III YEAR II SEMESTER COURSE OUTCOMES

SL.No.		COURSE CODE:	R2032021	COURSE NAME:	MICROPROCESSORS AND MICROCONTROLLERS
1	CO1:	Know the concepts of the Microprocessor capability in general and explore the evaluation of microprocessors.			
	CO2:	Analyse the instruction sets - addressing modes - minimum and maximum modes operations of 8086 Microprocessors			
	CO3:	Analyse the Microcontroller and interfacing capability			
	CO4:	Describe the architecture and interfacing of 8051 controller			
	CO5:	Know the concepts of PIC micro controller and its programming.			
2		COURSE CODE:	R2032022	COURSE NAME:	ELECTRICAL MEASUREMENTS AND INSTRUMENTATION
	CO1:	Know the construction and working of various types of analog instruments.			
	CO2:	Describe the construction and working of wattmeter and power factor meters			
	CO3:	Know the construction and working various bridges for the measurement resistance - inductance and capacitance			
	CO4:	Know the operational concepts of various transducers			
	CO5:	Know the construction and operation digital meters			
3		COURSE CODE:	R2032023	COURSE NAME:	POWER SYSTEM ANALYSIS
	CO1:	Apply the knowledge of various signals and operations.			
	CO2:	Analyze the spectral characteristics of periodic signals using Fourier Analysis.			
	CO3:	Classify the systems based on their properties and determine the response of LSI system using convolution.			
	CO4:	Understand the process of sampling and the effects of under sampling.			
	CO5:	Apply Laplace and z-transforms to analyze signals and Systems (continuous & discrete).			
4		COURSE CODE:	R203202A	COURSE NAME:	SIGNALS AND SYSTEMS (PROFESSIONAL ELECTIVE – II)
	CO1:	Explain the operation and performance of three phase induction motor.			
	CO2:	Analyze the torque-speed relation, performance of induction motor and induction generator			
	CO3:	Implement the starting of single phase induction motors.			
	CO4:	Develop winding design and predetermine the regulation of synchronous generators.			
	CO5:	Explain hunting phenomenon, implement methods of staring and correction of power factor with synchronous motor			
5		COURSE CODE:	R203202B	COURSE NAME:	ELECTRIC DRIVES (PROFESSIONAL ELECTIVE – II)
	CO1:	Explain the fundamentals of electric drive and different electric braking methods.			
	CO2:	Analyze the operation of three-phase converter fed dc motors and four quadrant operations of dc motors using dual converters.			
	CO3:	Describe the DC-DC converter fed control of dc motors in various quadrants of operation			
	CO4:	Know the concept of speed control of induction motor by using AC voltage controllers and voltage source inverters and differentiate the stator side control and rotor side control			
	CO5:	Learn the concepts of speed control of synchronous motor with different methods.			
		COURSE CODE:	R203202C	COURSE NAME:	ADVANCED CONTROL SYSTEMS (PROFESSIONAL ELECTIVE – II)
	CO1:	Analyse different canonical forms - solution of State equation.			

6	**CO2:**	Design of control system using the pole placement technique is given after introducing the concept of controllability and observability.
	CO3:	Analyze nonlinear system using describing function technique and phase plane analysis.
	CO4:	Examine the stability analysis using Lyapunov method.
	CO5:	Illustrate the Minimization of functional using calculus of variation - state and quadratic regulator problems.

