



Savitribai Phule Shikshan Prasarak Mandal's
SKN SINHGAD COLLEGE OF ENGINEERING

(Approved by AICTE & Affiliated to PAH Solapur University, Solapur)

A/p- Korti, Tal- Pandharpur, Pin- 413304, Dist.- Solapur.

E-mail: principal@sknscoe.ac.in, Website: <https://www.sknscoe.ac.in>

Department of Electrical Engineering

S.Y. B. Tech SEM-I

Course Name & Code- Analog Electronics (EEPCC-01)	
EEPCC-01.1	Develop conceptual understanding of diode and Bipolar Junction Transistor (BJT)
EEPCC-01.2	Analyze the frequency response of BJT
EEPCC-01.3	Develop conceptual understanding of Field effect transistors
EEPCC-01.4	Define the specification and parameters of Op-amp
EEPCC-01.5	Analyze configurations of operational amplifier
EEPCC-01.6	Use op-amp for different electronic applications

Course Name & Code-Power Plant Engineering and Elements of Engineering (EEPCC-02)	
EEPCC-02.1	Understand operation of different Base Load power plants.
EEPCC-02.2	Understand operation of different Peak Load power plants .
EEPCC-02.3	Analyze economic aspects of Electrical Power Generation.
EEPCC-02.4	Understand different DC & AC Supply Scheme a Power System and also Calculate Weight of Conductor Material required for same. Understand Kelvins Law.
EEPCC-02.5	Describe construction and use of different insulators, conductor, line supports. Understand Concept of String Efficiency.
EEPCC-02.6	Describe different equipment used in substation & can describe different types of Grounding

Course Name & Code- DC Machines & Transformer (EEPCC-03)	
EEPCC-03.1	Analyze the performance of DC Generators.
EEPCC-03.2	Analyze the performance of DC Motors.
EEPCC-03.3	Examine the performance of a single-phase transformer.
EEPCC-03.4	Examine the performance of three-phase transformer.

Course Name & Code- :Electrical Vehicle Technology (EEHn-01A)	
EEHn-01A.1	Understand the basics of Electric Vehicle.
EEHn-01A.2	Understand the Mechanics of electrical Electric Vehicle.
EEHn-01A.3	Analyze the performance & configurations of electric vehicles based on motor characteristics.
EEHn-01A.4	Elaborate the co ncepts & architecture of HEVs, PHEVs and Classify It.
EEHn-01A.5	Explain Social, Environmental & Economic Aspects of Solar Powered Charging Systems.
EEHn-01A.6	Understand The Mobility & Connectivity Used in The Charging System



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Course Name & Code- Universal Human Values VEC-01	
VEC-01.1	Appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings.
VEC-01.2	Develop holistic perspective towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence.
VEC-01.3	Appreciate the Universal Human Values and movement towards value-based living in a natural way.
VEC-01.4	Highlight ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

Course Name & Code- Basics of Electric Vehicle (EEMDM-01 B)	
EEMDM-01 B.1	Understand about basics of hybrid electric vehicle
EEMDM-01 B.2	Analyze the performance of electric vehicle.
EEMDM-01 B.3	Explain environmental aspects of solar powered charging system
EEMDM-01 B.4	Understand about mobility and connectors used in charging system.

S.Y. B. Tech SEM-II

Course Name & Code- Electrical Transmission and Distribution [EEPCC-04]	
EEPCC-04.1	Understand overall structure of power system.
EEPCC-04.2	Understand mechanical design of transmission lines.
EEPCC-04.3	Implement the knowledge to design underground power distribution system.
EEPCC-04.4	Analyze various performance parameters of transmission lines

Course Name & Code- Network Analysis (EEPCC-05)	
EEPCC-05.1	To develop the strong foundation for Electrical Networks
EEPCC-05.2	To develop analytical qualities in Electrical circuits by application of various theorems.
EEPCC-05.3	To understand the concepts of network topology
EEPCC-05.4	To understand the behavior of circuits by analyzing the transient response using classical methods
EEPCC-05.5	To understand the behavior of circuits by analyzing the transient response using Laplace Transform approach
EEPCC-05.6	To apply knowledge of Network theory for analysis of 2-port networks



