



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

Accredited by NAAC as 'A++' • Approved by AICTE • ISO 21001:2013 Certified
 Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA,
 Phone No. +91 8645 - 350 200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
 Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002, Ph. +91 - 866 - 3500122, 2576129

Department of Electrical and Electronics Engineering Program: M. Tech - Power Electronics & Power Systems Academic Year: 2022-2023

Course Code	Course Title	CO NO	Description of the Course Outcome
22EE5111	ANALYSIS OF POWER CONVERTERS	CO1	Analyze the various high power controller converters and power factor correction.
		CO2	Analyze the performance of Switch-Mode PWM and different control techniques for Inverters
		CO3	Analyze the operation of multi-level to inverters and Z-source inverter.
		CO4	Understand the various applications of power converters with solar systems
		CO5	Demonstrate and test basic power electronic converters by hardware realization and MATLAB software.
22EE5112	ADVANCED POWER SYSTEM ANALYSIS AND PROTECTION	CO1	Apply mathematical methods for the solution of Power flow problem
		CO2	Analyze of power system with symmetrical and unsymmetrical faults
		CO3	Apply power system protection equipment
		CO4	Apply digital relaying algorithms for protection of power system equipment
22EE5113	MODELING AND ANALYSIS OF ELECTRICAL MACHINES	CO1	Apply the basic concepts of Electromagnetic Energy Conversion Principles to DC Machines
		CO2	Understand the performance of electrical machines through mathematical modelling
		CO3	Illustrate the dynamic behaviour of electrical machines under different operating conditions
		CO4	Analysis of special machines
22EE5104	EMBEDDED CONTROLLERS AND APPLICATIONS	CO1	Apply Programming of 8051 Microcontroller for general purpose applications
		CO2	Apply programming concepts of 8051 for interfacing peripherals
		CO3	Demonstrate Architecture and Programming of PIC Microcontroller
		CO4	Apply programming concepts of 8051 and PIC Microcontroller for interfacing peripherals
		CO5	Apply programming concepts of the 8051 and PIC microcontroller
22EE5211		CO1	Understand the modeling of AC machines

J. Soma
Dr. JARUPULA SOMLA
 Professor & HOD
 Department of EEE
 KLEF Deemed to be University
 Green Fields, Vaddeswaram,
 Guntur Dt., A.P.-522 502.



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s, 3 of the UGC Act, 1956)

Accredited by NAAC as 'A++' Approved by AICTE ISO 21001:2018 Certified
 Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
 Phone No. +91 8645 - 350 200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in
 Admin Off: 29-36-38, Museum Road, Governorpet, Vijayawada - 520 002, Ph: +91 - 866 - 3500122, 2576129

	ADVANCED ELECTRICAL DRIVES	CO2	Contrast the speed control performance of 3-Phase induction and synchronous motor drive using vector control methods
		CO3	Analyze the dynamic behavior of SRM motor drives under various control methods
		CO4	Distinguish the performance of BLDC Motor drive using various control techniques
		CO5	Demonstrate and test electric converters by hardware realization and MATLAB software
22EE5212	POWER SYSTEM STABILITY & CONTROL	CO1	Analyze Synchronous Machine modeling
		CO2	Analyzing power system stability
		CO3	Analyze Small signal stability
		CO4	Analyze Excitation control and Voltage Stability
22EE5213	GRID INTEGRATION OF RENEWABLE ENERGY SYSTEMS	CO1	Understand renewable energy Systems
		CO2	Apply grid integrated techniques for solar PV System.
		CO3	Apply grid integrated techniques for wind energy System.
		CO4	Understand grid operation and control methods and standards.
22EE5204	AI AND IOT FOR MODERN ELECTRICAL SYSTEMS	CO1	Demonstrate IoT devices and tools
		CO2	Operate the cloud system Environment
		CO3	Utilize AI and ML Techniques
		CO4	Utilize AI techniques for electrical systems
22EE51A1	RELIABILITY ENGINEERING	CO1	Understand the system reliability concepts
		CO2	Apply the frequency and duration techniques for component repairable system.
		CO3	Apply the network reliability concepts to generation system reliability analysis.
		CO4	Apply the network reliability concepts to transmission and distribution system reliability analysis.
22EE51A2	APPLICATION OF PYTHON PROGRAMMING IN ELECTRICAL SYSTEMS	CO1	Understand Conditionals, Iterables, Regex, Files, Error Handling, Data Structures, Algorithm design and Object-Oriented Python
		CO2	Apply object-oriented programming, Python Standard Library, SciPy's optimization and Signal Processing and Linear algebra
		CO3	Understand Data Analysis using Pandas. Apply supervised Learning and Unsupervised Learning techniques using Scikit-Learn
		CO4	Analyse real world electrical engineering problems using pandapower and PyPSA for power system modeling, analysis and optimization.
		CO5	Analyze the applications of Python programming for electrical engineering applications
22EE51A3:		CO1	Understand data acquisition components of power system

J. Somaiah
 Dr. JARUPULA SOMLAL
 Professor & HOD
 Department of EEE
 KLEF Deemed to be University
 Green Fields, Vaddeswaram,
 Guntur Dt., A.P.-522 502.



