

B.TECH. SCHOOL OF ELECTRICAL ENGINEERING [2023-2024]



SCHEME I FIRST SEMESTER

Theory								
Sl. No.	Course Code	Subject	L	T	P	Total	Credit	
1	PH10001	Physics	3	0	0	3	3	
2	MA11001	Differential Equations and Linear Algebra	3	1	0	4	4	
3		Science Elective	2	0	0	2	2	
4		Engineering Elective	2	0	0	2	2	
5	LS10001	Science of Living Systems	2	0	0	2	2	
6	CH10003	Environmental Science	2	0	0	2	2	
Total Credit (Theory Subjects)						15	15	
Practical								
1	PH19001	Physics Lab	0	0	2	2	1	
2	CS13001	Programming Lab	0	2	4	6	4	
Sessional								
1	CE18001	Engineering Drawing and Graphics	0	0	2	2	1	
Total Credit (Practical & Sessional subject)						10	6	
Total Credit (Semester)						25	21	

SCHEME I SECOND SEMESTER (Computer Science and Electronics)

Theory								
Sl. No.	Course Code	Subject	L	T	P	Total	Credit	
1	CH10001	Chemistry	3	0	0	3	3	
2	MA11002	Transform Calculus and Numerical Analysis	3	1	0	4	4	
3	HS10001	English	2	0	0	2	2	
4	EC10001	Basic Electronics	2	0	0	2	2	
5	EE10002	Basic Electrical Engineering	2	0	0	2	2	
6		HASS Elective I	2	0	0	2	2	
Total Credit (Theory Subjects)						15	15	
Practical								
1	CH19001	Chemistry Lab	0	0	2	2	1	
2	EX19001	Engineering Lab	0	0	2	2	1	
Sessional								
1	ME18001	Workshop	0	0	2	2	1	
2	YG18001	Yoga	0	0	2	2	1	
3	HS18001	Communication Lab	0	0	2	2	1	
Total Credit (Practical & Sessional subject)						10	5	
Total Credit (Semester)						25	20	



SCHEME I
SECOND SEMESTER (Civil, Mechanical and Electrical)

Theory							
Sl. No.	Course Code	Subject	L	T	P	Total	Credit
1	CH10001	Chemistry	3	0	0	3	3
2	MA11002	Transform Calculus and Numerical Analysis	3	1	0	4	4
3	HS10001	English	2	0	0	2	2
4	EC10001	Basic Electronics	2	0	0	2	2
5	ME10001	Engineering Mechanics	2	0	0	2	2
6		HASS Elective I	2	0	0	2	2
Total Credit (Theory Subjects)						15	15
Practical							
1	CH19001	Chemistry Lab	0	0	2	2	1
2	EX19001	Engineering Lab	0	0	2	2	1
Sessional							
1	ME18001	Workshop	0	0	2	2	1
2	YG18001	Yoga	0	0	2	2	1
3	HS18001	Communication Lab	0	0	2	2	1
Total Credit (Practical & Sessional subject)						10	5
Total Credit (Semester)						25	20

SCHEME II
FIRST SEMESTER

Theory							
Sl. No.	Course Code	Subject	L	T	P	Total	Credit
1	CH10001	Chemistry	3	0	0	3	3
2	MA11001	Differential Equations and Linear Algebra	3	1	0	4	4
3	HS10001	English	2	0	0	2	2
4	EC10001	Basic Electronics	2	0	0	2	2
5	EE10002	Basic Electrical Engineering	2	0	0	2	2
6		HASS Elective I	2	0	0	2	2
Total Credit (Theory Subjects)						15	15
Practical							
1	CH19001	Chemistry Lab	0	0	2	2	1
2	EX19001	Engineering Lab	0	0	2	2	1
Sessional							
1	ME18001	Workshop	0	0	2	2	1
2	YG18001	Yoga	0	0	2	2	1
3	HS18001	Communication Lab	0	0	2	2	1
Total Credit (Practical & Sessional subject)						10	5
Total Credit (Semester)						25	20



**SCHEME II
SECOND SEMESTER**

Theory							
Sl. No.	Course Code	Subject	L	T	P	Total	Credit
1	PH10001	Physics	3	0	0	3	3
2	MA11002	Transform Calculus and Numerical Analysis	3	1	0	4	4
3		Science Elective	2	0	0	2	2
4		Engineering Elective	2	0	0	2	2
5	LS10001	Science of Living Systems	2	0	0	2	2
6	CH10003	Environmental Science	2	0	0	2	2
Total Credit (Theory Subjects)						15	15
Practical							
1	PH19001	Physics Lab	0	0	2	2	1
2	CS13001	Programming Lab	0	2	4	6	4
Sessional							
1	CE18001	Engineering Drawing & Graphics	0	0	2	2	1
Total Credit (Practical & Sessional subject)						10	6
Total Credit (Semester)						25	21

