	Elective 2	3-0-0	3	F
MT332	Non-Ferrous Physical Metallurgy Lab	0-0-3	1	S
MT334	Corrosion Lab	0-0-3	1	T
MT352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. MT362 Nuclear Metallurgy
2. MT364 Nano-materials and Applications
3. MT366 Semiconductor Materials and Devices
4. MT368 Ceramic Processing
5. MT372 Polymer Science and Technology

BRANCH: Metallurgy**SEMESTER - 7**

Course Code	Course Name	L-T-P	Credits	Exam Slot
MT401	Non-Destructive Testing	4-0-0	4	A
MT403	Creep, Fatigue and Fracture	3-0-0	3	B
MT405	Metallurgical Failure Analysis	3-0-0	3	C
MT407	Powder Metallurgy	3-0-0	3	D
MT409	Deformation Processing	3-0-0	3	E
	Elective 3	3-0-0	3	F
MT451	Seminar & Project Preliminary	0-1-4	2	S
MT431	NDT Lab	0-0-3	1	T

Total Credits = 22 Hours: 27**Cumulative Credits= 162**

Elective 3:-

1. MT461 High Temperature Materials
2. MT463 Vacuum Science and Deposition Techniques
3. MT465 Special Casting Techniques
4. MT467 Metallurgy of Tool Materials
5. MT469 Surface Engineering

BRANCH: Metallurgy

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
MT402	Ceramics, Polymers and Composite Materials	3-0-0	3	A
MT404	Fracture Mechanics	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
MT492	Project		6	

Total Credits = 18 Hours: 30**Cumulative Credits= 180**

Elective 4:-

1. MT462 Advances in Metal Forming
2. MT464 Ladle Metallurgy and Continuous Casting of Steel
3. ME363 Composite Materials and Mechanics
4. MT466 Structure and Properties Correlation in Alloys
5. MT468 Emerging Materials

BRANCH: *Naval architecture and Ship Building Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
SB201	Mechanics of Solids	3-1-0	4	B
SB203	Mechanics of Fluids	3-1-0	4	C
SB205	Introduction To Naval Architecture & Ship Building	3-1-0	4	D
SB207	Basic Ship Theory	2-1-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME237	Welding and Machine Tools Lab	0-0-3	1	S
SB231	Mechanics of Fluids Lab	0-0-3	1	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
SB202	Resistance and Propulsion of Ships	3-1-0	4	B
SB204	Stability of Ships and Submarines	3-1-0	4	C
SB206	Analysis of Structures	2-1-0	3	D
EE214	Electrical Technology and Instrumentation	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
SB232	Lines Plan and Hydrostatics Lab	0-0-3	1	S
ME238	Advanced Machine Tools Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

BRANCH: *Naval architecture and Ship Building Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
SB301	Ship Dynamics	3-1-0	4	A
SB303	Structural Design of Ships	2-1-0	3	B
SB305	Offshore Structures	2-1-0	3	C
SB307	Strength of Ships I	2-1-0	3	D
SB309	Programming and Data Structures	2-1-0	3	E
	Elective 1	3-0-0	3	F
SB341	Design Project	0-1-2	2	S
EE339	Electrical Engineering Lab	0-0-3	1	T
SB331	Marine Hydrodynamics & Hydraulic Machineries Lab	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. SB361 Applied Thermodynamics
 2. SB363 Marine Pollution, Control and Recovery Systems
 3. SB365 Hydraulic Machinery
 4. SB367 Inland Water Transportation

BRANCH: *Naval architecture and Ship Building Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
SB302	Ship Design I	3-1-0	4	A
SB304	Strength of Ships II	2-1-0	3	B
SB306	Material Science	3-0-0	3	C
SB308	Computer Aided Design, Drafting & Manufacturing	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
SB332	CAD/CAM Lab	0-0-3	1	S
CE336	Strength of Materials Lab	0-0-3	1	T
SB352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27

Cumulative Credits= 140

Elective 2:-

1. SB362 Maritime Law
2. SB364 Introduction to Subsea Pipelines
3. SB366 Experimental Techniques on Ships & Models
4. SB368 Submarines & Submersibles