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

Accredited by NAAC as 'A++' Approved by AICTE ISO 21001:2018 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.
Phone No. +91 8645 - 350 200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in

Admin Off: 29-38-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2576129

	ENERGY MANAGEMENT SYSTEMS	CO2	Understand energy data monitoring, reporting and communication
		CO3	Apply supervisory control for energy management
		CO4	Understand Energy management center functions
22EE51B1:	OPTIMIZATION TECHNIQUES	CO1	Understand classical optimization techniques, describe clearly the problems with and without constraints, identify its parts and analyze the individual functions, Feasibility study for solving an optimization problem.
		CO2	Apply mathematical translation of the verbal formulation of an optimization problem and design algorithms of linear programming problems, the repetitive use of which will lead reliably to finding an approximate solution.
		CO3	Analyze and measure the performance of an algorithm of different methods to solve non-linear programming problems, study and solve optimization problems.
		CO4	Analyze optimization techniques using algorithms. Investigate study, develop, organize and promote innovative solutions for various applications.
22EE51B2	ADVANCED CONTROL THEORY	CO1	Apply the mathematical representation to dynamic systems
		CO2	Apply the techniques to design the controllers
		CO3	Apply the techniques to identify non linear system stability
		CO4	Apply the algorithms for stability analysis
22EE51D3	DEREGULATED POWER SYSTEMS	CO1	Understand the market operations in the electricity market under deregulated environment, Open Access Same-time Information System (OASIS) and Available Transfer Capability (ATC).
		CO2	Analyze the concepts of Electricity Pricing.
		CO3	Analyze the Power System Operation in Competitive Environment and Market Power.
		CO4	Analyze the concepts of Transmission Pricing and Congestion pricing.
22EE52A1	DIGITAL SIMULATION OF POWER ELECTRONIC SYSTEMS	CO1	Design of non-isolated and isolated DC-DC converters
		CO2	Understand the working of Resonant converters
		CO3	Modelling of non-isolated DC -DC converters
		CO4	Design of closed loop controls for switched mode power supplies
22EE52A2	SWITCHED MODE POWER SUPPLIES	CO1	Understand Pspice modelling of power semiconductor devices and passive components behaviour with protection circuits.
		CO2	Analyse performance of AC-DC controlled, uncontrolled converters and DC-DC converters using Pspice and MATLAB Simulink model.
		CO3	Evaluate DC-AC converters performance using modern simulation tools.

J. Somla
Dr. JARUPULA SOMLA
Professor & HOD
Department of EEE
KLEF Deemed to be University
Green Fields, Vaddeswaram,
Guntur Dt., A.P.-522 502.



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

Accredited by NAAC as 'A++' Approved by AICTE ISO 21001:2018 Certified

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.

Phone No. +91 8645 - 350 200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in

Admin Off: 20-36-38, Mucoum Road, Govenorpat, Vijayuwada - 520 002, Ph: +91 - 866 - 3500122, 2576129

		CO4	Analyse AC voltage controller and cyclo-converter performance with programming and simulation tools.
22EE52C3	FACTS & POWER QUALITY	CO1	Understand the importance of FACTS devices and their applications to the Power Systems.
		CO2	Analyse the static shunt and series compensation and operation of devices under this category.
		CO3	Apply DSTATCOM for power quality restoration
		CO4	Apply combined compensation techniques for power quality restoration and fault ride through.
22EE52D1	SMART GRID TECHNOLOGIES	CO1	Understand the basic concepts of smart grid, terminology, challenges and initiatives.
		CO2	Identify various smart operations of power system structure, components, and monitoring techniques.
		CO3	Apply smart metering and advanced metering infrastructure with monitoring, protection and measuring units.
		CO4	Illustrate various communication protocols and cyber-security importance in smart grid.
22EE52D2	ENERGY CONSERVATION & AUDIT	CO1	Understand the concept of Energy Audit and Energy Management
		CO2	Analyze the various characteristics of energy efficient motors
		CO3	Analyze the different energy instruments and importance of power factor improvement
		CO4	Analyze the economic aspects of electrical energy
22EE52D3	SMART APPLIANCE AND SMART CITIES	CO1	Evaluate the characteristics of smart home appliances.
		CO2	Understand the essential elements of smart cities
		CO3	Analyze the Characteristics of a Smart City
		CO4	Apply the Designing, and Implementing a Smart City

J. Somaiah

Dr. JARUBILA SOMLAL
HOD-EEE
Professor
Department of EEE
KLEF Deemed to be University
Green Fields, Vaddeswaram,
Guntur Dt., A.P.-522 502.