R.M.K. ENGINEERING COLLEGE

RSM Nagar, Kavaraipettai – 601 206

Department of Electronics and Instrumentation Engineering

Course Outcomes – ODD Semester 2022-23

S.No	Semester	Theory/Practical	Course Code / Course Name
1	3	Theory	20MA301-Transforms and Partial Differential Equations
2	3	Theory	20EI301-Instrument Transducers
3	3	Theory	20EI302-Electrical and Electronic Measurements
4	3	Theory	20EI303-Electrical Machines
5	3	Theory	20EC302-Electronic Circuits
6	3	Theory	20CS302-Object Oriented Programming
7	3	Practical	20EI311-Devices and Machines lab
8	3	Practical	20EI312-Mini project
9	3	Practical	20CS311-Object Oriented Programming Laboratory
10	3	Practical	20CS313-Aptitude & Coding Skills -I
11	5	Theory	20CS201-Data structures
12	5	Theory	20EC402-Microprocessors and Microcontrollers
13	5	Theory	20EE603-Digital Signal Processing
14	5	Theory	20EI501-Process Control
15	5	Theory	20EI902-Professional Elective I – Analytical instrumentation
16	5	Theory	20CE004-Open Elective-I – Air Pollution and Control Engineering
17	5	Practical	20EI511-Process Control Lab
18	5	Practical	20EC411-Microprocessors and Microcontrollers Lab
19	7	Theory	EI8751- Industrial Data Networks
20	7	Theory	EE8691- Embedded Systems
21	7	Theory	EC8093- Digital Image Processing
22	7	Theory	EI8075-Fibre Optics and Laser Instrumentation
23	7	Theory	GE8077-Total Quality Management
24	7	Theory	OCS752 -Introduction To C Programming
25	7	Practical	EI8761-Industrial Automation Laboratory
26	7	Practical	EI8762-Instrumentation System Design Laboratory

THIRD SEMESTER

20MA301- Transforms and Partial Differential Equations

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Employ the Fourier series concept in Engineering Problems
CO2	Identify the solution of Fourier transform in continuous time signals.
CO3	Elucidate the difference equation using Z-transform.
CO4	Compute the solutions of the partial differential equation.
CO5	Utilize the Fourier series for heat and wave equations.

20EI301-Instrument Transducers

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Understand the physical quantities for measurement
CO2	Compare the mathematical model of Zero, First and Second order transducer.
CO3	Explain the construction and operation of variable resistance transducer..
CO4	Describe the knowledge of inductance transducer.
CO5	Illustrate the knowledge of capacitance transducers.
CO6	Differentiate the construction and operation of other transducers and sensors.

20EI302 - Electrical and Electronic Measurement

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Compare various measuring instruments and extension of range of instruments.
CO2	Construct the wattmeter and energy meter to measure power and energy.
CO3	Design DC and AC bridges for the measurement of R, L, C and Frequency measurement.
CO4	Classify the kind of instrument suitable for typical electronic measurements.
CO5	Compare various signal generators and waveform analyzers.
CO6	Minimize the errors occurring in the instrument.

20EC302 - Electronic Circuits

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Analyze biasing of BJT and BJT amplifiers
CO2	Analyze biasing of MOSFET and MOSFET amplifiers.
CO3	Compute the frequency response of amplifiers.
CO4	Acquire the knowledge of feedback amplifiers.
CO5	Acquire the knowledge of oscillators.
CO6	Illustrate the operation of power amplifiers.

20CS302-Object Oriented Programming

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Develop Java programs using OOP principles
CO2	Develop Java programs using the concepts of inheritance and interfaces
CO3	Build Java applications using exceptions and I/O streams
CO4	Develop Java applications with threads and generics classes
CO5	Develop interactive Java programs using swings
CO6	Develop an application based upon the concepts of Java.

20EI303- Electrical Machines

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Identify the starting and control techniques of DC Machine.
CO2	Solve the performance calculation of Transformer
CO3	Compare the starting and control techniques of 3 phase induction motor
CO4	Explain the performance characteristic of Synchronous Machines
CO5	Interpret the performance characteristic of Special motors
CO6	Design Electrical Machines for Industrial Drive Applications

20CS311-- Object Oriented Programming Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.
CO2	Develop and implement Java programs with array list
CO3	Develop and implement Java programs with exception handling and multithreading.
CO4	Design applications using file processing and generic programming
CO5	Design applications using event handling.

20EI311-Devices and Machines lab

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Differentiate the usage of various electronic equipment and simulation tools for design and analysis of electronic circuits.
CO2	Demonstrate the hands-on experience in studying the characteristics of semiconductor devices.
CO3	Analyze various electronic circuits such as voltage regulators, transistor amplifiers and oscillators.
CO4	Interpret the various speed control techniques of DC machines.
CO5	Compute the equivalent circuit parameters of single-phase transformer under short circuit test and No-load test
CO6	Illustrate the characteristics of transformer and Induction motor under load test

FIFTH SEMESTER

20CS201-DATA STRUCTURES

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Implement abstract data types using arrays and linked list.
CO2	Apply the linear data structures stack and queue to various computing problems.
CO3	Make use of different types of trees, a non-linear data structure, for problem solving.
CO4	Implement the non linear data structure, graph, along with its various operations for computational applications.
CO5	Differentiate the various sorting and searching algorithms.
CO6	Explain the different types of hashing techniques.

