R.M.K. ENGINEERING COLLEGE

RSM Nagar, Kavaraipettai – 601 206

Department of Electrical and Electronics Engineering

List of courses offered during 2023-24 (Odd Semester)

Sl. No.	Semester	Theory/Practical	Course Code / Course Name
1	3	Theory	22GE201- Tamils and Technology
2	3	Theory	22MA303-Fourier Analysis and Partial Differential Equations
3	3	Theory & Lab Integrated	22EE301-Circuit Theory
4	3	Theory & Lab Integrated	22EE302-Electrical Machines -I
5	3	Theory & Lab Integrated	22EE303-Control System Engineering
6	3	Theory & Lab Integrated	22EE304-Digital Electronics
7	3	Theory & Lab Integrated	22EE305-Analog Electronics
8	5	Theory	20EE503-Transmission & Distribution
9	5	Theory & Lab Integrated	20EE505-Power Electronics
10	5	Theory & Lab Integrated	20EE506-Embedded Systems and IoT
11	5	Theory & Lab Integrated	20EE507-Object Oriented Programming using C++
12	5	Theory	20EE905-Operating Systems
13	5	Theory	20EC001-Sensors and Transducers
14	5	Practical	20CS512-Advanced Aptitude and Coding Skills I
15	5	Practical	20EE513-Internship/Seminar
16	5	Practical	Industrial Internship – I
17	7	Theory	20EE701- Power System Protection andControl
18	7	Theory	20EE702-Conventional and RenewableEnergy Systems
19	7	Theory	20EE927- Fiber Optics and LaserInstrumentation (PE-V)
20	7	Theory	20EE931- Power Systems Transients (PE-VI)
21	7	Theory	20EE702- Conventional & RenewableEnergy Systems (OE)
22	7	Theory	20ME926-Principles of Management (OE)
23	7	Practical	20EE711 - Power System SimulationLaboratory
24	7	Practical	20EE712-Renewable Energy systems Lab
25	7	Project	20EE713-Project Work -Phase I

Course outcomes- 2023-2024 (odd semester)

Semester: 03
Course Code: 22MA303
Course Name: FOURIER ANALYSIS AND PARTIAL DIFFERENTIAL EQUATIONS

C201.1	Find the Fourier series of periodic functions.
C201.2	Compute the Fourier transform of prescribed functions.
C201.3	Solve first order partial differential equations.
C201.4	Determine the solutions of higher order partial differential equations.
C201.5	Apply the concept of Fourier series to solve heat and wave equations.

Semester: 03
Course Code: 22EE301
Course Name: CIRCUIT THEORY

C202.1	Apply the knowledge of basic circuital laws and simplify the dc and ac networks using reduction techniques.
C202.2	Analyse and verify the various network theorems
C202.3	Analyse the series and parallel resonant circuits.
C202.4	Infer and evaluate transient response, steady state response of series,parallel and compound circuits.
C202.5	Infer and evaluate transient response, steady state response of series, parallel and compound circuits.
C202.6	Analyse the three phase power circuits with different types of load arrangements

Semester: 03
Course Code: 22EE302
Course Name: ELECTRICAL MACHINES - I

C203.1	Apply the laws governing the electromechanical energy conversion for singly and multiple excited systems.
C203.2	Explain the construction and working principle of DC machines.
C203.3	Interpret various characteristics of DC machines.
C203.4	Compute various performance parameters of the machine, by conducting suitable tests.
C203.5	Draw the equivalent circuit of transformer and predetermine the efficiency and regulation.
C203.6	Describe the working principle of auto transformer, three phase transformer with different types of Connections

Semester: 03
Course Code: 22EE303
Course Name: CONTROL SYSTEM ENGINEERING

C204.1	Develop mathematical model of linear mechanical and electrical systems.
C204.2	Summarize the time response analysis of first and second order systems.
C204.3	Determine the applications of P, PI, PID controllers.
C204.4	Analyze the frequency response of open and closed loop systems.

C204.5	Estimate the stability and suitable compensators for the given system.
C204.6	Examine the state variables, controllability and observability of linear and time invariant systems.