LIST OF ELECTIVES

Engineering Elective							
Sl. No.	Course Code	Subjects	L	T	P	Total	Credit
1	CE10001	Basic Civil Engineering	2	0	0	2	2
2	ME10003	Basic Mechanical Engineering [#]	2	0	0	2	2
3	EE10001	Elements of Machine Learning [*]	2	0	0	2	2
4	EC10003	Biomedical Engineering	2	0	0	2	2
5	EE10003	Basic Instrumentation	2	0	0	2	2

#Not for student of Mechanical Engineering

*Not for students of Computer Engineering

Science Elective							
Sl. No.	Course Code	Subjects	L	T	P	Total	Credit
1	CH10005	Nanoscience	2	0	0	2	2
2	PH10003	Smart Materials	2	0	0	2	2
3	LS10003	Molecular Diagnostics	2	0	0	2	2
4	PE10002	Science of Public Health	2	0	0	2	2
5	MA10003	Optimization Techniques	2	0	0	2	2

HASS Elective I								
Sl. No.	Course Code	Subjects	L	T	P	Total	Credit	
1	HS10013	Society, Science, and Technology	2	0	0	2	2	
2	HS10202	Essential of Management	2	0	0	2	2	
3	HS 10121	Shades of Economics	2	0	0	2	2	
4	HS10123	Indian Economy Post Liberalisation	2	0	0	2	2	
5	SO10043	Socio-Political Environment	2	0	0	2	2	
6	PS10043	Thinking Perspectives	2	0	0	2	2	
7	PS10045	Creativity, Innovation and Entrepreneurship	2	0	0	2	2	
8	EX17001	Community/Environment-based Project	2	0	0	2	2	



SEMESTER- III

Theory							
Sl. No	Course Code	Subject	L	T	P	Total	Credit
1	EX20003	Scientific and Technical Writing	2	0	0	2	2
2	MA21001	Probability and Statistics	3	1	0	4	4
3	EE21001	Electric Circuit Analysis	3	1	0	4	4
4	EE20003	Electrical Machine-1	3	0	0	3	3
5	EE20005	Measurement and Sensor Technology	3	0	0	3	3
6	EE20007	Analog and Digital Electronics Circuit	3	0	0	3	3
Total credit (Theory Subjects)						19	19
Practical							
1	EE29001	Electric Circuit Laboratory	0	0	2	2	1
2	EE29003	Measurement and Sensor Laboratory	0	0	2	2	1
3	EE29005	Analog and Digital Circuit Design Laboratory	0	0	2	2	1
Total credit (Practical Subjects)						06	03
Sessional/Vocational							
1		Vocational Electives	0	0	2	2	1
Total credit (Vocational Subjects)						02	01
Total Practical & Sessional/Vocational						08	04
Total Credit (Semester)						27	23

SEMESTER- IV

Theory							
Sl. No	Course Code	Subject	L	T	P	Total	Credit
1		HASS Elective II	3	0	0	3	3
2	MA21006	Vectors, Differential Equations and Complex Analysis	3	1	0	4	4
3	EE20002	Electrical Machine-II	3	0	0	3	3
4	EE20004	Linear Control System	3	0	0	3	3
5	EE20006	Signal and System	3	0	0	3	3
6	EX20001	Industry 4.0 Technologies	2	0	0	2	2
Total credit (Theory Subjects)						18	18
Practical							
1	EE29002	Electrical Machines Laboratory	0	0	2	2	1
2	EE29004	Control System Laboratory	0	0	2	2	1
Total credit (Practical Subjects)						04	02
Sessional/Vocational							
1	EE28002	Electrical System Modeling Using MATLAB	0	0	2	2	1
Total credit (Vocational Subjects)						02	01
Total Practical & Sessional/Vocational						06	03
Total Credit (Semester)						24	21