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Course Name & Code- AC Machines [EEPCC-06]	
EEPCC-06.1	Analyze performance of three phase as well as single phase Induction Motors
EEPCC-06.2	Identify applications of Induction Motors in industries & power sector
EEPCC-06.3	Analyze performance of synchronous machines
EEPCC-06.4	Identify applications of synchronous machines in industries & power sector

Course Name & Code- Computer Aided Design and Simulation [EESEC-01]	
EESEC-01.1	Handle Simulation software for different applications in electrical engineering.
EESEC-01.2	Understand steady state analysis of various electrical devices through simulation.
EESEC-01.3	Create Design of various devices used in electrical engineering.
EESEC-01.4	Handle design software for different applications in electrical engineering

Course Name & Code- Project management economics [EM-02]	
EM-02.1	Demonstrate decision making and communication as a member of a team as well as Lead a team for effective management of construction projects.
EM-02.2	Apply the Optimization techniques for decision making in construction industry.
EM-02.3	Carry out ABC analysis, Break even analysis and calculate EOQ and Inventory costs for construction project.
EM-02.4	Demonstrate the decision making abilities based on economics in projects and to appraise alternative projects.

Course Name & Code- Measurement, Instrumentation & Sensors [OE-02D]	
OE-02D.1	Introduce basics of concepts of Measurements.
OE-02D.2	Understand operation of Analog instruments and Bridges.
OE-02D.3	Understand operation Instrument Transformer & Digital Instruments.
OE-02D.4	Introduce basics of various sensors and its characteristics.
OE-02D.5	Describe the working principle of different types of sensors.
OE-02D.6	Describe different sensor technologies and interfacing techniques.



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Course Name & Code- Professional Ethics [VEC-02]	
VEC-02.1	Inculcate the human values in their behavior.
VEC-02.2	Demonstrate the Engineering ethics in their professional practice.
VEC-02.3	Practice the safety and responsibility and professional rights in their professional practice.
VEC-02.4	Incorporate the code of ethics of Global organizations such as ASME, ASCE, and IEEE

Course Name & Code- Electric Motors and Controls for Electric Vehicle (Honors) [EEHn-02A]	
EEHn-02A.1	Select appropriate type of motor to be used in electric vehicle.
EEHn-02A.2	Describe the drive System to be used in Electric Vehicle DC motors.
EEHn-02A.3	Describe the drive System to be used in Electric Vehicle AC motors.
EEHn-02A.4	Explain different field oriented control methods of Electric Vehicle motors.
EEHn-02A.5	Explain direct torque control methods of Electric Vehicle motors.
EEHn-02A.6	Apply the required control strategy to the Electric Vehicle motors.

T.Y. B. Tech SEM-I

Course Name & Code-Power System-III (EL311)	
EL-311.1	Understand the Concept of single line diagram, Impedance, Reactance Diagram of a given power system network & Understand Concept of per unit System.
EL-311.2	Analyze Symmetrical Faults on a transmission line, Develop a solution against short circuit, Such as Short KVA of Circuit breaker.
EL-311.3	Apply the knowledge of Symmetrical components to represent unbalanced Voltage ,Currents, Impedance Etc. in terms of Set of Symmetrical Component.
EL-311.4	Calculate/Determine unsymmetrical fault currents and voltages under Unsymmetrical Fault Condition.
EL-311.5	Apply power flow equation, Numerical methods for the solution of load flow problem & Evaluate power flows through transmission lines.
EL-311.6	Derive and analyze swing equation, critical clearing angle time & Analyze steady state and transient stability of a power system using analytical methods.

Course Name & Code- LINEAR CONTROL SYSTEM EL_312	
EL312.1	Explain basic terminologies and applications of control systems
EL312.2	Derive mathematical model and determine the transfer function of a given control system through various techniques
EL312.3	Compute the time response and stability the given system.
EL312.4	Analyze the given control system in time and frequency domain



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Course Name & Code-Advanced Microcontroller System (EL313)	
EL 313.1	Understand the basics of Microcomputer systems.
EL 313.2	Understand the architecture and addressing modes of 8051.
EL 313.3	Develop program in assembly language and C language for 8051.
EL 313.4	Interface a microcontroller 8051 to various devices.
EL 313.5	Understand the architecture of advanced microcontrollers.
EL 313.6	Develop various applications of 8051 in Electrical Engineering.