Semester: 03
Course Code: 22EE304
Course Name: DIGITAL ELECTRONICS

C205.1	Apply Boolean algebra and gate level minimization to design digital circuits.
C205.2	Design various combinational logic circuits.
C205.3	Design and analyze the synchronous sequential logic circuits.
C205.4	Write and execute Verilog codes for combinational and sequential logic circuits.
C205.5	Apply ROM, PLA and PAL for developing combinational logic circuits.
C205.6	Compare the operation and characteristics of various digital logic families.

Semester: 03
Course Code: 22EE305
Course Name: ANALOG ELECTRONICS

C206.1	Ability to understand the structure and underlying semiconductor physics concepts.
C206.2	Ability to design circuits employing electronic devices.
C206.3	Analyze, comprehend and design of Analog electronic circuits involving OP-AMP
C206.4	Analyze, comprehend and design of Analog electronic circuits involving timer 555
C206.5	Analyze, comprehend and design of Analog electronic circuits involvingADC and DAC other specializes

Semester: 03
Course Code: 22ME311
Course Name: PRODUCT DEVELOPMENT LAB – 3

C207.1	Enhance their skills in design concepts, rules and procedures.
C207.2	Develop their cognitive strategy to think, organize, learn and behave.
C207.3	Demonstrate the ability to provide conceptual design strategies for a product.
C207.4	Describe the procedure for designing a Mock-up model.
C207.5	Recognize and apply appropriate interdisciplinary and integrative strategies for solving complex problems

Semester: 03
Course Code: 22CS311
Course Name: APTITUDE AND CODING SKILLS – I

C208.1	Develop vocabulary for effective communication and reading skills.
C208.2	Build the logical reasoning and quantitative skills.
C208.3	Develop error correction and debugging skills in programming.

Semester: 03
Course Code: 22EE311
Course Name: SEMINAR

C209.1	Experience the industrial environment, recognize the requirement of the industry and cope up with the industrial circumstances
C209.2	Recognize career paths taking into account their individual abilities and prepare a report about the work experience in the industry.
C209.3	Communicate effectively about the training through technical presentation.
C209.4	Develop their employability and start-up skills and to enhance the ability to

	engage in, life-long learning.
C209.5	Develop individual confidence to handle various engineering assignments and ability to think strategically, and to lead, motivate and work with teams

Semester: 05 Course Code: 20EE503 Course Name: TRANSMISSION AND DISTRIBUTION	
C301.1	Understand the structure of power system and various distribution systems
C301.2	Discuss the Modelling of the transmission line parameters
C301.3	Analyse the equivalent circuits for the transmission lines based on distance
C301.4	Explain the different types, characteristics of cables and design the performance parameters of different line insulators
C301.5	Interpret the significance of sag on overall design overhead lines
C301.6	Explain the type of substation, grounding systems along with the load variation.

Semester: 05 Course Code: 20EE505 Course Name: POWER ELECTRONICS	
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.

Semester: 05 Course Code: 20EE506 Course Name: EMBEDDED SYSTEMS AND IOT	
C303.1	Understand hardware and software requirements in embedded systems.
C303.2	Develop data management through cloud interface with processor technology
C303.3	Learn the development smart system solutions and analyse issues.
C303.4	Understand the types of sensors and bus for control implementation.
C303.5	Design portable IoT using Raspberry Pi / open platform
C303.6	Analyze applications of IoT in real time scenario

Semester: 05 Course Code: 20EE507 Course Name: OBJECT ORIENTED PROGRAMMING USING C++	
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