20EI902- Analytical Instruments

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Understand the fundamental principles of selective analytical instruments used in medical diagnosis, quality assurance & control and research studies
CO2	Assess and suggest a suitable analytical method for a specific purpose, and evaluate sensitivity, important sources of interferences and errors, and also suggest alternative analytical methods for quality assurance.
CO3	Evaluate the strengths and limitations of the various instrumental methods.
CO4	Develop critical thinking for interpreting analytical data.
CO5	Understand the working principle, types and applications of NMR
CO6	Understand the working principle, types and applications of Mass spectroscopy

20EI501- Process Control

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Understand technical terms and nomenclature associated with Process control domain..
CO2	Build models using first principles approach as well as analyze models.
CO3	Design PID Controllers to achieve desired performance for various processes
CO4	Analyse Systems , design and implement control Schemes for various Processes
CO5	Identify, formulate and solve problems in the Process Control Domain.
CO6	Analyse various model based control schemes

20EC402- Microprocessors and Microcontrollers

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	To explain the Architecture of 8086 Microprocessor.
CO2	To summarize the design aspects of I/O and Memory Interfacing circuits.
CO3	To learn the design aspects of I/O and Memory Interfacing Circuits.
CO4	To interface microprocessors with supporting chips.
CO5	To explain the Architecture of 8051 microcontroller.
CO6	To demonstrate a microcontroller based system.

20EE603- Digital Signal Processing

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Categorize the different types of Signals and Systems.
CO2	Examine the LTI systems with different inputs using Z transform.
CO3	Compare Discrete Fourier transform & Fast Fourier transform.
CO4	Realize FIR filters using windowing techniques.
CO5	Design IIR Filters using different types of approximation.
CO6	Summarize the DSP processors and its architectures for different applications.

20CE004- Air Pollution and Control Engineering

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Summarize the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management.
CO2	Identify, formulate and solve air pollution problems.
CO3	Design stacks and particulate air pollution control devices to meet applicable standards.
CO4	Select control equipment for gaseous contaminants
CO5	Ensure air quality control and preventive measures for air pollution.
CO6	Apply all quality management measures in the real time applications.

20EI511-Process Control Lab

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Understand and analyze process control engineering problems.
CO2	Build dynamic models using input – output data of a process
CO3	Demonstrate real time control loops for flow and level process
CO4	Demonstrate real time control loops for temperature process
CO5	Demonstrate real time control loops pressure process
CO6	Simulate tools such as MATLAB/LABVIEW

20EC411- Microprocessors and Microcontrollers Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Write ALP Programs for Arithmetic and logical operations.
CO2	Analyze to interface different I/Os with processor.
CO3	Analyze waveforms using Microprocessors.
CO4	Write programs in 8051.
CO5	Demonstrate to interface different I/Os with Microcontroller.
CO6	Demonstrate to perform serial communications between two kits

SEVENTH SEMESTER

EI8751-Industrial Data Networks

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Explain the basic concepts of data networks and communication.
CO2	Explain and relate the functions of networking and internetworking devices and choose the appropriate one depending on application.
CO3	Compare the characteristics of various communication buses like Fieldbus, and Profibus and select the appropriate one depending on application.
CO4	Explain the various communication protocols available like HART, MODBUS in data communication and select the appropriate one depending on application.
CO5	Explain the various Industrial Ethernets.
CO6	Explain the basic concepts of wireless communication.

EE8691- Embedded Systems

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Discuss the essentials of function and Blocks of Embedded system
CO2	Explain the different communication network strategies of embedded systems
CO3	Demonstrate the different phases of embedded product development life cycle (EDLC)
CO4	Analyze the issues, modeling and computational models in Embedded design
CO5	Explain the basic concepts and compare the features of real time operating systems (RTOS)
CO6	Utilize the concepts of Embedded Systems in real time applications

EC8093- Digital Image Processing

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.
CO2	Operate on images using the techniques of smoothing, sharpening and enhancement.
CO3	Understand the restoration concepts and filtering techniques.
CO4	Learn the basics of segmentation features extraction.
CO5	Learn the basics of compression methods for color models.

CO6	Learn the recognition methods.

EI8075-Fibre Optics and Laser Instrumentation

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	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.
CO2	Illustrate the various applications of lasers in industries.
CO3	Explain the characteristics and types of lasers.
CO4	Develop a thorough knowledge about applications of lasers in industries and material processing.
CO5	Explain the concept of holography using lasers.
CO6	Interpret the applications of lasers in medical field.

GE8077-Total Quality Management

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Understand the quality philosophies and customer focused managerial system
CO2	Summarize the quality management principles
CO3	Apply six sigma concept in manufacturing and service sector
CO4	Determine the tools and techniques for quality improvement.
CO5	Analyze standards and auditing system on implementation of TQM.
CO6	Analyze standards for the operation of EMS.

OCS752 -INTRODUCTION TO C PROGRAMMING

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Develop algorithmic solutions to simple computational problems using basic constructs
CO2	Develop simple applications in C using Control Constructs
CO3	Design and implement applications using arrays
CO4	Represent data using string and string operations
CO5	Decompose a C program into functions and pointers

CO6	Represent and write program using structure and union

EI8761-Industrial Automation Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Understanding programming of PLC
CO2	Understanding programming of SCADA
CO3	Understanding programming of DCS
CO4	Working with Industrial automation system
CO5	Design and implement control schemes in PLC and DCS
CO6	Interface with PLC and DCS

EI8762-Instrumentation System Design Laboratory

COs	Course Outcome: The students, after the completion of the course, are expected to ….
CO1	Design of signal conditioning systems
CO2	Design of Instrumentation systems
CO3	Design controller
CO4	Design control valve and Transmitter
CO5	Design and draw piping diagram for Industrial application projects
CO6	Design of Multi-channel data acquisition and transmitter