Course Name & Code- Electromagnetic Engineering EE-314	
EL314.1	Solve numerical problems on different coordinate systems, divergence, curl and gradient.
EL314.2	Derive basic laws of electrostatics and magneto statics and can apply them for different fields.
EL314.3	Analyze boundary conditions for conductors and dielectric.
EL314.4	Derive Maxwell's equations under different conditions

Course Name & Code-Managerial Economics (EL315)	
EL315.1	Elaborate the concepts of managerial economics
EL315.2	Analyse the issues related to demand, supply and market
EL315.3	Use different tools for demand analysis and forecasting
EL315.4	Analyse the production and cost functions
EL315.5	Decide price based on market, demand and supply

Course Name & Code- Electrical Workshop (EL317)	
EL317.1	Apply workshop equipment, wiring accessories and print circuit boards.
EL317.2	Prepare the PCB in the practical field.
EL317.3	Install the earthing for different equipment.
EL317.4	Find the faults in the circuits by troubleshooting

Course Name & Code-Electric Motors & Controls for Electric Vehicle(Hnv512)	
Hnv512.1	Select appropriate type of motor to be used in electric vehicle
Hnv512.2	To understand the drive System to be used in Electric Vehicle motors.
Hnv512.3	To understand different control methods of Electric Vehicle motors.
Hnv512.4	Apply the required control strategy to the Electric Vehicle motors



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T.Y. B. Tech SEM-II

Course Name & Code-Electrical Machine Design (EL321)	
EL321.1	Student will able to Understand design principles of electrical machine design and design factors. and also Understand modern trends in design of electrical machines.
EL321.2	Understand basic concepts of design of Transformer and Design the main dimensions, Design winding and Tank. & also Analyze the performance of single phase, three phase transformer
EL321.3	Calculate/Estimate the main dimensions & analyze the performance of DC machine 1. Design and Analyze parameters of rotating machines 2. Design of Poles, core length and design of field system.
EL321.4	Calculate the main dimensions & analyze the performance of Induction Motor. 1. Understand design of three phase induction motors. 2. Understand design of various parts of three phase induction motors
EL321.5	Design the main dimensions & analyze the performance of Synchronous machine 1. Understand the basic concepts of design of Synchronous machines 2. Understand how to design various parts of Synchronous machines

Course Name & Code- Electrical Utilization EL 322	
EL322.1	Design a suitable scheme of speed control for the traction systems.
EL322.2	Understand different controlling methods, transition methods in traction.
EL322.3	Identify a heating/ welding scheme for a given application.
EL322.4	Identify/ Trouble shoot various lamps and fittings in use.
EL322.5	Understand the importance of maximizing the energy efficiency by its optimum utilization and mould their practical work in professional world accordingly

Course Name & Code-Power Electronics & Industrials Drives [EL 323]	
EL 323.1	Understand operation and characteristics of various power electronic devices.
EL 323.2	Analyze phase-controlled rectifiers
EL 323.3	Analyze inverter circuits
EL 323.4	Apply the concepts of electrical drive
EL 323.5	Understand the converter fed DC motor speed control techniques
EL 323.6	Understand the inverter fed induction motor speed control techniques

Course Name & Code- ADVANCED CONTROL SYSTEM EL 324	
EL324.1	Design the controller in time and frequency domain
EL324.2	Examine and design the control system in modern approach
EL324.3	Analyze the nonlinear control system
EL324.4	Analyze the Discrete Time Control System



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Course Name & Code- Renewable Energy Sources [EL325]	
EL325.1	Describe the role and potential of Renewable sources and analyze different instruments for measurement of solar radiation.
EL325.2	Explain different methods for collection and storage of solar energy.
EL325.3	Describe operation, site selection considerations and applications of wind energy conversion system.
EL325.4	Explain Bio-gas power plant process.
EL325.5	Discuss geothermal energy conversion and its potential in India.
EL325.6	Describe Ocean Thermal Energy Conversion (OTEC) power plant and Direct Energy Conversion (DEC).

