Noorul Islam Centre for Higher Education

(Deemed to be University u/s 3 of the UGC Act 1956)

Kumaracoil, Thuckalay, Kanyakumari District - 629 180

Accredited by NAAC with 'A' Grade

EE22 BE ELECTRICAL AND ELECTRONICS ENGINEERING

Student Performance and Learning Outcomes

EE22 BE ELECTRICAL AND ELECTRONICS ENGINEERING

ProgrammeOutcome - PO	
PO-A	Graduates are capable to apply the knowledge of mathematics, science, engineering fundamentals to the real world applications.
PO-B	Graduates are able to identify, formulate and solve engineering problems.
PO-C	Graduates are able to design electrical and electronic circuits and conduct experiments with electrical systems, analyze and interpret data.
P0-D	Graduates are able to understand different kinds of complex problem solving methods through the imparted domain knowledge.
PO-E	Graduates arecapable to design an ICT based system for optimal analysis of systems.
PO-F	Graduates are able to apply contextual knowledge to assess social, health, safety and cultural issues and endure the consequent responsibilities relevant to professional engineering practice.
PO-G	Graduates are able to utilize core engineering knowledge in a global, economic, environmental, and societal context for sustainable development.
PO-H	A Graduate understands the responsibility of taking professional decisions based on the impact of socio-techno- economical issues
PO-I	Graduates develop their skill to function effectively as an individual or a team member or a leader to accomplish a common goal in a multi disciplinary team
PO-J	Graduates are able to communicate effectively
PO-K	Graduates are capable to apply engineering and management principles for the development of projects.
PO-L	Graduates develop their confidence for self education and ability for life-long learning.

PROGRAMME SPECIFIC OUTCOME

PSO-1	Apply the knowledge of mathematics , physics to solve complex network problems
PSO-2	Design and develop the projects related to power converters
PSO-3	Analyze suitable controllers for powersystem

Sl.No	Subject Code	Subject Name
SEMESTER II		
1.	BS2103	Environmental Science
2.	EE2201	Circuit Theory
3.	ME2201	Engineering Graphics
4.	MA2102	Engineering Mathematics - II
5.	EG2102	Technical English - II
6.	PH2201	Physics for Electronics Engineering
7.	ME2272	Manufacturing Processes Laboratory – I
8.	EE2271	Electrical Workshop
SEMESTER IV		
9.	EE2205	Analog Integrated Circuits
10.	MA2203	Numerical Methods
11.	EE2203	Electrical Machines – II
12.	EE2204	Transmission & Distribution of Cables
13.	ME2229	Mechanical Engineering-II
14.	EE2206	Electromagnetic Theory
15.	ME2299	Mechanical Engineering Laboratory-II
16.	EE2273	Electrical Machines Laboratory – II
17.	EC2277	Integrated Circuits Lab
SEMESTER VI		
18.	EE12A1	HVDC & FACTS
19.	EE12A2	High Voltage Engineering
20.	EE1212	Power System Analysis
21.	EE1218	Electrical Measurements & Instrumentation
22.	IT1212	Cyber Security
23.	EE1219	Solid State Drives & Control
24.	EE1279	Electrical Measurement & Instrumentation Laboratory
25.	EE1280	Power System Simulation Laboratory
SEMESTER VIII		
26.	EE1222	Electric Energy Generation, Utilization and Conservation
27.	EE12A9	Renewable Energy Sources
28.	EC12B6	Medical Electronics
29.	CS1214	Artificial Intelligence and Applications
30.	EE12P5	Project Work Phase – II

BS2103-Environmental Science	
CO1	Ability to learn about the nature of environment studies and natural resources.
CO2	Understand the concept of ecosystems and bio-diversity.
CO3	Realize the causes and Understand the concept and effects of environmental pollution.
CO4	Able to understand the interaction between social issues and the environment.
CO5	Reflects the effects of human population and environment.

EE2201-Circuit Theory	
CO1	Apply Kirchhoff's current and voltage law to solve electric circuits using mesh and nodal methods
CO2	Apply network theorems to solve complex circuit problems
CO3	Analyze 3 phase balanced and unbalanced load circuit using star and delta network
CO4	Evaluate the transient response of RLC circuit
CO5	Understand the series, parallel resonance circuit and frequency response of tuned circuit

ME2201-Engineering Graphics	
CO1	Familiarize with the fundamental standards applied in engineering graphics and perform free hand sketching of basic geometrical construction and multiple views of object.
CO2	Project orthographic projection of points, line and plane surfaces.
CO3	Understand and draw the projection of solids and its sections.
CO4	Visualize and project isometric views.
CO5	Understand and draw development t of different solids and project orthographic projection of various machine parts.