7		**COURSE CODE:**	**R203202D**	**COURSE NAME:**	**SWITCHGEAR AND PROTECTION (PROFESSIONAL ELECTIVE – II)**
	CO1:	Illustrate the principles of arc interruption for application to high voltage circuit breakers of air - oil - vacuum - SF6 gas type.			
	CO2:	Analyse the working principle and operation of different types of electromagnetic protective relays.			
	CO3:	Acquire knowledge of protective schemes for generator and transformers for different fault conditions.			
	CO4:	Classify various types of protective schemes used for feeders and bus bar protection and Types of static relays.			
	CO5:	Analyse the operation of different types of over voltages protective schemes required for insulation co–ordination and types of neutral grounding.			
8		**COURSE CODE:**	**R203202E**	**COURSE NAME:**	**BIG DATA ANALYTICS (PROFESSIONAL ELECTIVE – II)**
	CO1:	Understand how to leverage the insights from big data analytics			
	CO2:	Analyze data by utilizing various statistical and data mining approaches			
	CO3:	Perform analytics on real-time streaming data			
	CO4:	Understand the various NoSql alternative database models			
9		**COURSE CODE:**	**R203202F**	**COURSE NAME:**	**SBATTERY MANAGEMENT SYSTEMS AND CHARGING STATIONS (OPEN ELECTIVE – II)**
	CO1:	Describe the construction and operation of different batteries for EV applications			
	CO2:	Describe charging algorithms of different batteries and balancing methods of battery packs			
	CO3:	Describe the different kinds of infrastructure needed in the charging stations			
	CO4:	Describe the requirements of battery management and their maintenance.			
	CO5:	Obtain the modelling of batteries and develop their simulation models.			
10		**COURSE CODE:**	**R203202G**	**COURSE NAME:**	**FUNDAMENTALS OF UTILIZATION OF ELECTRICAL ENERGY (OPEN ELECTIVE – II)**
	CO1:	Know the concepts of illumination and various illumination methods.			
	CO2:	Know about the resistance - induction and dielectric heating.			
	CO3:	Learn about the resistance and arc welding and welding equipment			
	CO4:	Know about the mechanisms - equipment and technology used in the electric traction.			
	CO5:	Differentiatethe importance of various energy storage systems			
11		**COURSE CODE:**	**R203202H**	**COURSE NAME:**	**INDIAN ELECTRICITY ACT (OPEN ELECTIVE – II)**
	CO1:	Learn the national policy and plan and the joint responsibilities of state and central governments.			
	CO2:	Analyze the licensing and the provisions related to transmission and distribution of electricity.			
	CO3:	Remember the composition and powers of Regulatory commissions and CEA.			
	CO4:	Learn the functions of Appellate Tribunal for electricity.			
	CO5:	Know the constitution procedure and provisions in Special courts and dispute resolutions.			
12		**COURSE CODE:**	**R2032024**	**COURSE NAME:**	**ELECTRICAL MEASUREMENTS AND INSRUMENTATION LABORATORY**
	CO1:	Know about the phantom loading.			
	CO2:	Learn the calibration process.			
	CO3:	Measure the electrical parameters voltage - current - power - energy and electrical characteristics of resistance - inductance and capacitance.			
	CO4:	Gain the skill knowledge of various brides and their applications.			
	CO5:	Learn the usage of CT's - PT's for measurement purpose.			
	CO6:	Know the characteristics of transducers.			
	CO7:	Measure the strains - frequency and phase difference.			