BRANCH: *Naval architecture and Ship Building Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
SB401	Ship Design II	3-1-0	4	A
SB403	Marine Engineering	3-0-0	3	B
SB405	Design of Machine Components	2-1-0	3	C
SB407	Ship Production	3-0-0	3	D
SB409	Electrical Systems in Ships & Shipyards	3-0-0	3	E
	Elective 3	3-0-0	3	F
SB451	Seminar & Project Preliminary	0-1-4	2	S
SB431	Marine Engineering Lab	0-0-3	1	T

Total Credits = 22 Hours: 27

Cumulative Credits= 162

Elective 3:-

1. SB461 Ship Building Materials, Corrosion Prevention and Protection
2. SB463 Ship Recycling
3. SB465 Design of Fishing Vessels
4. SB467 Computer Aided Ship Design

BRANCH: *Naval architecture and Ship Building Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
SB402	Joining Techniques in Ship Building Technology	3-0-0	3	A
SB404	Ship Survey, Estimation and Repair	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
SB492	Project		6	

Total Credits = 18 Hours: 30

Cumulative Credits= 180

Elective 4:-

1. SB462 Ship Production Management
2. SB464 Refrigeration and Air Conditioning of Ships
3. SB466 Ocean Wave Hydrodynamics
4. SB468 Finite Element Methods

BRANCH: *Production Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
ME200	Fluid Mechanics & Machinery	3-1-0	4	C
MP201	Machine Tool Technology	4-0-0	4	D
ME210	Metallurgy & Materials Engineering	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
ME233	Mechanical Engineering Lab	0-0-3	1	S
MP231	Production Engineering Drawing	0-0-3	1	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
MP202	Machining of Materials	3-1-0	4	B
MP204	Industrial Engineering	4-0-0	4	C
MP206	Foundry Technology	3-0-0	3	D
MP208	Metal Joining Technology	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
MP232	Machine Tools Lab I	0-0-3	1	S
CE230	Material Testing Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

BRANCH: *Production Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME301	Mechanics of Machinery	3-1-0	4	A
MP301	Metal Forming Technology	3-0-0	3	B
ME305	Computer Programming & Numerical Methods	3-0-0	3	C
ME313	Thermal Engineering	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 1	3-0-0	3	F
MP341	Design Project	0-1-2	2	S
MP331	Machine Tools Lab II	0-0-3	1	T
MP333	Production Engineering Lab I	0-0-3	1	U

Total Credits = 23

Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. MP365 Machine Tool Design
 2. MP361 Facilities Planning and Plant Layout
 3. MP367 Entrepreneurship
 4. ME369 Tribology
 5. MP369 Soft Computing

BRANCH: *Production Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
ME318	Machine Design	3-1-0	4	A
ME304	Dynamics of Machinery	2-1-0	3	B
EE312	Electrical and Electronics Engineering	3-0-0	3	C
ME308	Computer Aided Design and Analysis	3-0-0	3	D
ME312	Metrology and Instrumentation	3-0-0	3	E
	Elective 2	3-0-0	3	F
MP332	CAD/CAM Lab	0-0-3	1	S
EE336	Electrical and Electronics Lab	0-0-3	1	T
MP352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27
Cumulative Credits= 140

Elective 2:-

1. MP364 Rapid Prototyping, Tooling and Manufacture
2. MP366 Modern Manufacturing Concepts
3. MP368 Advanced Materials and Processes
4. MP372 Industrial Automation
5. ME469 Finite Element Analysis

BRANCH: *Production Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
MP401	Maintenance Engineering. and Management	4-0-0	4	A
MP403	Computer Integrated Manufacturing	3-0-0	3	B
MP405	Tool Engineering	3-0-0	3	C
ME407	Mechatronics	3-0-0	3	D
MP407	Total Quality Management	3-0-0	3	E
	Elective 3	3-0-0	3	F
MP451	Seminar & Project Preliminary	0-1-4	2	S
MP431	Production Engineering Lab	0-0-3	1	T

Total Credits = 22 Hours: 27
Cumulative Credits= 162

Elective 3:-

1. IE364 Management Information Systems
2. MP465 Concurrent Engineering
3. IE306 Supply Chain and Logistics Management
4. IE462 Marketing Management
5. MP467 Human Resources Management

BRANCH: *Production Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
MP402	Operations Research	3-0-0	3	A
MP404	Productions and Operations Management	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
MP492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. MP464 Simulation of Manufacturing Systems
2. MP466 Integrated Product Development
3. ME468 Nanotechnology
4. MP468 Lean and Agile Manufacturing
5. MP472 Technology Management

