



R.M.K. ENGINEERING COLLEGE

RSM Nagar, Kavaraipettai – 601 206



Department of Electrical and Electronics Engineering

List of courses offered during 2022-23 (Odd Semester)

Sl. No.	Semester	Theory/ Practical	Course Code / Course Name
1	3	Theory	20MA301 – Transforms and Partial Differential Equations
2	3	Theory	20EE301 - Digital Logic Circuits
3	3	Theory	20EE302 – Electromagnetic Theory
4	3	Theory	20EE303 – DC machines and Transformers
5	3	Theory	20EE304– Linear Integrated circuits
6	3	Theory	20CS305 – Data structures and Algorithms(Lab Integrated)
7	3	Practical	20EE311- Analog and Digital Electronics Laboratory
8	3	Practical	20EE312- DC Machines and Transformers Laboratory
9	3	Practical	20EE313-Mini Project
10	3	Practical	20CS313-Aptitude and coding skills -1
11	5	Theory	20EE501 – Power Electronics
12	5	Theory	20EE502-Embedded System Design and IoT
13	5	Theory	20EE503-Transmission & Distribution
14	5	Theory	20EE504-Object Oriented Programming using C++
15	5	Theory	20EE905-Operating Systems
16	5	Theory	20EC001- Sensors and Transducers
17	5	Practical	Object Oriented Programming using C++ Laboratory
18	5	Practical	Embedded Systems and IoT Laboratory
19	5	Practical	Advanced Aptitude and Coding Skills-I
20	5	Practical	Industrial Internship – I (2 to 4 weeks in IV Semester)
21	7	Theory	EE8701 – High voltage engineering
22	7	Theory	EE8702 – Power system operation and control
23	7	Theory	EE8703– Renewable Energy Systems
24	7	Theory	GE 8077- Total Quality management
25	7	Theory	OCS752 –Introduction to C programming
26	7	Theory	EI8075-Total Quality Management
27	7	Theory	MG8591-Principles of Management
28	7	Practical	EE8711 - Power System Simulation Lab
29	7	Practical	EE8712-Renewable Energy systems Lab

Course outcomes- 2022-2023 (odd semester)

Third Semester (Regulation 2020)

Semester: 03 Course Code: 20MA301 Course Name: Transforms And Partial Differential Equations	
C201.1	Employ the Fourier series concept in Engineering Problems
C201.2	Identify the solution of Fourier transform in continuous time signals.
C201.3	Elucidate the difference equation using Z-transform.
C201.4	Compute the solutions of the partial differential equation.
C201.5	Utilize the Fourier series for heat and wave equations.

Semester: 03 Course Code: 20EE301 Course Name: Digital Logic Circuits	
C202.1	Apply Boolean algebra and gate level minimization to design digital circuits.
C202.2	Design various combinational logic circuits
C202.3	Design and analyze the synchronous sequential logic circuits.
C202.4	Design and analyze the asynchronous sequential logic circuits and to get used to Verilog coding
C202.5	Apply ROM, PLA and PAL for developing combinational logic circuits.
C202.6	Compare the operation and characteristics of various digital logic families.

Semester: 03 Course Code: 20EE302 Course Name: Electro Magnetic Theory	
C203.1	Understand the basic mathematical concepts related to electromagnetic vector fields.
C203.2	Understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications
C203.3	Acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications
C203.4	Understand the different methods of emf generation and Maxwell's equations.
C203.5	Understand the basic concepts electromagnetic waves and characterizing parameters.
C203.6	Understand and compute electromagnetic fields and apply them for design and Analysis of electrical equipment and systems.

Semester: 03 Course Code: 20EE303 Course Name: DC Machines and Transformers	
C204.1	Apply the laws governing the electromechanical energy conversion for singly and multiple excited systems.
C204.2	Explain the construction and working principle of DC machines.
C204.3	Interpret various characteristics of DC machines.
C204.4	Compute various performance parameters of the machine, by conducting suitable tests.
C204.5	Draw the equivalent circuit of transformer and predetermine the efficiency and regulation.
C204.6	Describe the working principle of auto transformer, three phase transformer with different types of connections.

Semester: 03 Course Code: 20CS 305 Course Name: Data Structures and Algorithms	
C205.1	Explain abstract data types for linear data structures.
C205.2	Apply the appropriate linear data structures to solve problems
C205.3	Identify and use appropriate tree and graph data structures in problem solving.
C205.4	Critically analyze the various sorting and searching algorithms.
C205.5	Solve and analyse problems using various algorithm design techniques

Semester: 03 Course Code: 20EE304 Course Name: LINEAR INTEGRATED CIRCUITS	
C206.1	Demonstrate the fabrication of IC's
C206.2	Analyze the performance characteristics of Op-Amp.
C206.3	Design Op-Amp based circuits for engineering applications
C206.4	Classify and comprehend the working principle of data converters.
C206.5	Illustrate the function of application specific IC's such as VCO, PLL and its applications.
C206.6	Classify the different voltage regulators using Op-Amp.