SEMESTER- V

Theory							
Sl. No	Course Code	Subject	L	T	P	Total	Credit
1	HS30101	Engineering Economics and Costing	3	0	0	3	3
2		HASS Elective III	3	0	0	3	3
3	EE31001	Transmission and Distribution of Electric Power	3	1	0	4	4
4	EE30001	Power Electronics	3	0	0	3	3
5		Professional Elective -I	3	0	0	3	3
6	HS30401	Universal Human Values	3	0	0	3	3
Total credit (Theory Subjects)						19	19
Practical							
1	EE39001	Power Electronics Laboratory	0	0	2	2	1
Total credit (Practical Subjects)						02	01
Sessional/Vocational							
1	EE38001	Industrial Automation Using PLC	0	0	2	2	1
2	EE38003	Data Structures and Programming Paradigms	0	0	2	2	1
	EE38005	System Design using IOT	0	0	2	2	1
3		K-Explore (Practice-oriented Open Elective I)	0	0	0	0	1
Total credit (Vocational Subjects)						06	04
Total Practical & Sessional/Vocational						08	05
Total Credit (Semester)						27	24

SEMESTER- VI

Theory							
Sl. No	Course Code	Subject	L	T	P	Total	Credit
1	EE30004	Microprocessors and Embedded System	3	0	0	3	3
2	EE30002	Principles of Communication Engineering	3	0	0	3	3
3	EE31002	Power System Operation control and Protection	3	1	0	4	4
4		Professional Elective -II	3	0	0	3	3
5		Professional Elective-III	3	0	0	3	3
6		Open Elective II/ (MI-1)	3	0	0	3	3
Total credit (Theory Subjects)						19	19
Practical							
1	EE39002	Power Systems Laboratory	0	0	2	2	1
2	EE39004	Electric Drives Laboratory	0	0	2	2	1
	EE39006	Microprocessor Laboratory	0	0	2	2	1
Total credit (Practical Subjects)						06	03
Sessional/Vocational							
1	EE37002	Mini Project	0	0	4	4	2
Total credit (Vocational Subjects)						04	02
Total Practical & Sessional/Vocational						10	05
Total Credit (Semester)						29	24



SEMESTER- VII (For Honours Options Students)

Theory							
Sl. No	Course Code	Subject	L	T	P	Total	Credit
1		Professional Elective-IV	3	0	0	3	3
2		Open Elective III/ (MI-2)	3	0	0	3	3
3	EX40003	Engineering Professional Practice	2	0	0	2	2
4		(MI-3)	(3)	(0)	(0)	(3)	(3)
5		(MI-4)	(3)	(0)	(0)	(3)	(3)
Total credit (Theory Subjects)						08	08
Sessional/Vocational							
1	EE48001	Internship	0	0	0	0	2
2	EE47001	Project-1	0	0	10	10	5
		(Project/Lab –Minor)	(0)	(0)	(4)	(4)	(2)
Total credit (Vocational Subjects)						10	07
Total Practical & Sessional/Vocational						10	07
Total Credit (Semester)						18	15

SEMESTER- VIII (For Honours Options Students)

Theory							
Sl. No	Course Code	Subject	L	T	P	Total	Credit
1		Professional Elective-V	3	0	0	3	3
2		Open Elective IV/ (MI-5)	3	0	0	3	3
3		(MI-6)	(3)	(0)	(0)	(3)	(3)
Total credit (Theory Subjects)						06	06
Sessional/Vocational							
1	EE47002	Project-II	0	0	18	18	9
Total credit (Vocational Subjects)						18	09
Total Practical & Sessional/Vocational						18	09
Total Credit (Semester)						24	15

SEMESTER- VII (For Research Options Students)

Theory							
Sl. No	Course Code	Subject	L	T	P	Total	Credit
1		Research Elective I	3	0	0	3	3
2		(MI-2)	(3)	(0)	(0)	(3)	(3)
3	EX40003	Engineering Professional Practice	2	0	0	2	2
4	EX40001	Research Methods and Ethics	3	0	0	3	3
5		(MI-3)	(3)	(0)	(0)	(3)	(3)
6		(MI-4)	(3)	(0)	(0)	(3)	(3)
Total credit (Theory Subjects)						08	08
Sessional/Vocational							
1	EE48001	Internship	0	0	0	0	2
2	EE47003	Research Project-1	0	0	10	10	5
		(Project/Lab –Minor)	(0)	(0)	(4)	(4)	(2)
Total credit (Vocational Subjects)						10	07
Total Practical & Sessional/Vocational						10	07
Total Credit (Semester)						18	15



SEMESTER- VIII (For Research Options Students)

Theory							
Sl. No	Course Code	Subject	L	T	P	Total	Credit
1		Research Elective II	3	0	0	3	3
2		(MI-5)	(3)	(0)	(0)	(3)	(3)
3		(MI-6)	(3)	(0)	(0)	(3)	(3)
Total credit (Theory Subjects)						03	03
Sessional/Vocational							
1	EE47004	Research Project-II	0	0	24	24	12
Total credit (Vocational Subjects)						24	12
Total Practical & Sessional/Vocational						24	12
Total Credit (Semester)						27	15