BRANCH: *Safety and Fire Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA201	Linear Algebra & Complex Analysis	3-1-0	4	A
ME201	Mechanics of Solids	3-1-0	4	B
FS201	Principles of Chemical Engineering	3-1-0	4	C
FS203	Principles of Safety Management	3-1-0	4	D
FS205	Safety in Construction Industry	3-0-0	3	E
HS200/ HS210	Business Economics/Life Skills	3-0-0/ 2-0-2	3	F
FS231	Safety Engineering Lab	0-0-3	1	S
CE230	Materials Testing Lab	0-0-3	1	T

Total Credits = 24

Hours: 28/29

Cumulative Credits= 71

SEMESTER - 4

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA202	Probability Distributions, Transforms and Numerical Methods	3-1-0	4	A
FS202	Transfer Operations in Chemical Engineering	3-1-0	4	B
ME200	Fluid Mechanics & Machinery	4-0-0	4	C
EE212	Electrical Technology and Safety	3-0-0	3	D
FS208	Fire Engineering Fundamentals	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EE235	Electrical Technology Lab	0-0-3	1	S
ME230	Fluid Mechanics & Machines Lab	0-0-3	1	T

Total Credits = 23

Hours 28/27

Cumulative Credits= 94

BRANCH: *Safety and Fire Engineering*

SEMESTER - 5

Course Code	Course Name	L-T-P	Credits	Exam Slot
FS301	Planning and Design of Fire Protection Systems	3-1-0	4	A
FS303	Engineering Design and Drawing	3-0-0	3	B
FS305	Industrial Electronics and Safety	3-0-0	3	C
FS307	Chemical Technology and Mechanical Operations	3-0-0	3	D
FS309	Occupational Health and First Aid	3-0-0	3	E
	Elective 1	3-0-0	3	F
FS341	Design Project	0-1-2	2	S
ME337	Machine Tools Lab	0-0-3	1	T
FS331	Fire Engineering and First Aid Lab	0-0-3	1	U

Total Credits = 23 Hours: 28

Cumulative Credits= 117

- Elective 1:-
1. FS361 Fire Dynamics
 2. FS363 Food and Biosafety
 3. FS365 Fault Detection and Diagnosis
 4. FS367 Heat Transfer, Combustion and Explosion
 5. MR361 Reliability Engineering

BRANCH: *Safety and Fire Engineering*

SEMESTER - 6

Course Code	Course Name	L-T-P	Credits	Exam Slot
FS302	Safety in Engineering Industry	4-0-0	4	A
FS304	Process Instrumentation and Control Engineering	3-0-0	3	B
FS306	Chemical Process Safety	3-0-0	3	C
FS308	Structural Fire Safety	3-0-0	3	D
HS300	Principles of Management	3-0-0	3	E
	Elective 2	3-0-0	3	F
FS332	Chemical Engineering Lab	0-0-3	1	S
FS334	Industrial Hygiene and Environmental Lab	0-0-3	1	T
FS352	Comprehensive Exam	0-1-1	2	U

Total Credits = 23 Hours: 27

Cumulative Credits= 140

Elective 2:-

1. FS362 Safety in Petroleum and Petrochemical Industries
2. FS364 Biomechanics and Human Body Vibration
3. FS366 Environmental Engineering and Management
4. FS368 Industrial Ecology

BRANCH: *Safety and Fire Engineering*

SEMESTER - 7

Course Code	Course Name	L-T-P	Credits	Exam Slot
FS401	Hazard Identification and Risk Assessment	4-0-0	4	A
FS403	Transportation Systems and Safety	3-0-0	3	B
FS405	Disaster Management	3-0-0	3	C
FS407	Life Safety in Building Fire	3-0-0	3	D
FS409	Legal Aspects of HSE	3-0-0	3	E
	Elective 3	3-0-0	3	F
FS451	Seminar & Project Preliminary	0-1-4	2	S
FS431	Cad & Computational Lab	0-0-3	1	T

Total Credits = 22 Hours: 27
Cumulative Credits= 162

Elective 3:-

1. FS461 Safety in Material Handling
2. FS463 Nuclear Engineering and Safety
3. FS465 Automobile Engineering and Safety
4. FS467 Safety in Powder Handling
5. FS469 OHSAS 18000 and ISO 14000