MA2102- Engineering Mathematics – II	
CO1	Understand the linear differential equations with constant and variable coefficients. To solve the Cauchy's and Legendre's linear equations and solve the differential equations by variation of parameters.
CO2	Know about a functions of a complex variable, analytic functions, Cauchy's Riemann equations. To prove the properties of analytic functions. To find analytic functions and bilinear transformations.
CO3	Study about Cauchy's integral formula and Cauchy's integral theorem and Laurent expressions. Know about singular point and Cauchy's Residue theorem. To evaluate the integrals by Contour integration.
CO4	Know about Gradient, Divergence, Curl, Directional derivative, Irrotational and solenoidal vector field. To verify the vector integration by Green's theorem, Gauss divergence theorem and Stoke's theorem.
CO5	Obtain the Laplace transform of elementary functions, Transform of derivatives and integrals and periodic functions. To find the inverse Laplace transform using convolution theorem and solve the differential equations.

EG2102-Technical English – II	
CO1	The Students will be able to improve their vocabulary and use articles and prepositions effectively in sentences.
CO2	The students will be able to understand grammatical items like phrases and verbs, derivatives, relative pronouns etc. and thereby enhance their linguistic competence.
CO3	The students will be able to acquire the essentials of writing skills relating to resume writing, E-mail writing and also the essential components of essay writing.
CO4	The students will be able to learn the basics of letter writing and the formalities involved in writing formal and business letters.
CO5	The students will be able to learn English Phonemes such as vowels, Diphthongs, consonants, Stress and Intonation.

PH2201-Physics for Electronics Engineering	
CO1	Apply the theoretical foundations of photonics to an advanced level.
CO2	Develop the knowledge and understanding of the key principles and applications.
CO3	Classify solids on the basis of band theory.
CO4	Describe the properties of different materials and their applications.
CO5	Understands the current technical literature which underpins the topic of study

ME2272-Manufacturing Processes Laboratory – I	
CO1	Understands the important of casting. Machining
CO2	Develop the knowledge about usage of machining and handling cost
CO3	Enable the students for manufacturing the components
CO4	Increase the imagination into reality as a product
CO5	Increase skill to prepare a project report

EE2271-Electrical Workshop	
CO1	Understand the simulated outputs of circuits
CO2	Apply the different kinds of theorems to solve complex circuit problems
CO3	Evaluate the circuit parameters
CO4	Analyze the operations of circuits with different wiring
CO5	Design and synthesis electrical wirings in various workplaces

EC2205-Analog Integrated Circuits	
CO1	Infer the DC and AC characteristics of OPAMP and its effect on output and their compensation techniques
CO2	Analyze and design of basic OPAMP circuits, particularly various linear and non-linear circuits
CO3	Learn about the various techniques used to develop AD and DA converters
CO4	Analysis of multipliers, PLL and their applications
CO5	Working of multivibrators using special function, 555 and their applications

MA2203-Numerical Methods	
CO1	Compute the solution of nonlinear equations using N.R method Fixed point iteration method. Solve a linear system of equation using direct iteration method.
CO2	Apply Interpolation for equal and unequal intervals using Newton's forward, backward divided difference and Lagrange's method.
CO3	Compute the derivatives of functions using numerical values for equal and unequal intervals. Evaluate numerical integration by using Trapezoidal Simpson's Gaussian Quadrature.
CO4	Solve the initial value problem of first order Ordinary Differential Equation by using single and multistep methods.
CO5	Find the finite difference solution of boundary value problem.

EE2203-Electrical Machines – II	
CO1	To offer comprehensive coverage of the construction, working and application of 3 phase Induction motor.
CO2	To understand the various types of starters and modern techniques of speed control of 3 phase Induction motor.
CO3	To impact knowledge about the various types of single phase Induction motor and special machines.
CO4	To enable the students to learn the synchronous generator in a professional manner.
CO5	To acquire knowledge aboiut the principle and application of synchronous motors professionally.

EE2204-Transmission & Distribution of Cables	
CO1	Articulate power system concepts required to engineering problems
CO2	Discuss various factors governing the performance of transmission line
CO3	Find calculation of resistance, inductance and capacitance of transmission lines
CO4	Discuss construction of underground cables
CO5	Electrical Technology La Ability to discuss functions of substations

ME2229-Mechanical Engineering-II	
CO1	To know about the basic concept and properties of fluids.
CO2	To understand the fluid kinematics and dynamics.
CO3	To understand the incompressible fluid flow.
CO4	To understand the basic of fluid mechanics and turbine.
CO5	To understand the performance of various type of pump.

EE2206-Electromagnetic Theory	
CO1	Gain knowledge about static electric fields.
CO2	Gain knowledge about static magnetic fields.
CO3	Gain knowledge about electric and magnetic fields in materials.
CO4	Gain knowledge about time varying fields.
CO5	Gain knowledge about electromagnetic waves.

ME2299-Mechanical Engineering Laboratory-II	
CO1	To analyzed the flow measurement of coefficient of discharge.
CO2	To analyzed the flow measurement of rate of flow.
CO3	To understand and analyzed the friction loss of flow
CO4	To understand and analyzed the performance of pumps.
CO5	To understand and analyzed the characteristics of turbines.

