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

BRANCH: *Aeronautical Engineering*

SEMESTER - 3

Course Code	Course Name	L-T-P	Credits	Exam Slot
MA 201	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
MA 202	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	Aircraft 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   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	3-1-0	4	A
AO403	Aircraft Systems 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
EC230	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 distributions, 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	Electrical Measurements & Measuring Instruments	3-0-0	3	B
AE305	Microprocessors & 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	Microprocessors & Microcontrollers 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	3-0-0	3	B
AE306	Digital Signal Processing	3-0-0	3	C
AE312	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
MA 201	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 and 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 I C Engines	3-0-0	3	D
AU409	Simulation & Analysis of IC Engine Processes	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 and 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. BM411   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

Course Code	Course Name	L-T-P	Credits	Exam Slot
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 and 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	Chemical Technology and Environmental Engg 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. CE 373   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

    7. 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	3-0-0/ 2-0-2	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
HS210/ HS200	Life Skills/Business Economics	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	Analogue 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 and 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: 29   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

4. BM367   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
BM314	Principles of Logic System Design	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: 29   Cumulative Credits= 180

Elective 4:-

    1. BM462   VLSI Design

    2. BM464   Reliability Engineering

    3. BM466   Advanced Biomedical Signal Processing

    4. BM306   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
EC233	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 distributions, 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	Analogue Communication Engineering	3-0-0	3	E
HS210/ HS200	Life Skills/Business Economics	2-0-2/ 3-0-0	3	F
EC232	Analogue 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 System	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 Engg	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	All free hours

Total Credits = 18　　　**Hours:　29**　　　**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   Neutraceuticals 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 Technological 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	Data Warehousing & Mining	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   Information Retrieval
2. IT364   Software Project Management
3. IT366   Advanced DBMS
4. IIT368   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 Testing & Quality Assurance

    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 and 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. IC368   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: 29**　　　**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 & 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 and 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 and 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	Principles 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	CAD & 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 and 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 Harness

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 and 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	CAD 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
EE209	Electrical Technology	3-1-0	4	C
EC209	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 and 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 and Machinery 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	Measurements 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. MR365   Composite Materials

4. ME369   Tribology

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. MR366   Biomaterials

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. MR465   Entrepreneurship

4. ME469   Finite Element Analysis

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: 29   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   Sensors for Engineering Applications

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   Energy Storing Devices and Fuel Cells

    3. MT466   Composite Materials

    4. MT468   Non Traditional machining

    5. MT472   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 Machinery 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 and 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
MP303	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

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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: 29   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
EE236	Electrical Technology & Safety Lab	0-0-3	1	S
ME230	Fluid Mechanics & Machinery 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 Engg. 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

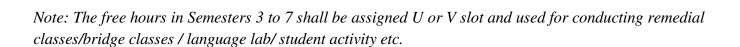5. FS469   OHSAS 18000 and ISO 14000

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	All free hours

Total Credits = 18   Hours: 29
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: The free hours in Semesters 3 to 7 shall be assigned U or V slot and used for conducting remedial classes/bridge classes / language lab/ student activity etc.

ELECTIVE 5 (NON DEPARTMENTAL ELECTIVE COURSES)

1. AO482   FLIGHT AGAIST GRAVITY

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. BT461   DESIGN OF BIOLOGICAL WASTE WATER SYSTEMS

9. BT362   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   SOFT COMPUTING

24. EE488   INDUSTRIAL AUTOMATION

25. EE492   INSTRUMENTATION SYSTEMS

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