BRANCH: *Safety and Fire Engineering*

SEMESTER - 8

Course Code	Course Name	L-T-P	Credits	Exam Slot
FS402	Human Factors Engineering	3-0-0	3	A
FS404	Advanced Safety Engineering and Management	3-0-0	3	B
	Elective 4	3-0-0	3	C
	Elective 5 (Non Departmental)	3-0-0	3	D
FS492	Project		6	

Total Credits = 18

Hours: 30

Cumulative Credits= 180

Elective 4:-

1. FS462 Safety in Power Plant Engineering
2. FS464 Environmental Pollution and Control
3. FS466 Explosive Technology and Safety
4. FS468 Safety in Mines
5. FS472 Safety in Textile Industry

Note:

All free hours shall be used for remedial programmes/project/student activity.

ELECTIVE 5 (NON DEPARTMENTAL ELECTIVE COURSES)

1. AO482 AUTOMOTIVE AERODYNAMICS
2. AE482 INDUSTRIAL INSTRUMENTATION
3. AE484 INSTRUMENTATION SYSTEM DESIGN
4. AU484 MICROPROCESSOR AND EMBEDDED SYSTEMS
5. AU486 NOISE, VIBRATION AND HARSHNESS
6. BM482 BIOMEDICAL INSTRUMENTATION
7. BM484 MEDICAL IMAGING & IMAGE PROCESSING TECHNIQUES
8. BT482 DESIGN OF BIOLOGICAL WASTEWATER SYSTEMS
9. BT484 SUSTAINABLE ENERGY PROCESSES
10. CH482 PROCESS UTILITIES AND PIPE LINE DESIGN
11. CH484 FUEL CELL TECHNOLOGY
12. CE482 ENVIRONMENTAL IMPACT ASSESSMENT
13. CE484 APPLIED EARTH SYSTEMS
14. CE486 GEO INFORMATICS FOR INFRASTRUCTURE MANAGEMENT
15. CE488 DISASTER MANAGEMENT
16. CE492 ENVIRONMENT HEALTH AND SAFETY
17. CS482 DATA STRUCTURES
18. CS484 COMPUTER GRAPHICS
19. CS486 OBJECT ORIENTED PROGRAMMING
20. CS488 C # AND .NET PROGRAMMING
21. EE482 ENERGY MANAGEMENT AND AUDITING
22. EE484 CONTROL SYSTEMS
23. EE486 INDUSTRIAL AUTOMATION
24. EE488 INSTRUMENTATION SYSTEMS

- 25. EE492 SOFT COMPUTING
- 26. EC482 BIOMEDICAL ENGINEERING
- 27. FT482 FOOD PROCESS ENGINEERING
- 28. FT484 FOOD STORAGE ENGINEERING
- 29. FT486 FOOD ADDITIVES AND FLAVOURING
- 30. IE482 FINANCIAL MANAGEMENT
- 31. IE484 INTRODUCTION TO BUSINESS ANALYTICS
- 32. IE486 DESIGN AND ANALYSIS OF EXPERIMENTS
- 33. IE488 TOTAL QUALITY MANAGEMENT
- 34. IC482 BIOMEDICAL SIGNAL PROCESSING
- 35. IT482 INFORMATION SYSTEM MANAGEMENT
- 36. MA482 APPLIED LINEAR ALGEBRA
- 37. MA484 OPERATIONS RESEARCH
- 38. MA486 ADVANCED NUMERICAL COMPUTATIONS
- 39. MA488 CRYPTOGRAPHY (Not for IT branch)
- 40. ME469 FINITE ELEMENT ANALYSIS
- 41. ME482 ENERGY CONSERVATION AND MANAGEMENT
- 42. ME471 OPTIMIZATION TECHNIQUES
- 43. MP482 PRODUCT DEVELOPMENT AND DESIGN
- 44. MP469 INDUSTRIAL PSYCHOLOGY & ORGANIZATIONAL BEHAVIOUR
- 45. MP484 PROJECT MANAGEMENT
- 46. MT482 INDUSTRIAL SAFETY
- 47. MR482 MECHATRONICS
- 48. FS482 RESPONSIBLE ENGINEERING
- 49. SB482 DREDGERS AND HARBOUR CRAFTS
- 50. HS482 PROFESSIONAL ETHICS