Professional Electives:

PE-I

Sl. No	Code	Subject	Credit
1	EE30011	Electromagnetic Field Theory	3
2	EE30013	Industrial Applications of Electric Energy	3
3	EE30015	IoT for Electrical Engineering	3
4	EE30017	Neural Network and Fuzzy Logic	3
5	EE30019	Modern Control System	3

PE-II

Sl. No	Code	Subject	Credit
1	EE30012	Sensors and Actuators	3
2	EE30014	Power Generation and Control	3
3	EE30016	Renewable Energy Resource	3
4	EE30018	Restructuring of Power System	3
5	EE30020	Energy Audit and Accounting	3

PE-III

Sl. No	Code	Subject	Area
1	EE30022	Special Machines and its control	Drives and Electric Vehicle
	EE30024	Electric Drives and Control	
2	EE30026	Distribution System Planning and Automation	Power system
	EE30028	HVDC and FACTS	
3	EE30030	Solar Energy Utilization	Renewable energy
	EE30032	Sustainable Energy and Applications	

PE-IV

Sl. No	Code	Subject	Area
1	EE40007	Inverter and SMPS	Drives and Electric Vehicle
	EE40009	Industrial Automation	
2	EE40011	Digital Protection System	Power system
	EE40015	Computer Aided Power System(CAPS)	
3	EE40013	Wind and Biomass Energy	Renewable energy
	EE40017	Tidal and Small Hydro Power	

PE-V

Sl. No	Code	Subject	Area
1	EE40008	Principles of Harmonics Elimination and Application	Drives and Electric Vehicle
	EE40010	Electric Vehicles Technology	
2	EE40012	Smart Grid	Power system
	EE40014	Energy Management and SCADA	
3	EE40016	Economics Planning of Energy Systems	Renewable energy
	EE40018	Waste Management and Energy Recovery	

Research Elective-I

Sl. No	Code	Subject	Area
1	EE40019	Power Converter Analysis and Design	Drives and Electric Vehicle
	EE40021	Battery Management System	
2	EE40023	Power Quality	Power system
	EE40025	State estimation and security	
3	EE40027	Renewable Energy resources assessment and forecasting	Renewable energy
	EE40029	Wind Turbine and Aerodynamics	

Research Elective-II

Sl. No	Code	Subject	Area
1	EE40020	Digital System Design using FPGA	Drives and Electric Vehicle
	EE40022	Vehicle Charging Technology	
2	EE40024	Distributed generation of Microgrid	Power system
	EE40026	Synchrophasors Application to Power System	
3	EE40028	Grid Integration and Control	Renewable energy
	EE40030	Energy Systems Modelling and Analysis	

HASS ELECTIVE**HASS Elective II**

Sl. No	Code	Subject	Credit
1	HS 20220	Organizational Behaviour	3
2	HS20222	Human Resource Management	3
3	HS 20120	Economics of Development	3
4	HS 20122	International Economic Cooperation	3

HASS Elective III

Sl. No	Code	Subject	Credit
1	HS 30225	Business Ethics and Corporate Social Responsibility	3
2	HS 30227	Leadership and Team Effectiveness	3
3	HS 30125	Market Structure and Pricing Policies	3
4	HS 30127	Pragmatic Inquiry	3
5	HS 30129	Economic Analysis of Decision Rules	3
6	HS 30131	Economics of Health and Education	3
7	HS30421	Gender Studies	3
8	HS30423	Tribal Resource Management	3
9	HS30425	Indian Knowledge System	3

Vocational courses offered by School of Civil Engineering

Sl. No.	Course Code	Subjects
1	CE28001	Building Drawing, Estimation & Costing (for Civil Engineering Students)
2	CE28003	GIS & GPS Applications (For other branch students)

Vocational courses offered by School of Computer Science Engineering

Sl. No.	Course Code	Subjects
1	CS28001	Web Design

Vocational courses offered by School of Electrical Engineering

Sl. No.	Course Code	Subjects
1	EE28011	Industrial wiring and control panel design
2	EE28013	Installation, operation and maintenance of solar power system
3	EE28015	Domestic wiring and home automation
4	EE28017	Cyber physics application in industrial IOT
5	EE28019	Industrial Control and Remote Monitoring

Vocational courses offered by School of Electronics Engineering

Sl. No.	Course Code	Subjects
1.	EC28001	Computational Photography
2.	EC28003	Sound Engineering
3.	EC28005	Sensors for Automation
4.	EC28007	PCB Design