Course Name & Code-Mini Hardware Project (EL327)	
EL327.1	Understand, plan and execute a mini project with team.
EL327.2	Device electronic hardware by implementing knowledge of PCB design techniques, soldering techniques and hardware debugging techniques.
EL327.3	Prepare technical report based on the mini project.
EL327.4	Estimate cost of the mini project, deliver technical seminar over mini project.

Course Name & Code-Energy Management System For Electric Vehicle (Hn613)	
Hn613.1	Discuss about the different types of energy storage system
Hn613.2	Describe about the battery characteristic & parameters
Hn613.3	Demonstrate the Model of different types of batteries
Hn613.4	Understand battery management system
Hn613.5	Explain about the battery-testing, disposal and recycling

Final Year B. Tech SEM-I

Course Name & Code-Power Quality & Facts (EL411)	
EL411.1	Student will be able to get the in-depth understanding of power quality issues & standards.
EL411.2	Students will be able to understand working of power quality improving Equipment's
EL411.3	Student will able to understand Shunt & Series compensator devices
EL411.4	Student will able to understand various method of improving real and reactive power



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Course Name & Code- Signals and System (EL412)	
EL412.1	Identify basic signals, mathematically and graphically represent, transform and classify CT andDT signals
EL412.2	Classify different systems and state their properties.
EL412.3	Analyze LTI systems in the time domain using convolution and investigate their properties using Impulse response.
EL412.4	Use Fourier and Z Transform for analyzing systems in frequency domain and use their properties.
EL412.5	Compute DFT and FFT of DT sequences.

Course Name & Code- Switchgear & Protection (EL413)	
EL413.1	Understand various types of protective devices in Electrical power system
EL413.2	Know operating principles & types of different relay zone used for protection..
EL413.3	Apply protection schemes to different equipment & over voltage protection in power systems
EL413.4	Understand all types of circuit breakers & choice of relay for appropriate Protection of power systems equipment.

Course Name & Code- Power System and Operation Control (EL414)	
EL414.1	Students can understand the optimum allocation to solve Economic dispatch Problems and Unit Commitment Problems in Power System.
EL414.2	Understand Operation and Control of Power Systems.
EL414.3	Explain the Modelling of Reactive Power-Voltage Interaction And The control actions.
EL414.4	Explain the Concept of Reactive Power Control and Voltage Stability.

Course Name & Code-Power System Planning (EL 415.1)	
EL 415.1.1	Explain the need of power system expansion
EL 415.1.2	Analyze the given power system for determining optimal values of decision variables
EL 415.1.3	Apply mathematical tools to solve multi-objective optimization problems in expansion planning and reliability studies
EL 415.1.4	Power System Planning and Reliability



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Course Name & Code- Project Phase-I (EL417)	
EL417.1	Define the project problem statement and identify the scope of the project.
EL417.2	Search the appropriate research papers, standards and e-resources and write a literature survey.
EL417.3	Identify tools, techniques, methods, concepts, measuring devices, and instruments required for the project to define the methodology of the project.
EL417.4	Justify the selection of electrical, electronic and mechanical components for the project prototyping

Course Name & Code- Testing and Certification of Electric and Hybrid Vehicles (Honors) [Hn714]	
Hn714.1	Explain electric vehicle certification procedure.
Hn714.2	Test the overall performance of electric vehicle.
Hn714.3	Inspect and test all components used in electric vehicle.

Final Year B. Tech SEM-II

Course Name & Code- Project Phase-II (EL423)	
EL423.1	Identify tools, techniques, methods, concepts, measuring devices, and instruments required for the project to define the methodology of the project
EL423.2	Justify the selection of electrical, electronic and mechanical components for the project prototyping
EL423.3	Select the appropriate testing method for system performance evaluation
EL423.4	Interpret results obtained by simulation, and hardware implementation and decide on further action or write a conclusion
EL423.5	Write a project report and research paper on the project work