13		**COURSE CODE:**	**R2032025**	**COURSE NAME:**	**MICRO PROCESSORS AND MICRO CONTROLLERS LAB**
	CO1:	Write assembly language program using 8086 microprocessor based on arithmetic - logical - number systems and shift operations.			
	CO2:	Write assembly language programs for numeric operations and array handling problems.			
	CO3:	Write a assembly program on string operations.			
	CO4:	Interface 8086 with I/O and other devices.			
	CO5:	Do parallel and serial communication using 8051 & PIC 18 micro controllers.			
	CO6:	Program microprocessors and microcontrollers for real world applications.			
14		**COURSE CODE:**	**R2032026**	**COURSE NAME:**	**POWER SYSTEMS AND SIMULATION LAB**
	CO1:	Estimate the sequence impedances of 3-phase Transformer and Alternators			
	CO2:	Evaluate the performance of transmission lines			
	CO3:	Analyse and simulate power flow methods in power systems			
	CO4:	Analyse and simulate the performance of PI controller for load frequency control.			
	CO5:	Analyse and simulate stability studies of power systems			
15		**COURSE CODE:**	**R2032027**	**COURSE NAME:**	**SKILL ADVANCED COURSE MACHINE LEARNING WITH PYTHON**
	CO1:	Illustrate and comprehend the basics of Machine Learning with Python			
	CO2:	Demonstrate the algorithms of Supervised Learning and be able to differentiate linear and logistic regressions			
	CO3:	Demonstrate the algorithms of Unsupervised Learning and be able to understand the clustering algorithms			
	CO4:	Evaluate the concepts of binning, pipeline Interfaces with examples			
	CO5:	Apply the sentiment analysis for various case studies			
16		**COURSE CODE:**	**R2032028**	**COURSE NAME:**	**RESEARCH METHODOLOGY**
	CO1:	Understand objectives and characteristics of a research problem			
	CO2:	Analyze research related information and to follow research ethics.			
	CO3:	Understand the types of intellectual property rights.			
	CO4:	Learn about the scope of IPR.			
	CO5:	Understand the new developments in IPR.			
17		**COURSE CODE:**	**R203202**	**COURSE NAME:**	**DIGITAL CONTROL SYSTEMS (Honors Engineering Course)**
	CO1:	Illustrate advantages of digital systems, sampling and data reconstruction.			
	CO2:	Calculate Z Transform and Inverse Z Transfer function, pulse transfer functions of open and closed loop response.			
	CO3:	Construct various canonical forms and concepts of controllability and observability.			
	CO4:	Compute the absolute and relative stability of discrete time systems using Routh Stability criterion and Root Locus, Design lag and lead compensators to improve system performance using bode diagrams.			
	CO5:	Design of state feedback controllers and state observers.			
18		**COURSE CODE:**	**R203202**	**COURSE NAME:**	**ANALYSIS OF POWER ELECTRONIC CONVERTERS (Honors Engineering Course)**
	CO1:	Describe and analyze the characteristics of Switching devices			
	CO2:	Demonstrate the operation and perform harmonic analysis of AC-DC power converters.			
	CO3:	Analyze the operation of single-phase and three-phase inverters with PWM control.			
	CO4:	Illustrate the principles of operation of multilevel inverters.			
	CO5:	PWM Control of CHB and diode clamped multilevel inverters.			

19		**COURSE CODE:**	**R203202**	**COURSE NAME:**	**HVDC TRANSMISSION (Honors Engineering Course)**
	CO1:	Learn the basic concepts of HVDC Transmission & their converters.			
	CO2:	Understand the HVDC System Control Strategies with respect to protection.			
	CO3:	Understand the concepts of HVDC systems protection.			
	CO4:	Understand the various sources of reactive power			
	CO5:	Understand the Multi Terminal HVDC Systems.			
20		**COURSE CODE:**	**R203202**	**COURSE NAME:**	**EVOLUTIONARY ALGORITHMS (Minors Engineering Course)**
	CO1:	State and formulate the optimization problem, without and with constraints, by using design variables.			
	CO2:	Apply GA and PSO algorithms to solve single objective optimization problems			
	CO3:	Apply HSA and ABC algorithms to solve single objective optimization problems			
	CO4:	Apply Bat and SFL algorithms to solve single objective optimization problems			
	CO5:	Formulate multi-objective optimization problem and use NSGA-II to solve two objective optimization problem			
21		**COURSE CODE:**	**R203202**	**COURSE NAME:**	**FUNDAMENTALS OF POWER ELECTRONICS (Minors Engineering Course)**
	CO1:	Illustrate the static and dynamic characteristics SCR - Power MOSFET and Power IGBT.			
	CO2:	Analyse the operation of phase controlled rectifiers.			
	CO3:	Analyse the operation of Three-phase full–wave converters - AC Voltage Controllers and Cycloconverters			
	CO4:	Examine the operation and design of different types of DC-DC converters.			
	CO5:	Analyse the operation of PWM inverters for voltage control and harmonic mitigation.			

PRINCIPAL