Vocational courses offered by School of Mechanical Engineering

Sl. No.	Course Code	Subjects
1	ME28011	Additive Manufacturing(3-D Printing)
2	ME28013	Die development by CNC milling
3	ME28015	Concept Car Manufacturing
4	ME28017	Development of Autonomous Wheeled Robots
5	ME28019	Modelling of Micro-Wind turbine by 3D CAD Design

K-EXPLORE OPEN ELECTIVE COURSES OFFERD KSAC

Sl. No.	Course Code	Subjects
1	SA38001	Robotics
2	SA38003	Web Designing
3	SA38005	Civil-Tech
4	SA38007	Circuit Design & Control
5	SA38009	Indian Classical, Folk and Bollywood Dance
6	SA38011	Indian Classical & Western Music
7	SA38013	Graphic Designing & Editing
8	SA38015	Art & Craft
9	SA38017	Theatre & Street Play
10	SA38019	Film Making
11	SA38021	Debating, Public Speaking& Anchoring
12	SA38023	Creative Writing
13	SA38025	Photography & Videography
14	SA 38027	Fashion Styling
15	SA 38029	Culinary Arts
16	SA 38031	Quiz Activity
17	SA 38033	Social Outreach
18	SA 38035	Health and Emergency Care

OPEN ELECTIVES AND MINORS

Civil Engineering

SEMESTER – VI						
Course Code	Open Elective Courses	Pre-requisite	Minor in			
			Water Resources Management	Urban Environmental Management	Geohazard Mitigation and Management	Urban Transportation Management
CE30072	Fundamentals of Project Management	Nil				
CE30074	Elements of Surface Hydrology	Nil				
CE30076	Environmental Pollution and Control	Nil				
CE30078	Municipal Solid Waste Management	Nil				
CE30052	Surface & Groundwater Hydrology	Nil	X			
CE30054	Water Supply & Quality Management	Nil		X		
CE30056	Geomaterial characterization	Nil			X	
CE30058	Highway Material Characterization	Nil				X
SEMESTER – VII						
CE40081	Disaster Management	Nil				
CE40083	Coastal Management	Nil				
CE40085	Basic Groundwater Hydrology	Nil				
CE40087	Clean water & Sanitation	Nil				
CE40065	Geo-hazards Risk Management	Nil			X	
CE40051	Basic Fluid Mechanics & Hydraulics	Nil	X			
CE40053	Remote Sensing & GIS	Nil	X	X		
CE40055	Irrigation Water Management	Nil	X			
CE40057	Urban Waste Management	Nil		X		
CE40059	Urban Storm Water Management	Nil		X		
CE40061	Landslide hazards and protection	Nil			X	
CE40063	Earthquake hazards and mitigation	Nil			X	
CE40067	Traffic Analysis and Management	Nil				X
CE40069	Railway and Airport Planning	Nil				X
CE40071	Road Safety Analysis	Nil				X
SEMESTER – VIII						
CE40082	Global Warming & Climate Change	Nil				
CE4008	Construction Materials &	Nil				

4	Specifications					
CE40086	Natural Resources Management	Nil				
CE40088	Basic Transportation Engineering	Nil				
CE40050	Gender & Legal Aspects in Water Resources Management	Nil	X			
CE40052	Environmental Impact Assessment & Auditing	Nil	X	X		X
CE40054	Air Pollution Control & Management	Nil		X		
CE40056	Groundwater contamination and remediation	Nil			X	
CE40058	Geotechnical instrumentation and monitoring	Nil			X	
CE40060	Fundamentals of Urban Transportation Planning	Nil				X

Minor Lab / Project (Students pursuing 4 years B.Tech. Hons or B.Tech. Research program along with Minor program)

Course Code	Course	Pre-requisite	Minor Specialization			
			Water Resources Management	Urban Environmental Management	Geohazard Mitigation and Management	Urban Transportation Management
CE49001	Water Resources Lab	Nil	X			
CE49003	Environmental Quality Lab	Nil		X		
CE49005	Geomaterial Lab	Nil			X	
CE49007	Highway Infrastructure Lab	Nil				X

Computer Science and Engineering

Semester VI			
Course Code	Open Elective Courses	Pre-requisite	Minor in Computer Science
CS30001	Design and Analysis of Algorithms	Nil	
CS30018	Software Engineering Fundamentals	Nil	
CS30020	Essentials of Computer Science	Nil	
CS30022	Object Oriented Programming	Nil	
CS30024	Fundamentals of Data Structures	Nil	
CS30011	Computational Intelligence	Nil	
CS40002	Nature Inspired Computing	Nil	