EE2273-Electrical Machines Laboratory – II	
CO1	Analyze the regulation of the alternator by different methodologies
CO2	Analyze performance the synchronous motor
CO3	Analyze performance of 3 Phase Induction Motor
CO4	analyze the performance of 1 Phase Induction motor
CO5	Analyze performance of 3 Alternator

EC2277-Integrated circuits Lab	
CO1	Understand the concepts of linear integrated circuits
CO2	Apply knowledge about the op-amps to design various analog circuits
CO3	Design oscillators using operational amplifiers
CO4	Design amplifiers using operational amplifiers
CO5	Design integrator using operational amplifiers

EE12A1-HVDC & FACTS	
CO1	Understand the importance of transmission power through HVDC
CO2	Analyze the HVDC converter operation
CO3	Identify the importance of filters for HVDC system
CO4	Extend the knowledge of active and reactive power and voltage control with FACTS devices
CO5	Analyze the use of control schemes of TCSC, TSSC in improving power quality.

EE12A2-High Voltage Engineering	
CO1	Acquire the knowledge of various reasons of over voltage in power systems and protection against them
CO2	Acquire the knowledge of the causes of breakdown in various states
CO3	To understand the generation of high voltages
CO4	Acquire the knowledge of measuring of high voltage and current
CO5	Acquire the knowledge of various testing methods of various apparatus in power systems

EE1212-Power System Analysis	
CO1	To understand the role of power system and the basic components of power system
CO2	To calculate the Ybus and Zbus Matrix
CO3	To study the various faults and its analysis
CO4	To apply the concepts of symmetrical components for unsymmetrical fault analysis
CO5	To apply different numerical methods for solving the swing equation.

EE1218-Electrical Measurements & Instrumentation	
CO1	Students will be able to understand the different methods for measurement of various electrical quantities.
CO2	Learn the different types of error in measurement and the method of compensation.
CO3	Understand the measurement of resistance, inductance ,capacitance and impedance by using different types of bridge circuits.

CO4	Recognize various recording , storage and display devices.
CO5	Familiarize various passive and active analog and digital transducers

IT1212- Cyber Security	
CO1	Remember and understand the principles of computer organization and communicate effectively to discuss about the OS and architectures.
CO2	Understand and identify the information security fundamentals and apply them in E-commerce.
CO3	Remember and understand the security threats and test the programming bugs in computing systems.
CO4	Understand the security principles and apply the skills and tools for the computing system.
CO5	Apply the cyber laws, ethics and cyber forensic tools in computing systems and social networks.

EE1219-Solid State Drives & Control	
CO1	Gain knowledge about electrical drives.
CO2	Gain knowledge about converter /chopper.
CO3	Gain knowledge about induction motor drives.
CO4	Gain knowledge about synchronous motor drives.
CO5	Gain knowledge about electrical drives.

EE1279-Electrical Measurement & Instrumentation Laboratory	
CO1	Capable to use CRO effectively.
CO2	Capable to measure unknown resistance, inductance and capacitance values.
CO3	Can calibrate different meters.
CO4	Capable of designing bridge circuits.
CO5	Gain knowledge about analysis of errors.

EE1280-Power System Simulation Laboratory	
CO1	To understand the computational methods in power system analysis
CO2	To compute the transmission line parameters using matlab.
CO3	To find the solution of load flow equation using different methods
CO4	To compute the Zbus and Ybus matrix using MATLAB.
CO5	To analyses of transient characteristics of single machine infinite bus system.

EE1222-Electric Energy Generation, Utilization and Conservation	
CO1	Gain knowledge about different methods of power generation
CO2	Gain knowledge about illuminating different places.
CO3	Gain knowledge about heating and welding
CO4	Gain knowledge about electrical energy conservation &Tariff calculation
CO5	Gain knowledge about traction

EE12A9-Renewable Energy Sources	
CO1	Create awareness about Renewable Energy
CO2	Enable student understand various Renewable Energy source
CO3	To impart the knowledge of storage technique
CO4	Equip student understanding various possible method about renewable energy project
CO5	Understanding the combined Renewable Energy sources.

EC12B6-Medical Electronics	
CO1	Learn about the biological parameters related to electronics and electrical parameters
CO2	Learn about the various measuring and recording systems.
CO3	Familiarize with the Bio Chemical and electrical parameter measurement
CO4	Gain the knowledge about various assist devices for health care
CO5	Gain knowledge about recent medical instrumentation devices

CS1214-Artificial Intelligence and Applications	
CO1	Analyze the concept of agent and evaluate the problem solving concepts
CO2	Identify and describe the search algorithms and apply the algorithms in gaming techniques
CO3	Recognize the knowledge representation concepts using first order logic and simulation methods
CO4	Synthesis natural networking concepts. Recognize learning algorithms and logic programming
CO5	Understand the application of artificial intelligence in augmented grammar, probabilistic language

EE12P5- PROJECT WORK –PHASE II	
CO1	Demonstrate a sound technical knowledge of their selected project topic.
CO2	Undertake problem identification, formulation and solution.
CO3	Design engineering solutions to complex problems utilising a systems approach.
CO4	Conduct an engineering project
CO5	Demonstrate the knowledge, skills and attitudes of a professional engineer.