



# R.M.K. ENGINEERING COLLEGE

**(An Autonomous Institution)**

(Affiliated to Anna University, Chennai / Approved by AICTE, New Delhi  
Accredited by NAAC with A+ Grade / ISO 9001:2015 Certified Institution  
All the Eligible UG Programs are Accredited by NBA, New Delhi.)  
RSM Nagar, Kavaraipettai – 601 206.



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### ACADEMIC YEAR 2024-25

S.No	SEMESTER	COURSE CODE	COURSE NAME
1	3	22EE301	Circuit Theory
2	3	22EE302	Electrical Machines -I
3	3	22EE303	Control System Engineering
4	3	22EE304	Digital Electronics
5	3	22EE305	Analog Electronics
6	3	22EE311	Seminar
7	3	22EE501	Microcontroller and ARM Processor
8	5	22EE502	Conventional and Renewable Energy Systems
9	5	22EE503	Power System Analysis
10	5	22EE504	Embedded Systems and IoT
11	5	22EE511	Internship
12	5	20EE701	Power System Protection and Control
13	7	20EE924	System Programming
14	7	20EE938	Power Electronics for Renewable Energy Sources



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COURSE CODE	COURSE NAME	COURSE OUTCOMES
22EE301	Circuit Theory	<p>CO1: Apply the knowledge of various mathematical concepts, basic circuit laws and to simplify the dc and ac networks using reduction techniques.</p> <p>CO2: Analyse and verify the various network theorems using simulation.</p> <p>CO3: Design and simulate resonance and coupled circuits.</p> <p>CO4: Comprehend the mathematical expression for voltages and currents in RL, RC and RLC circuits to find the transient response of inductor and capacitor in dc circuits.</p> <p>CO5: Analyse the three phase power circuits with different types of load arrangements.</p>
22EE302	Electrical Machines-I	<p>CO1: Apply the laws governing the electromechanical energy conversion for Calculating Power and Energy.</p> <p>CO2: Understand the construction and working principle of DC machines.</p> <p>CO3: Interpret various characteristics of DC machines and Identify appropriate Machines for a given Application.</p> <p>CO4: Compute various performance parameters and analyse the suitability of a machine for a given Application.</p> <p>CO5: Predetermine the performance parameters of a Transformer from the equivalent circuit.</p> <p>CO6: Will be able to understand different types of connection for a 3 phase Transformer along with their significance.</p>
22EE303	Control System Engineering	<p>CO1: Develop mathematical model of various systems &amp; analyse their applications.</p> <p>CO2: Analyse the performance of various systems using time domain analysis.</p> <p>CO3: Design an appropriate controller for a given system &amp; analyse its performance.</p> <p>CO4: Design an appropriate compensator for improving the stability of the given system &amp; analyse its performance.</p> <p>CO5: Analyse the stability of system using state space variable approach.</p>



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		CO6: Analyse the performance of a given plant & suggest an suitable technique to improve its performance.
22EE304	Digital Electronics	CO1: Apply Boolean algebra and gate level minimization to design digital circuits. CO2: Design basic combinational logic circuits. CO3: Design and analyze the synchronous sequential logic circuits. CO4: Write and execute Verilog codes for combinational and sequential logic circuits. CO5: Apply ROM, PLA and PAL for developing combinational logic circuits. CO6: Compare the operation and characteristics of various digital logic families.
22EE305	Analog Electronics	CO1: Illustrate working principle of different semiconductor device, their performance parameters and their application in real life. CO2: Analyse and design various amplifier circuits using transistor. CO3: Design and develop diverse applications using OP-AMP. CO4: Design and Implement different signal conditioning circuits using OP-AMP. CO5: Develop multivibrators using timer IC for different applications.
22EE311	Seminar	CO1: Experience the industrial environment, recognize the requirement of the industry and cope up with the industrial circumstances. CO2: Recognize career paths taking into account their individual abilities and prepare a report about the work experience in the industry. CO3: Communicate effectively about the training through technical presentation. CO4: Develop their employability and start-up skills and to enhance the ability to engage in, life-long learning. CO5: Develop individual confidence to handle various engineering assignments and ability to think strategically, and to lead, motivate and work with teams.
22EE501	Microcontroller and ARM Processor	CO1: Apply the basic concepts of and utilizing IDEs tailored for microcontrollers and microprocessors. CO2: Illustrate/ Acquire skills in the interfacing of different peripherals with Microprocessor.