Semester VII			
Course Code	Open Elective Courses	Pre-requisite	Minor in Computer Science
CS30001	Design and Analysis of Algorithms	Nil	
CS30018	Software Engineering Fundamentals	Nil	
CS30020	Essentials of Computer Science	Nil	X
CS30022	Object Oriented Programming	Nil	
CS30024	Fundamentals of Data Structures	Nil	X
CS30011	Computational Intelligence	Nil	
CS40002	Nature Inspired Computing	Nil	

Semester VIII			
Course Code	Open Elective Courses	Pre-requisite	Minor in Computer Science
CS30001	Design and Analysis of Algorithms	Nil	X
CS30018	Software Engineering Fundamentals	Nil	
CS30020	Essentials of Computer Science	Nil	
CS30022	Object Oriented Programming	Nil	
CS30024	Fundamentals of Data Structures	Nil	
CS30011	Computational Intelligence	Nil	
CS40002	Nature Inspired Computing	Nil	

Minor Lab / Project (Students pursuing 4 years B.Tech. Hons or B.Tech. Research program along with Minor program)

Course Code	Courses	Pre-requisite
CS39008	Computing Laboratory	Nil

Electrical Engineering

SEMESTER – VI					
Course Code	Open Elective Courses	Pre-requisite	Minor in		
			Electrical Engineering	Smart Electric Vehicles	Industrial IoT
EE30034	Network Analysis	Nil	X	X	X
EE30016	Renewable Energy Resources	Nil	X	X	
EE30036	Solar Power Technology	Nil			
EE30038	Introduction to Electrical Machines	Nil	X	X	X
EE30040	Energy and Environment	Nil			
EE20007	Analog and Digital Electronics Circuits	Nil	X	X	
EE20005	Measurements and Sensors Technology	Nil	X		

SEMESTER – VII					
EE40031	Fuel Technology	Nil			
EE40033	Energy Audit and Management	Nil	X		
EE20004	Linear Control System	Nil	X	X	X
EE30012	Sensors and Actuators	Nil		X	X
EE40035	Energy Storage Technology	Nil	X	X	
EE30004	Microprocessors and Embedded System	Nil	X		
EE40020	Digital System Design using FPGA	Nil		X	X
EE30022	Special Machines and control	Nil		X	
EE40044	Hybrid Electric Vehicles	Nil		X	
EE40042	Robotics and Control	Nil			X
EE40047	Cyber security	Nil			X
EE40048	Wireless network systems	Nil			X
SEMESTER – VIII					
EE30007	Power Transmission and Distribution	Nil	X		
EE30001	Power Electronics	Nil	X		
EE30024	Electric Drives and Control	Nil	X		
EE40041	Power System Protection	Nil	X		
EE40046	IoT in Electric Vehicles	Nil		X	
EE40022	Vehicle Charging Technology	Nil		X	
EE40045	Hydrogen and fuel cell technology for Electric and hybrid Vehicle	Nil		X	
EE40049	IoT in Industry	Nil			X
EE40050	Smart Bio-Medical Instruments	Nil			X
EE40051	Bio-Inspired Algorithm	Nil			X
EE40052	IoT Sensors and Protocols	Nil			X

Minor Lab / Project (Students pursuing 4 years B.Tech. Hons or B.Tech. Research program along with Minor program)

Course Code	Course	Pre-requisite	Minor Specialization		
			Electrical Engineering	Smart Electric Vehicles	Industrial IoT
EE29002	Electrical Machines Laboratory	Nil	X		
EE39001	Power Electronics Laboratory	Nil	X		
EE49001	Power System Protection Lab	Nil	X		
EE49005	Electric Vehicles Laboratory	Nil		X	
EE49003	IoT Laboratory	Nil		X	X
EE49002	Sensors and Control Laboratory	Nil		X	X
EE39007	PLC Laboratory	Nil			X

Electronics Engineering

SEMESTER – VI

Course Code	Open Elective Courses	Pre-requisite	Minor in			
			Minor in Communication and Networking	Minor in VLSI and Embedded System	Minor in Applied Machine Learning	Minor in Cyberphysical Systems
EC30014	Circuits, Signals and Communication	NIL	X	X	X	X
EC30016	Introduction to Sensor Technology	EC10001				X
EC30018	Evolution of Communication Technology	NIL				
EC30020	Electronics and PCB Design	NIL				
EC40001	Optimization Techniques in Engineering	NIL				