Laboratory

Semester: 03 Course Code: 20EE311 Course Name: Analog and Digital Electronics Laboratory	
C207.1	Interpret and understand the characteristics of semiconductor devices
C207.2	Demonstrate different configurations of transistors
C207.3	Employ voltage-controlled transistor for generating saw tooth waveform
C207.4	Design and implement combinational logic circuits and sequential logic circuits
C207.5	Demonstrate the experimental implementation of differential amplifiers and test operational amplifier based linear and nonlinear systems

C207.6	Compare the working of multi vibrators using op-amp, IC 555 timer and analyze working of voltage regulator and PLL using LM317 and NE/ SE 566 IC
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Semester: 03

Course code :20 EE 312

Course Name: DC machines and Transformers Laboratory

C208.1	Construct the circuit with appropriate connections for the given DC machine/transformer
C208.2	Experimentally determine the characteristics of different types of DC machines
C208.3	Demonstrate the speed control techniques for a DC motor for industrial applications.
C208.4	Identify suitable methods for testing of transformer and DC machines.
C208.5	Predetermine the performance parameters of transformers and DC motor
C208.6	Understand DC motor starters and 3-phase transformer connection

Semester: 03

Course code :20 EE 313

Course Name: Mini Project

C209.1	Interpret literature with the purpose of formulating a project proposal
C209.2	Solve the identified problem with the modern technology and innovative thinking,giving priority to real life problem.
C209.3	Identify the key stages in development of the project
C209.4	Propose to work as a team and to focus on getting a working project donewithin a stipulated period of time
C209.5	Develop a prototype or a working model.
C209.6	Discuss and report effectively project related activities and findings

Semester: 03

Course code : 20CS313

Course Name: Aptitude and Coding Skills -1

C210.1	Develop vocabulary for effective communication and reading skills.al
C210.2	Build the logical reasoning and quantitative skills.
C210.3	Develop error correction and debugging skills in programming.

Fifth Semester(Regulation 2020)

Course code :20EE501

Course Name: Power Electronics

CO	Course outcome(CO) – Statements
C301.1	Summarize the fundamental concepts of power switching devices.
C301.2	Analyse single phase power converter circuits and their application.
C301.3	Analyse three phase power converter circuits and their application.
C301.4	Analyse switching regulator circuits and their application.
C301.5	Analyse various harmonic reduction techniques
C301.5	Develop skills to simulate converter circuits using simulation software.

Course code :20EE502	
Course Name: Embedded Systems Design and IoT	
CO	Course outcome(CO) – Statements
C302.1	Summarize the fundamental concepts of power switching devices.
C302.2	Analyse single phase power converter circuits and their application.
C302.3	Analyse three phase power converter circuits and their application.
C302.4	Analyse switching regulator circuits and their application.
C302.5	Analyse various harmonic reduction techniques
C302.6	Develop skills to simulate converter circuits using simulation software.

Course code :20EE503	
Course Name: Transmission and Distribution	
CO	Course outcome(CO) – Statements
C303.1	Understand the structure of power system and various distribution systems
C303.2	Discuss the Modelling of the transmission line parameters
C303.3	Analyse the equivalent circuits for the transmission lines based on distance
C303.4	Explain the different types, characteristics of cables and design the performance parameters of different line insulators
C303.5	Interpret the significance of sag on overall design overhead lines
C303.6	Explain the type of substation, grounding systems along with the load variation.

Course code : 20EE504	
Course Name: Object Oriented Programming using C++ concepts	
CO	Course outcome(CO) – Statements
C304.1	Explain the fundamentals of C++
C304.2	Be familiar with the concepts of Polymorphism, Data encapsulation and abstraction
C304.3	Develop some programs using the principle of Inheritance and interfaces
C304.4	Develop Programs using exception handling, sort and trees
C304.5	Be familiar with the basics of Operating Systems

Course code: 20EE905	
Course Name: Operating Systems	
CO	Course outcome(CO) – Statements
C305.1	Analyze thread mechanisms
C305.2	Analyze various CPU scheduling algorithms
C305.3	Implement the concepts of process synchronization and deadlocks
C305.4	Design various memory management schemes for a given application
C305.5	Implement various I/O and file management techniques

Course code: 20EC001	
Course Name: Sensors and Transducers	
CO	Course outcome(CO) – Statements
C306.1	Analyze the problems related to sensors & transducers.
C306.2	Expertise in various calibration techniques and signal types for sensors.
C306.3	Study the basic characteristics of transducers and sensors.
C306.4	Understand the properties and working of various transducers.
C306.5	Select the right sensor/transducer for a given applications
C306.6	Describe various signal conditioning and DAQ systems.

Course code: 20EE511	
Course Name: Object Oriented Programming using C++ Laboratory	
CO	Course outcome(CO) – Statements
C307.1	The principle of quick sort and merge sort for developing programs
C307.2	The principle of heap sort for developing programs
C307.3	The principle of tree for developing programs
C307.4	Develop an application using data encapsulation/exception handling
C307.5	Develop an application using polymorphism/inheritance

Course code: 20EE512	
Course Name: Embedded Systems and IoT Laboratory	
CO	Course outcome(CO) – Statements
C308.1	Understand and acquire knowledge on hardware and software components of Internet of Things.
C308.2	Demonstrate to interface I/O devices, sensors & communication modules.
C308.3	Analyze by connecting and exchanging data with other devices and systems over the Internet.
C308.4	Analyze to remotely monitor data and control devices.
C308.5	Analyze the issues involved in the design of IoT application in terms of performance, efficiency and response time.
C308.6	Develop real time IoT based projects.

Seventh Semester

Course code : EE8701	
Course Name: High voltage engineering	
CO	Course outcome(CO) - Statements
CO-1	Understand various types of over voltages experienced by the power system
CO-2	Understand and explain the breakdown mechanism of different types of dielectrics
CO-3	Explain the generation of High voltages and currents and apply the same for calculating the voltage to be generated for testing an apparatus of a particular rated voltage

CO-4	Understand various methods of HV measurements and identify the appropriate measuring system for various types of over voltages and currents
CO-5	Understand process of testing of various power system apparatus
CO-6	Understand the significance of insulation coordination and apply the same for fixing the BIL of an apparatus

Course code : EE8702	
Course Name: POWER SYSTEM OPERATION AND CONTROL	
CO	Course outcome(CO) - Statements
CO-1	Ability to understand the day-to-day operation of electric power system.
CO-2	Ability to analyze the control actions to be implemented on the system to meet the minute-to-minute variation of system demand.
CO-3	Ability to understand the significance of power system operation and control.
CO-4	Ability to acquire knowledge on real power-frequency interaction.
CO-5	Ability to understand the reactive power-voltage interaction.
CO-6	Ability to design SCADA and its application for real time operation.

Course code : EE8703	
Course Name: Renewable Energy Systems	
CO	Course outcome(CO) - Statements
CO-1	Understand the current energy scenario, environment aspect and renewable energy resources in India
CO-2	Understand the basic concept of wind energy conversion system and basics of grid Integration.
CO-3	Understand the solar energy conversion system and different types of solar plants.
CO-4	Experiment with standalone and grid connected PV system.
CO-5	Explain the basic of renewable sources like Hydro, biomass and Geothermal
CO-6	Explain the basic of different ocean energy system and Fuel cell.

Course code : OCS752	
Course Name: Introduction to C Programming	
CO	Course outcome(CO) - Statements
CO-1	Develop C Programs using basic programming constructs.
CO-2	Develop C programs using arrays
CO-3	Develop C programs using strings
CO-4	Develop applications in C using functions
CO-5	Develop applications in C using Structures.
Course code: TQM777	
Course Name: Total Quality Management	
CO	Course outcome(CO) - Statements
CO-1	Understand the quality philosophies and customer focused managerial system
CO-2	Summarize the quality management principles
CO-3	Apply six sigma concept in manufacturing and service sector
CO-4	Determine the tools and techniques for quality improvement.
CO-5	Analyze standards and auditing system on implementation of TQM.
CO-6	Analyze standards for the operation of EMS.

Course code : EI8075 -Fiber optics and laser instruments	
CO	Course outcome(CO) – Statements
CO-1	Classify the types of optical fibers and discuss the various losses and dispersion involved in optical fibers and discuss about various optical sources, optical detectors, optical connectors and splices.
CO-2	Illustrate the various applications of lasers in industries.
CO-3	Explain the characteristics and types of lasers.
CO-4	Develop a thorough knowledge about applications of lasers in industries and material processing.
CO-5	Explain the concept of holography using lasers.
CO-6	Interpret the applications of lasers in medical field
Course code : EE8712	
Course Name: Renewable Energy Systems Lab	
CO	Course outcome(CO) - Statements
CO-1	Ability to understand and analyze Renewable energy systems
CO-2	Ability to train the students in Renewable Energy Sources and technologies
CO-3	Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy
Course code : EE8711	
Course Name: Power System Simulation lab	
CO	Course outcome(CO) - Statements
CO-1	Model the Transmission line of power system
CO-2	Ability to simulate the various Renewable Energy sources
CO-3	Develop Bus Impedance and Admittance matrices for a network
CO-4	Ability to recognize current and possible future role of Renewable energy sources
CO-5	Analysis of Load flow by numerical methods
CO-6	Ability to understand basics of Intelligent controllers
CO-4	Determine the fault current for the N bus system
CO-5	Examine the stability level of Single and Multi machine system
CO-6	Analyze the load frequency dynamics of multi area system