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		<p>CO3: Understand the features, architecture, and integration of external devices of ARM based embedded system.</p> <p>CO3 Analyse the instruction set and development tools of ARM for a computer based system/Develop the software applications for ARM based embedded systems.</p> <p>CO5: Describe the architecture of ARM Cortex and OMAP.</p>
22EE502	Conventional and Renewable Energy Systems	<p>CO1: Have a solid understanding of conventional and renewable energy sources and technologies.</p> <p>CO2: Deal with various issues associated with wind energy generation and operation.</p> <p>CO3: Handle various issues related to performance improvement of solar energy harnessing.</p> <p>CO4: Develop good understanding of biomass and geothermal energy principles and operation.</p> <p>CO5: Propose an appropriate renewable energy system for a given application.</p>
22EE503	Power System Analysis	<p>CO1: Model the power system under steady state operating conditions.</p> <p>CO2: Apply numerical methods to solve the power flow problem.</p> <p>CO3: Model and analyze the system under balanced fault condition.</p> <p>CO4: Model and analyze the system under unbalanced fault condition.</p> <p>CO5: Classify the power system stability and analyze the transient behaviour of power system.</p>
22EE504	Power System Analysis	<p>CO1: Understand hardware and software requirements in embedded systems.</p> <p>CO2: Develop embedded C programs for real time applications.</p> <p>CO3: Learn the development smart system solutions and analyze issues.</p> <p>CO4: Understand the types of communication model in IoT.</p> <p>CO5: Design portable IoT using Raspberry Pi / open platform.</p> <p>CO6: Analyze applications of IoT in real time scenario</p>
22EE511	Internship	<p>CO1: Experience the industrial environment, recognize the requirement of the industry and cope up with the industrial circumstances.</p> <p>CO2: Recognize career paths taking into account their individual abilities and prepare a report about the work experience in the industry.</p>



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		<p>CO3: Communicate effectively about the training through technical presentation.</p> <p>CO4: Develop their employability and start-up skills and to enhance the ability to engage in, life-long learning.</p> <p>CO5: Develop individual confidence to handle various engineering assignments and ability to think strategically, and to lead, motivate and work with teams.</p>
20EE701	Power System Protection and Control	<p>CO1: Ability to analyze the characteristics and functions of relays and protection schemes.</p> <p>CO2: Study about the apparatus protection, static and numerical relays.</p> <p>CO3: Acquire knowledge on functioning of circuit breaker.</p> <p>CO4: Understand the significance of power system operation and control.</p> <p>CO5: Acquire knowledge on real power-frequency interaction.</p> <p>CO6: Understand the reactive power-voltage interaction.</p>
20EE924	System Programming	<p>CO1: Write System programs in Linux environment.</p> <p>CO2: Design and implement simple system projects.</p> <p>CO3: Perform advanced C programming using linked list, Function pointers, arrays, sorting.</p> <p>CO4: Demonstrate various debugging techniques.</p> <p>CO5: Design simple Embedded system projects.</p>
20EE938	Power Electronics for Renewable Energy Sources	<p>CO1: Understand stand alone and grid connected renewable energy systems.</p> <p>CO2: Review machine theories used for renewable energy.</p> <p>CO3: Design different power converters for renewable energy systems</p> <p>CO4: Understand various operating modes of wind and solar energy systems.</p> <p>CO5: Analyse working of hybrid renewable energy systems.</p>