SEMESTER – VII

Course Code	Open Elective Courses	Pre-requisite	Minor in			
			Minor in Communication and Networking	Minor in VLSI and Embedded System	Minor in Applied Machine Learning	Minor in Cyberphysical Systems
EC40031	Principles of Opto-Electronics	EC30014 /EC10001				
EC40033	Principle of Modern Communication Systems	EC30014 /EC10001				
EC40023	Consumer Electronics	EC30014 /EC10001				
EC40025	Fundamentals of Data Acquisition Systems	NIL				
EC40027	Embedded System Design and Applications	EC10001		X	X	X
EC40029	Communication Network Fundamentals	EC21002 /EC20008/EC30014	X			
EC20007	Semiconductor Technology	Nil		X		
EM30011	Data Mining	Nil			X	
EM30009	Data Analytics	Nil				X
EC300013	Optical and Satellite Communication	EC21002 /EC20008	X			
EC30011	Digital System Design with Verilog	EC10001		X		
EC30010	Information Theory and Coding	EC20008 /EC30014	X			
EM40006	Cybersecurity	Nil				X
EM40008	Bioinformatics	LS10001			X	

SEMESTER – VIII

Course Code	Open Elective Courses	Pre-requisite	Minor in			
			Minor in Communication and Networking	Minor in VLSI and Embedded System	Minor in Applied Machine Learning	Minor in Cyberphysical Systems
EC40004	Quantum Engineering	NIL		X		
EC40020	Essence of Biomedical Signal Processing	MA1100 1 MA1100 2				
EC40022	Imaging Techniques	NIL				
EC30019	Mobile Ad Hoc Network	EC21002 /EC2000 8	X			
EM40010	Optimization Methods in Machine Learning	MA1100 1 MA1100 2 MA2100 1			X	
EC30021	Industrial IoT	EC20002 /EC3000 4				X
EM30004	Machine learning based Signal Processing	MA2100 1/ EC20001	X	X	X	X

Minor Lab / Project (Students pursuing 4 years B.Tech. Hons or B.Tech. Research program along with Minor program)

Course Code	Course	Pre-requisite	Minor Specialization			
			Minor in Communication and Networking	Minor in VLSI and Embedded System	Minor in Applied Machine Learning	Minor in Cyberphysical Systems
EC39002	Wireless Communication and Networking Lab	Nil	X			
EC29002	Communication Engineering Lab	Nil	X			
EC39001	VLSI Design Lab	Nil		X		
EC29005	Digital System Design Lab	Nil		X		
EC39004	Electronics Design Lab	Nil				X
EM47003	Project	Nil			X	X

Mechanical Engineering

SEMESTER – VI					
Course Code	Open Elective Courses	Pre-requisite	Minor in		
			Mechanical Engineering	Manufacturing Engineering	Industrial Engineering and Management
ME30050	Kinematics and Dynamics of Machinery	Nil	X		
ME20005	Material Science and Engineering	Nil		X	
ME30016	Supply Chain Management	Nil			X
ME30052	Introduction to Fluid Mechanics and Heat Transfer	Nil			
ME30054	Renewable Energy Sources	Nil			
ME30056	Finite Element Method for Engineers	Nil			
ME30058	Introduction to Composite Materials	Nil			
SEMESTER – VII					
ME40061	Engineering Metrology	Nil		X	
ME30005	Industrial Engineering and Operations Research	Nil	X	X	
	Manufacturing Processes	Nil	X	X	
ME40063	Quality Engineering	Nil			X
ME40065	Project Management	Nil			X
ME40067	Operations Research	Nil			X
ME40069	Thermodynamics and Hydraulic Devices	Nil	X		
ME40071	Biomechanics	Nil			
ME40073	Fundamentals of Computational Fluid Dynamics	Nil			
ME40075	Automobile Technology	Nil			
SEMESTER – VIII					
ME40062	Work System Design	Nil			X
ME30018	Power Plant Engineering	Nil	X		
ME40064	Mechanical System Design	Nil	X		
ME30015	Additive Manufacturing	Nil		X	
ME40066	Industrial Automation and Robotics	Nil		X	
ME40068	Production, Planning and Control	Nil			X
ME40070	Mechatronic Systems	Nil			
ME40072	Robotics	Nil			
ME40074	Computer Controlled Manufacturing Systems	Nil			

Minor Lab / Project (Students pursuing 4 years B.Tech. Hons or B.Tech. Research program along with Minor program)

Course Code	Open Elective Courses	Pre-requisite	Minor Specialization		
			Mechanical Engineering	Manufacturing Engineering	Industrial Engineering and Management
ME49011	Thermo fluids Lab	Nil	X		
ME28003	Manufacturing Practices	Nil	X	X	
ME49013	Metrology and Instrumentation Lab	Nil		X	
ME48011	Operations Research Sessional	Nil			X
ME49016	Work System Design Lab.	Nil			X

Humanities

SEMESTER – VI			
Course Code	Open Elective Courses	Pre-requisite	Minor in
			Financial Economics (Using Data Analytics)
HS30150	Foundations of Modern Macroeconomics	Nil	
HS30152	Money and Financial Markets	Nil	X
HS30154	Poverty to Prosperity	Nil	
HS30250	Organizational Change and Development	Nil	
HS30050	Indian Literature in Translation (ILT)	Nil	
HS30052	Climate Change Fiction	Nil	
HS30054	Introduction to Science Fiction	Nil	
SEMESTER – VII			
HS40151	Econometrics for Business Data Analysis	Nil	X
HS40153	Financial Economics	Nil	X
HS40155	Corporate Finance	Nil	X
HS40157	Employment, Employability and Growth	Nil	
SEMESTER – VIII			
HS40156	Public Economics	Nil	X
HS40158	Advanced Econometrics	Nil	X
HS47160	PROJECT	Nil	X
HS40162	Economic Inequality	Nil	

SEMESTER – VI			
Course Code	Minor Courses	Pre-requisite	Minor in
			Sustainable Development
CE30078	Municipal Solid Waste Management	Nil	
EE30032	Sustainable Energy and Applications	Nil	
HS30154	Poverty to Prosperity	Nil	X
EE30030	Solar Energy Utilization	Nil	
SEMESTER – VII			
CE40087	Clean Water & Sanitation	Nil	X
CE40065	Geo-Hazards Risk Management	Nil	X
EE40013	Wind and Biomass Energy	Nil	X
HS 40157	Employment, Employability and Growth	Nil	X
SEMESTER – VIII			
LS40002	Industrial Ecology and Design for Sustainability	Nil	X
EE40018	Waste Management and Energy Recovery	Nil	
HS40162	Economic Inequality	Nil	X

OPEN ELECTIVE COURSES OFFERD BY SCHOOL OF APPLIED SCIENCE

Theory							
Sl. No.	Course Code	Subjects	L	T	P	Total	Credit
1	MA30002	Advanced Numerical Techniques	3	0	0	3	3
2	CH40002	Composite Materials And Structures	3	0	0	3	3
3	MA40001	Finite Element Analysis	3	0	0	3	3
4	LS30002	Industrial Ecology And Design For Sustainability	3	0	0	3	3
5	PH40001	Quantum Computing	3	0	0	3	3
6	CH30002	Sustainable Energy And Environment	3	0	0	3	3
7	CH40001	Solid Waste Management	3	0	0	3	3

OPEN ELECTIVE COURSES OFFERD BY SCHOOL OF LAW

Sl. No.	Course Code	Subjects	L	T	P	Total	Credit
1	LW30910	Law of Patent	3	0	0	3	3
2	LW30904	Law of Contract	3	0	0	3	3
3	LW30908	Intellectual Property Rights Law	3	0	0	3	3
4	LW30914	Environmental Law	3	0	0	3	3
5	LW30918	Copyright Law	3	0	0	3	3
6	LW30920	Information Technology Law	3	0	0	3	3

OPEN ELECTIVE COURSE OFFERD BY SCHOOL OF PUBLIC HEALTH

Sl. No.	Course Code	Subjects	L	T	P	Total	Credit
1	PE30002	Health and Wellbeing	3	0	0	3	3

OPEN ELECTIVE COURSES OFFERD BY SCHOOL OF RURAL MANAGEMENT

Sl. No.	Course Code	Subjects	L	T	P	Total	Credit
1	RM30152	Sustainable Rural Development	3	0	0	3	3
2	RM20152	Food Security	3	0	0	3	3

OPEN ELECTIVE COURSES OFFERD BY SCHOOL OF MANAGEMENT

Sl. No.	Course Code	Subjects	L	T	P	Total	Credit
1	BM30102	Training and Development	3	0	0	3	3
2	BM30202	Financial Management	3	0	0	3	3
3	BM30302	Marketing Management	3	0	0	3	3
4	BM30602	Basics of Management Information System	3	0	0	3	3
5	BM30702	Entrepreneurship	3	0	0	3	3
6	BM30802	Production and Operations Management	3	0	0	3	3