Semester: 05 Course Code: 20EE905 Course Name: OPERATING SYSTEMS	
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
Semester: 05 **Course Code:20EC001** **Course Name: SENSORS AND TRANSDUCERS**	
C303.1	Analyze the problems related to sensors & transducers.
C303.2	Expertise in various calibration techniques and signal types for sensors.
C303.3	Study the basic characteristics of transducers and sensors.
C303.4	Understand the properties and working of various transducers.
C303.5	Select the right sensor/transducer for a given applications
C303.6	Describe various signal conditioning and DAQ systems.
Semester: 05 **Course Code: 20CS512** **Course Name: ADVANCED APTITUDE AND CODING SKILLS - I**	
C303.1	Develop vocabulary for effective communication and reading skills.
C303.2	Build the logical reasoning and quantitative skills.
C303.3	Develop error correction and debugging skills in programming.
Semester: 07 **Course Code: 20EE701** **Course Name: POWER SYSTEM PROTECTION AND CONTROL**	
C401.1	Ability to analyze the characteristics and functions of relays and protection schemes.
C401.2	Study about the apparatus protection, static and numerical relays.
C401.3	Acquire knowledge on functioning of circuit breaker
C401.4	Understand the significance of power system operation and control.
C401.5	Acquire knowledge on real power-frequency interaction.
C401.6	Understand the reactive power-voltage interaction.
Semester: 07 **Course Code: 20EE702** **Course Name: CONVENTIONAL AND RENEWABLE ENERGY SYSTEMS**	
C402.1	Create awareness about conventional and renewable energy sources and technologies.
C402.2	Get adequate inputs on a variety of issues in harnessing renewable energy.
C402.3	Recognize current and possible future role of renewable energy sources.
C402.4	Explain the various renewable energy resources and technologies and their applications.
C402.5	Understand basics about biomass energy.
C402.6	Acquire knowledge about solar energy.
Semester: 07 **Course Code: 20EE927** **Course Name: FIBER OPTICS AND LASER INSTRUMENTATION**	
C403.1	Understand the principle, transmission, dispersion and attenuation characteristics of optical fibers
C403.2	Apply the gained knowledge on optical fibers for its use as communication medium and as sensor as well which have important applications in production, manufacturing industrial and biomedicalapplications.
C403.3	Understand laser theory and laser generation system.

C403.4	Students will gain ability to apply laser theory for the selection of lasers for a specific Industrial andmedical application.
Semester: 07 **Course Code: 20EE931** **Course Name: POWER SYSTEMS TRANSIENTS**	
C404.1	Ability to understand and analyze switching and lightning transients.
C404.2	Ability to acquire knowledge on generation of switching transients and their control.
C404.3	Ability to analyze the mechanism of lighting strokes.
C404.4	Ability to understand the importance of propagation, reflection and refraction of travellingwaves.
C404.5	Ability to find the voltage transients caused by faults.
C404.6	Ability to understand the concept of circuit breaker action, load rejection on integrated powersystem.
Semester: 07 **Course Code: 20EE924** **Course Name: SYSTEM PROGRAMMING**	
C405.1	Write System programs in Linux environment.
C405.2	Design and implement simple system projects.
C405.3	Perform advanced C programming using linked list, Function pointers, arrays, sorting.
C405.4	Demonstrate various debugging techniques
C405.5	Design simple Embedded system projects.
Semester: 07 **Course Code: 20ME926** **Course Name: PRINCIPLES OF MANAGEMENT**	
C406.1	Understand the management thoughts and various challenges of managerial activities in a global business environment.
C406.2	Demonstrate the various strategies in Decision making at various levels management in the Organizations.
C406.3	Discuss the various types of Organization structure.
C406.4	Describe the steps in Staffing process and stages in Career development.
C406.5	Explain the elements in Direction.
C406.6	Summarize the various Controlling techniques to maintain standards in Organizations.
Semester: 07 **Course Code: 20EE711** **Course Name: POWER SYSTEM SIMULATION LABORATORY**	
C407.1	Understand power system planning and operational studies.
C407.2	Acquire knowledge on Formation of Bus Admittance and Impedance Matrices and Solution of Networks.
C407.3	Analyze the power flow using GS and NR method
C407.4	Find Symmetric and Unsymmetrical fault
C407.5	Understand the economic dispatch.
C407.6	Analyze the electromagnetic transients.
Semester: 07 **Course Code: 20EE712**	

Course Name: RENEWABLE ENERGY SYSTEMS LABORATORY	
C408.1	Ability to understand and analyze Renewable energy systems.
C408.2	Ability to train the students in Renewable Energy Sources and technologies.
C408.3	Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy.
C408.4	Ability to simulate the various Renewable energy sources.
C408.5	Ability to recognize current and possible future role of Renewable energy sources.
C408.6	Ability to understand basics of Intelligent Controllers.

.

Course Name: RENEWABLE ENERGY SYSTEMS LABORATORY	
C408.1	Ability to understand and analyze Renewable energy systems.
C408.2	Ability to train the students in Renewable Energy Sources and technologies.
C408.3	Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy.