



# R.M.K. ENGINEERING COLLEGE (An Autonomous Institution)



R.S.M Nagar, Kavaraipettai, Gummidipoondi Taluk, Thiruvallur Dt- 601206.

(Affiliated to Anna University, Chennai/Approved by AICTE, New Delhi / ISO 9001:2015 Certified Institution/  
Accredited by NAAC with A+ Grade/ All the eligible UG Programs are accredited by NBA, New Delhi)

## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

**B.E., - Civil Engineering – 2<sup>nd</sup> semester**

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20EL201 - Technical English
2.	2	Theory	20MA201 - Engineering Mathematics – II
3.	2	Theory	20PH201 - Physics for Civil Engineering
4.	2	Theory	20CH201 - Chemistry for Civil Engineering
5.	2	Theory	20ME205 - Core II - Engineering Mechanics
6.	2	Theory	20CE201 - Core III -Building Materials
7.	2	Practical	20PC111 - Physics and Chemistry Laboratory
8.	2	Practical	20CS212 - Advanced C Programming Laboratory
9.	2	Practical	20EL211 - Advanced Reading and Writing Lab

## Second Semester B.E., / CE

<b>20EL201 - Technical English</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course learners will be able to:</b>
<b>CO1</b>	Read technical texts and write area- specific texts effortlessly.
<b>CO2</b>	Listen and comprehend lectures and talks in their area of specialization successfully.
<b>CO3</b>	Speak appropriately and effectively in varied formal and informal contexts.
<b>CO4</b>	Write reports and winning job applications.

<b>20MA201-Engineering Mathematics - II</b>	
<b>COs</b>	<b>Course Outcome: After the successful completion of the course, the student will be able to</b>
<b>CO1</b>	Solve the higher order linear differential equations.
<b>CO2</b>	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
<b>CO3</b>	Apply Laplace Transforms method for solving linear ordinary differential equation.
<b>CO4</b>	Construct an analytic function and analyze conformal mapping.
<b>CO5</b>	Evaluate the real integrals using complex integration

<b>20PH201 - Physics for Civil Engineering</b>	
<b>COs</b>	<b>Course Outcome:</b> On completion of this course, the students will be able to gain basic knowledge and good understanding on the following topics.
<b>CO1</b>	To recognize and apply the basic knowledge of waves and oscillations.
<b>CO2</b>	To know the principle, construction and working of lasers and their applications in fibre optic communication
<b>CO3</b>	To comprehend the concepts of elastic properties of materials and properties of matter.
<b>CO4</b>	To apply the knowledge of thermal properties and its applications.
<b>CO5</b>	To classify sound and analyze the factors affecting the acoustics of buildings.
<b>CO6</b>	To understand the basic concepts of waves and oscillations, laser and fiber optics, elastic and thermal properties of materials and acoustics.

### 20CH201- Chemistry for Civil Engineering

COs	Course Outcome: Upon completion of the course, the students will be able to:
CO1	Classify the potential impact of impurities in water for industrial and domestic use.
CO2	Apply the basic knowledge on different polymeric materials, their general preparation methods and their applications in the construction industry
CO3	Compare and contrast different corrosion types and to discuss various corrosion control techniques.
CO4	Explain manufacturing of building materials like cement, lime and glass and their properties.
CO5	Describe the properties and uses of engineering materials such as refractories, adhesives and composites

### 20ME205 - Core II - Engineering Mechanics

COs	Course Outcome: On successful completion of this course, the student will be able to
CO1	Illustrate the vectorial and scalar representation of forces and moments
CO2	Analyze the rigid body in equilibrium
CO3	Evaluate the properties of surfaces and solids
CO4	Apply dynamic forces exerted in rigid body
CO5	Solve the friction and the effects by the laws of friction
CO6	Apply the effort of force and moment in the various design functions of rigid body

### 20CE201 - Core III -Building Materials

COs	Course Outcome: Students will be able to
CO1	Apply the knowledge for the selection of different materials used for masonry
CO2	Compare the properties of various binding materials and aggregates.
CO3	Understand the various applications of concrete, timber and steel.
CO4	Identify the various building finishes.
CO5	Understand the importance of thermal insulation in buildings.
CO6	Discover the applications of modern building materials.

## Laboratory

20PC111-Physics & Chemistry Laboratory	
<b>COs</b>	<b>Course Outcome: Upon completion of the course, based on hands-on experience of the students, they will be able to</b>
<b>CO1</b>	determine the wavelength of mercury spectrum and also determine the wavelength of a laser source, particle size, divergence angle of semiconductor laser source using diffraction grating and to analyze the numerical aperture and acceptance angle of an optical fibre.
<b>CO2</b>	examine the Young's modulus of a beam by uniform and non-uniform bending and to estimate the moment of inertia of the disc and rigidity modulus of wire by torsional pendulum.
<b>CO3</b>	determine the band gap of a semiconductor.
<b>CO4</b>	Analyse the given hard water sample, change in conductivity of an acid(s) when added with base .
<b>CO5</b>	Examine the change in pH when an acid is added with a base, Understand the redox reactions and its impact on emf values.
<b>CO6</b>	Assess the corrosion rate of a given metal, Construct an electrochemical cell to determine the concentration of the given solution.

20CS212 - Advanced C Programming Laboratory	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Apply array and string concepts to solve problems.
<b>CO2</b>	Employ pointers to solve various problems.
<b>CO3</b>	Implement dynamic memory allocation.
<b>CO4</b>	Understand file manipulations.
<b>CO5</b>	Design and develop real-world applications utilizing the concepts of arrays, strings, pointers, dynamic memory allocation and files.

20EL211 Advanced Reading and Writing Lab	
<b>COs</b>	<b>Course Outcome : At the end of the course learners will be able to</b>
<b>CO1</b>	Write different types of essays.
<b>CO2</b>	Write winning job applications.
<b>CO3</b>	Read and evaluate texts critically
<b>CO4</b>	Display critical thinking in various professional contexts.



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## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

**B.E., - Computer Science and Design – 2<sup>nd</sup> semester**

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20EL201 - Technical English
2.	2	Theory	20MA201 - Engineering Mathematics – II
3.	2	Theory	20CH102 - Environmental Science and Engineering
4.	2	Theory	20ME103 - Computer Aided Engineering Graphics
5.	2	Theory	20CS201 - Data Structures
6.	2	Theory	20CS202 - Python Programming (Lab Integrated)
7.	2	Practical	20EM111 - Engineering Practices Laboratory
8.	2	Practical	20CS211 - Data Structures Laboratory
9.	2	Practical	20EL211 - Advanced Reading and Writing Laboratory

## Second Semester B.E., / CSD

20EL201 - Technical English	
<b>COs</b>	<b>Course Outcome: At the end of the course learners will be able to:</b>
<b>CO1</b>	Read technical texts and write area- specific texts effortlessly.
<b>CO2</b>	Listen and comprehend lectures and talks in their area of specialization successfully.
<b>CO3</b>	Speak appropriately and effectively in varied formal and informal contexts.
<b>CO4</b>	Write reports and winning job applications.

20MA201-Engineering Mathematics - II	
<b>COs</b>	<b>Course Outcome: After the successful completion of the course, the student will be able to</b>
<b>CO1</b>	Solve the higher order linear differential equations.
<b>CO2</b>	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
<b>CO3</b>	Apply Laplace Transforms method for solving linear ordinary differential equation.
<b>CO4</b>	Construct ananalytic function and analyze conformal mapping.
<b>CO5</b>	Evaluate the real integrals using complex integration

20CH102 - Environmental Science and Engineering	
<b>COs</b>	<b>Course Outcome : Upon completion of the course, the students will be able to:</b>
<b>CO1</b>	Illustrate the importance and conservation of natural resources.
<b>CO2</b>	Assess the impact of various pollutants and suggest appropriate pollution control methods.
<b>CO3</b>	Explain the basic structure of ecosystem and the conservation of biodiversity.
<b>CO4</b>	Analyze the social issues related to environment and recommend suitable solutions.
<b>CO5</b>	Investigate the trends in population explosion and assess its impact.

### 20ME103 - Computer Aided Engineering Graphics

COs	Course Outcome : At the end of this course, the students will be able to:
CO1	Illustrate the fundamentals and standards of engineering drawing and apply the concepts of orthographic projections using CAD software.
CO2	Interpret and construct various plane curves.
CO3	Develop orthographic projections of points, lines and plane surfaces.
CO4	Make use of concepts in projection to draw projections of solids and interpret the concept in section of solids.
CO5	Interpret and visualize development of surfaces.
CO6	Interpret and visualize isometric projection of simple solids.

### 20CS201 - Data Structures

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement abstract data types for linear data structures.
CO2	Apply the appropriate linear data structures to solve problems.
CO3	Identify and use appropriate tree data structures in problem solving.
CO4	Choose appropriate Graph representations and solve real-world applications.
CO5	Critically analyze the various sorting and searching algorithms.

### 20CS202 - Python Programming (Lab Integrated)

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement simple Python programs.
CO2	Develop Python programs using functions.
CO3	Represent and solve compound data using Python lists, tuples, dictionaries.
CO4	Implement and perform operations on files, modules and packages.
CO5	Apply Exceptions, Standard Libraries and IDE for application development.

## Laboratory

20EM111 - Engineering Practices Laboratory	
<b>COs</b>	<b>Course Outcome : On successful completion of this course, the student will be able to</b>
<b>CO1</b>	Develop carpentry components and pipe connections including plumbing works.
<b>CO2</b>	Make use of welding equipments to join the structures
<b>CO3</b>	Analyse the basic machining operations
<b>CO4</b>	Develop the models using sheet metal works
<b>CO5</b>	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings
<b>CO6</b>	Fabricate carpentry components and pipe connections including plumbing works.
<b>CO7</b>	Carry out simple wiring as per the layout given
<b>CO8</b>	Measures various electrical parameters like Voltage, Current, Power factor, Energy, Earth resistance etc.
<b>CO9</b>	Calculate ripple factor of a given waveform, use logic gates for simple applications.

20CS211 - Data Structures Laboratory	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Write functions to implement linear and non-linear data structure operations.
<b>CO2</b>	Suggest and use appropriate linear / non-linear data structure operations for solving a given problem.
<b>CO3</b>	Implement different operations of search trees.
<b>CO4</b>	Implement appropriate Graph representations and traversals to solve real-world applications.
<b>CO5</b>	Implement and analyze the various searching and sorting algorithms. Write programs for simple applications making use of basic constructs, arrays and strings.

20EL211 - Advanced Reading and Writing Laboratory	
<b>COs</b>	<b>Course Outcome : At the end of the course learners will be able to</b>
<b>CO1</b>	Write different types of essays.
<b>CO2</b>	Write winning job applications.
<b>CO3</b>	Read and evaluate texts critically
<b>CO4</b>	Display critical thinking in various professional contexts.





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## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

**B.E., - Computer Science Engineering – 2<sup>nd</sup> semester**

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20EL201 - Technical English
2.	2	Theory	20MA201 - Engineering Mathematics – II
3.	2	Theory	20CH102 - Environmental Science and Engineering
4.	2	Theory	20ME103 - Computer Aided Engineering Graphics
5.	2	Theory	20CS201 - Data Structures
6.	2	Theory	20CS202 - Python Programming (Lab Integrated)
7.	2	Practical	20EM111 - Engineering Practices Laboratory
8.	2	Practical	20CS211 - Data Structures Laboratory
9.	2	Practical	20EL211 - Advanced Reading and Writing Laboratory

## Second Semester B.E., / CSE

20EL201 - Technical English	
<b>COs</b>	<b>Course Outcome: At the end of the course learners will be able to:</b>
<b>CO1</b>	Read technical texts and write area- specific texts effortlessly.
<b>CO2</b>	Listen and comprehend lectures and talks in their area of specialization successfully.
<b>CO3</b>	Speak appropriately and effectively in varied formal and informal contexts.
<b>CO4</b>	Write reports and winning job applications.

20MA201-Engineering Mathematics - II	
<b>COs</b>	<b>Course Outcome: After the successful completion of the course, the student will be able to</b>
<b>CO1</b>	Solve the higher order linear differential equations.
<b>CO2</b>	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
<b>CO3</b>	Apply Laplace Transforms method for solving linear ordinary differential equation.
<b>CO4</b>	Construct ananalytic function and analyze conformal mapping.
<b>CO5</b>	Evaluate the real integrals using complex integration

20CH102 - Environmental Science and Engineering	
<b>COs</b>	<b>Course Outcome : Upon completion of the course, the students will be able to:</b>
<b>CO1</b>	Illustrate the importance and conservation of natural resources.
<b>CO2</b>	Assess the impact of various pollutants and suggest appropriate pollution control methods.
<b>CO3</b>	Explain the basic structure of ecosystem and the conservation of biodiversity.
<b>CO4</b>	Analyze the social issues related to environment and recommend suitable solutions.
<b>CO5</b>	Investigate the trends in population explosion and assess its impact.

### 20ME103 - Computer Aided Engineering Graphics

COs	Course Outcome : At the end of this course, the students will be able to:
CO1	Illustrate the fundamentals and standards of engineering drawing and apply the concepts of orthographic projections using CAD software.
CO2	Interpret and construct various plane curves.
CO3	Develop orthographic projections of points, lines and plane surfaces.
CO4	Make use of concepts in projection to draw projections of solids and interpret the concept in section of solids.
CO5	Interpret and visualize development of surfaces.
CO6	Interpret and visualize isometric projection of simple solids.

### 20CS201 - Data Structures

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement abstract data types for linear data structures.
CO2	Apply the appropriate linear data structures to solve problems.
CO3	Identify and use appropriate tree data structures in problem solving.
CO4	Choose appropriate Graph representations and solve real-world applications.
CO5	Critically analyze the various sorting and searching algorithms.

### 20CS202 - Python Programming (Lab Integrated)

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement simple Python programs.
CO2	Develop Python programs using functions.
CO3	Represent and solve compound data using Python lists, tuples, dictionaries.
CO4	Implement and perform operations on files, modules and packages.
CO5	Apply Exceptions, Standard Libraries and IDE for application development.

## Laboratory

20EM111 - Engineering Practices Laboratory	
<b>COs</b>	<b>Course Outcome : On successful completion of this course, the student will be able to</b>
<b>CO1</b>	Develop carpentry components and pipe connections including plumbing works.
<b>CO2</b>	Make use of welding equipments to join the structures
<b>CO3</b>	Analyse the basic machining operations
<b>CO4</b>	Develop the models using sheet metal works
<b>CO5</b>	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings
<b>CO6</b>	Fabricate carpentry components and pipe connections including plumbing works.
<b>CO7</b>	Carry out simple wiring as per the layout given
<b>CO8</b>	Measures various electrical parameters like Voltage, Current, Power factor, Energy, Earth resistance etc.
<b>CO9</b>	Calculate ripple factor of a given waveform, use logic gates for simple applications.

20CS211 - Data Structures Laboratory	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Write functions to implement linear and non-linear data structure operations.
<b>CO2</b>	Suggest and use appropriate linear / non-linear data structure operations for solving a given problem.
<b>CO3</b>	Implement different operations of search trees.
<b>CO4</b>	Implement appropriate Graph representations and traversals to solve real-world applications.
<b>CO5</b>	Implement and analyze the various searching and sorting algorithms. Write programs for simple applications making use of basic constructs, arrays and strings.

20EL211 - Advanced Reading and Writing Laboratory	
<b>COs</b>	<b>Course Outcome : At the end of the course learners will be able to</b>
<b>CO1</b>	Write different types of essays.
<b>CO2</b>	Write winning job applications.
<b>CO3</b>	Read and evaluate texts critically
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## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

### **B.E., - Electrical and Electronics Engineering – 2<sup>nd</sup> semester**

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1	2	Theory	20EL201 - Technical English
2	2	Theory	20MA201 - Engineering Mathematics – II
3	2	Theory	20PH102 - Physics for Electronics Engineering
4	2	Theory	20CH101 - Engineering Chemistry
5	2	Theory	20EE201 - Core II- Electronic Devices and Circuits
6	2	Theory	20EE202 - Core III- Electric Circuit Analysis
7	2	Practical	20PC111 - Physics and Chemistry Laboratory
8	2	Practical	20CS212 - Advanced C Programming Laboratory
9.	2	Practical	20EM211 - Basic Engineering and Circuits Laboratory

## Second Semester B.E., / EEE

### 20EL201 - Technical English

COs	Course Outcome: At the end of the course learners will be able to:
CO1	Read technical texts and write area- specific texts effortlessly.
CO2	Listen and comprehend lectures and talks in their area of specialization successfully.
CO3	Speak appropriately and effectively in varied formal and informal contexts.
CO4	Write reports and winning job applications.

### 20MA201-Engineering Mathematics - II

COs	Course Outcome: After the successful completion of the course, the student will be able to
CO1	Solve the higher order linear differential equations.
CO2	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
CO3	Apply Laplace Transforms method for solving linear ordinary differential equation.
CO4	Construct an analytic function and analyze conformal mapping.
CO5	Evaluate the real integrals using complex integration

### 20PH102 - Physics for Electronics Engineering

COs	Course Outcome: On completion of this course, the students will be able to
CO1	estimate the conducting properties of materials based on CFE and QFE theories and understand the formation of energy band structures.
CO2	understand the basic properties of semiconducting materials and apply the concepts to determine Hall coefficient.
CO3	elucidate the principle and working of various opto and nanoelectronic devices and their applications.
CO4	attain basic knowledge on the concepts of lasers and apply in fibre optics communication.
CO5	correlate electric and magnetic field behavior of electro-magnetostatics and electrodynamics.
CO6	understand the concepts of conducting materials, semiconducting materials and apply the same to determine resistivity and bandgap, explicate the principle and working of opto and nanoelectronic devices and analyze Maxwell's equation in different forms (differential and integral) in Electro-Magnetostatics and Electrodynamics.

<b>20CH101 - Engineering Chemistry</b>	
<b>COs</b>	<b>Course Outcome: Upon completion of the course, the students will be able to:</b>
<b>CO1</b>	Illustrate the role of chemistry in everyday life and the industrial uses of water.
<b>CO2</b>	Construct electrochemical cells and to determine the cell potential.
<b>CO3</b>	Compare and analyse the different energy storage devices and to explain potential energy sources.
<b>CO4</b>	Classify different types of polymeric materials and to discuss their properties and applications.
<b>CO5</b>	Explain basic concepts of nanochemistry and to enumerate the applications of nanomaterials in engineering and technology.

<b>20EE201 - Core II- Electronic Devices and Circuits</b>	
<b>COs</b>	<b>Course Outcome: On successful completion of this course, the student will be able to</b>
<b>CO1</b>	Explain the characteristics and applications of electronic devices such as diode, special diodes, BJTs and MOSFETs
<b>CO2</b>	Explain the characteristics and applications of BJTs and MOSFETs
<b>CO3</b>	Design biasing circuits for the BJT and MOSFET based amplifiers for the given specifications
<b>CO4</b>	Explain the operation of Class A,B,C and D power amplifiers
<b>CO5</b>	Design feedback amplifiers and oscillators for given specifications

<b>20EE202 - Core III- Electric Circuit Analysis</b>	
<b>COs</b>	<b>Course Outcome: After the completion of the course, students are able to</b>
<b>CO1</b>	Apply the knowledge of basic circuit law and simplify the network using reduction techniques and analyse the circuit using Kirchhoff's law.
<b>CO2</b>	Understand network theorems to simplify the complex networks
<b>CO3</b>	Design resonant circuits which are used in wireless transmission and communication networks.
<b>CO4</b>	Develop the coupled circuit and tuned circuits for communication networks
<b>CO5</b>	Understand 3-phase ac circuits for designing and analysis of power system networks
<b>CO6</b>	Solve and analyse AC and DC transients using Laplace transform techniques

## Laboratory

20PC111-Physics & Chemistry Laboratory	
<b>COs</b>	<b>Course Outcome: Upon completion of the course, based on hands-on experience of the students, they will be able to</b>
<b>CO1</b>	determine the wavelength of mercury spectrum and also determine the wavelength of a laser source, particle size, divergence angle of semiconductor laser source using diffraction grating and to analyze the numerical aperture and acceptance angle of an optical fibre.
<b>CO2</b>	examine the Young's modulus of a beam by uniform and non-uniform bending and to estimate the moment of inertia of the disc and rigidity modulus of wire by torsional pendulum.
<b>CO3</b>	determine the band gap of a semiconductor.
<b>CO4</b>	Analyse the given hard water sample, change in conductivity of an acid(s) when added with base .
<b>CO5</b>	Examine the change in pH when an acid is added with a base, Understand the redox reactions and its impact on emf values.
<b>CO6</b>	Assess the corrosion rate of a given metal, Construct an electrochemical cell to determine the concentration of the given solution.

20CS212 - Advanced C Programming Laboratory	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Apply array and string concepts to solve problems.
<b>CO2</b>	Employ pointers to solve various problems.
<b>CO3</b>	Implement dynamic memory allocation.
<b>CO4</b>	Understand file manipulations.
<b>CO5</b>	Design and develop real-world applications utilizing the concepts of arrays, strings, pointers, dynamic memory allocation and files.

20EM211 - Basic Engineering and Circuits Laboratory	
<b>COs</b>	<b>Course Outcome: After the completion of the course, students should be able to</b>
<b>CO1</b>	To gain hands on experience in plumbing, welding and Foundry
<b>CO2</b>	To gain hands on experience in basic house wiring
<b>CO3</b>	To gain Practical knowledge in measurement and analysis of electrical quantities in complicated electric circuits using various methods of analysis
<b>CO4</b>	To learn how to analyze an electrical circuit using simulation software
<b>CO5</b>	To wiring, and electric circuits





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## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

### **B.E., -Electronics and Communication Engineering – 2<sup>nd</sup> semester**

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20EL201 - Technical English
2.	2	Theory	20MA201 - Engineering Mathematics – II
3.	2	Theory	20CH102 - Environmental Science and Engineering
4.	2	Theory	20EC201 - Core I – Fundamentals of Electrical Engineering and Circuits
5.	2	Theory	20EC202 - Core II – Electronic Devices
6.	2	Theory	20CS201 - Core III – Data Structures
7.	2	Practical	20EM111 - Engineering Practices Laboratory
8.	2	Practical	20CS211 - Data Structures Laboratory
9.	2	Practical	20EL211 - Advanced Reading and Writing Laboratory

## Second Semester B.E., / ECE

<b>20EL201 - Technical English</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course learners will be able to:</b>
<b>CO1</b>	Read technical texts and write area- specific texts effortlessly.
<b>CO2</b>	Listen and comprehend lectures and talks in their area of specialization successfully.
<b>CO3</b>	Speak appropriately and effectively in varied formal and informal contexts.
<b>CO4</b>	Write reports and winning job applications.

<b>20MA201-Engineering Mathematics - II</b>	
<b>COs</b>	<b>Course Outcome: After the successful completion of the course, the student will be able to</b>
<b>CO1</b>	Solve the higher order linear differential equations.
<b>CO2</b>	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
<b>CO3</b>	Apply Laplace Transforms method for solving linear ordinary differential equation.
<b>CO4</b>	Construct ananalytic function and analyze conformal mapping.
<b>CO5</b>	Evaluate the real integrals using complex integration

<b>20CH102 - Environmental Science and Engineering</b>	
<b>COs</b>	<b>Course Outcome : Upon completion of the course, the students will be able to:</b>
<b>CO1</b>	Illustrate the importance and conservation of natural resources.
<b>CO2</b>	Assess the impact of various pollutants and suggest appropriate pollution control methods.
<b>CO3</b>	Explain the basic structure of ecosystem and the conservation of biodiversity.
<b>CO4</b>	Analyze the social issues related to environment and recommend suitable solutions.
<b>CO5</b>	Investigate the trends in population explosion and assess its impact.

### 20EC201 - Core I – Fundamentals of Electrical Engineering and Circuits

COs	Course Outcome : On successful completion of this course, the student will be able to
CO1	Develop the capacity to analyze electrical circuits using mesh and nodal analysis
CO2	Apply the circuit theorems in real time
CO3	Analyse resonance and coupled circuits
CO4	Analyse the transient response for DC circuits
CO5	Explain the two port networks and parameters
CO6	Design, understand and evaluate the AC and DC circuits

### 20EC202 - Core II – Electronic Devices

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Understand the basics of electron devices
CO2	Explain the basics of device physics and working principle of PN Junction diode
CO3	Describe the construction, operation and applications of BJT, JFET and MOSFET
CO4	Understand the device physics of metal-semiconductor junctions and working principle of special semiconductor devices
CO5	Explain the construction and working principle of power semiconductor devices and optoelectronic and display devices

### 20CS201 - Data Structures

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement abstract data types for linear data structures.
CO2	Apply the appropriate linear data structures to solve problems.
CO3	Identify and use appropriate tree data structures in problem solving.
CO4	Choose appropriate Graph representations and solve real-world applications.
CO5	Critically analyze the various sorting and searching algorithms.

## Laboratory

<b>20EM111 - Engineering Practices Laboratory</b>	
<b>COs</b>	<b>Course Outcome : On successful completion of this course, the student will be able to</b>
<b>CO1</b>	Develop carpentry components and pipe connections including plumbing works.
<b>CO2</b>	Make use of welding equipments to join the structures
<b>CO3</b>	Analyse the basic machining operations
<b>CO4</b>	Develop the models using sheet metal works
<b>CO5</b>	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings
<b>CO6</b>	Fabricate carpentry components and pipe connections including plumbing works.
<b>CO7</b>	Carry out simple wiring as per the layout given
<b>CO8</b>	Measures various electrical parameters like Voltage, Current, Power factor, Energy, Earth resistance etc.
<b>CO9</b>	Calculate ripple factor of a given waveform, use logic gates for simple applications.

<b>20CS211 - Data Structures Laboratory</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Write functions to implement linear and non-linear data structure operations.
<b>CO2</b>	Suggest and use appropriate linear / non-linear data structure operations for solving a given problem.
<b>CO3</b>	Implement different operations of search trees.
<b>CO4</b>	Implement appropriate Graph representations and traversals to solve real-world applications.
<b>CO5</b>	Implement and analyze the various searching and sorting algorithms. Write programs for simple applications making use of basic constructs, arrays and strings.

<b>20EL211 - Advanced Reading and Writing Laboratory</b>	
<b>COs</b>	<b>Course Outcome : At the end of the course learners will be able to</b>
<b>CO1</b>	Write different types of essays.
<b>CO2</b>	Write winning job applications.
<b>CO3</b>	Read and evaluate texts critically
<b>CO4</b>	Display critical thinking in various professional contexts.



# R.M.K. ENGINEERING COLLEGE (An Autonomous Institution)



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## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

### **B.E., -Electronics and Instrumentation Engineering – 2<sup>nd</sup> semester**

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20EL201 - Technical English
2.	2	Theory	20MA201 - Engineering Mathematics – II
3.	2	Theory	20PH102 - Physics for Electronics Engineering
4.	2	Theory	20CH101 - Engineering Chemistry
5.	2	Theory	20EI201 - Core II –Basic Electronics and Instrumentation Engineering
6.	2	Theory	20EE202 - Core III- Electric Circuit Analysis
7.	2	Practical	20PC111 - Physics and Chemistry Laboratory
8.	2	Practical	20CS212 - Advanced C Programming Laboratory
9.	2	Practical	20EM211 - Basic Engineering and Circuits Laboratory

## Second Semester B.E., / EIE

<b>20EL201 - Technical English</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course learners will be able to:</b>
<b>CO1</b>	Read technical texts and write area- specific texts effortlessly.
<b>CO2</b>	Listen and comprehend lectures and talks in their area of specialization successfully.
<b>CO3</b>	Speak appropriately and effectively in varied formal and informal contexts.
<b>CO4</b>	Write reports and winning job applications.

<b>20MA201-Engineering Mathematics - II</b>	
<b>COs</b>	<b>Course Outcome: After the successful completion of the course, the student will be able to</b>
<b>CO1</b>	Solve the higher order linear differential equations.
<b>CO2</b>	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
<b>CO3</b>	Apply Laplace Transforms method for solving linear ordinary differential equation.
<b>CO4</b>	Construct an analytic function and analyze conformal mapping.
<b>CO5</b>	Evaluate the real integrals using complex integration

<b>20PH102 - Physics for Electronics Engineering</b>	
<b>COs</b>	<b>Course Outcome: On completion of this course, the students will be able to</b>
<b>CO1</b>	estimate the conducting properties of materials based on CFE and QFE theories and understand the formation of energy band structures.
<b>CO2</b>	understand the basic properties of semiconducting materials and apply the concepts to determine Hall coefficient.
<b>CO3</b>	elucidate the principle and working of various opto and nanoelectronic devices and their applications.
<b>CO4</b>	attain basic knowledge on the concepts of lasers and apply in fibre optics communication.
<b>CO5</b>	correlate electric and magnetic field behavior of electro-magnetostatics and electrodynamics.
<b>CO6</b>	understand the concepts of conducting materials, semiconducting materials and apply the same to determine resistivity and bandgap, explicate the principle and working of opto and nanoelectronic devices and analyze Maxwell's equation in different forms (differential and integral) in Electro-Magnetostatics and Electrodynamics.

<b>20CH101 - Engineering Chemistry</b>	
<b>COs</b>	<b>Course Outcome: Upon completion of the course, the students will be able to:</b>
<b>CO1</b>	Illustrate the role of chemistry in everyday life and the industrial uses of water.
<b>CO2</b>	Construct electrochemical cells and to determine the cell potential.
<b>CO3</b>	Compare and analyse the different energy storage devices and to explain potential energy sources.
<b>CO4</b>	Classify different types of polymeric materials and to discuss their properties and applications.
<b>CO5</b>	Explain basic concepts of nanochemistry and to enumerate the applications of nanomaterials in engineering and technology.

<b>20EI201 - Core II –Basic Electronics and Instrumentation Engineering</b>	
<b>COs</b>	<b>Course Outcome: On successful completion of this course, the student will be able to</b>
<b>CO1</b>	Understand the structure and operation of PN junction devices and power supply design
<b>CO2</b>	Differentiate the various transistors and special electronic devices for real time applications
<b>CO3</b>	Illustrate the basic knowledge in Industrial Instrumentation system
<b>CO4</b>	Verify the static and dynamic characteristics of Measurement system
<b>CO5</b>	Categorize the various types of Measuring Instruments for the Industrial applications

<b>20EE202 - Core III- Electric Circuit Analysis</b>	
<b>COs</b>	<b>Course Outcome: After the completion of the course, students are able to</b>
<b>CO1</b>	Apply the knowledge of basic circuit law and simplify the network using reduction techniques and analyse the circuit using Kirchhoff's law.
<b>CO2</b>	Understand network theorems to simplify the complex networks
<b>CO3</b>	Design resonant circuits which are used in wireless transmission and communication networks.
<b>CO4</b>	Develop the coupled circuit and tuned circuits for communication networks
<b>CO5</b>	Understand 3-phase ac circuits for designing and analysis of power system networks
<b>CO6</b>	Solve and analyse AC and DC transients using Laplace transform techniques

## Laboratory

<b>20PC111-Physics &amp; Chemistry Laboratory</b>	
<b>COs</b>	<b>Course Outcome: Upon completion of the course, based on hands-on experience of the students, they will be able to</b>
<b>CO1</b>	determine the wavelength of mercury spectrum and also determine the wavelength of a laser source, particle size, divergence angle of semiconductor laser source using diffraction grating and to analyze the numerical aperture and acceptance angle of an optical fibre.
<b>CO2</b>	examine the Young's modulus of a beam by uniform and non-uniform bending and to estimate the moment of inertia of the disc and rigidity modulus of wire by torsional pendulum.
<b>CO3</b>	determine the band gap of a semiconductor.
<b>CO4</b>	Analyse the given hard water sample, change in conductivity of an acid(s) when added with base .
<b>CO5</b>	Examine the change in pH when an acid is added with a base, Understand the redox reactions and its impact on emf values.
<b>CO6</b>	Assess the corrosion rate of a given metal, Construct an electrochemical cell to determine the concentration of the given solution.

<b>20CS212 - Advanced C Programming Laboratory</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Apply array and string concepts to solve problems.
<b>CO2</b>	Employ pointers to solve various problems.
<b>CO3</b>	Implement dynamic memory allocation.
<b>CO4</b>	Understand file manipulations.
<b>CO5</b>	Design and develop real-world applications utilizing the concepts of arrays, strings, pointers, dynamic memory allocation and files.

<b>20EM211 - Basic Engineering and Circuits Laboratory</b>	
<b>COs</b>	<b>Course Outcome: After the completion of the course, students should be able to</b>
<b>CO1</b>	To gain hands on experience in plumbing, welding and Foundry
<b>CO2</b>	To gain hands on experience in basic house wiring
<b>CO3</b>	To gain Practical knowledge in measurement and analysis of electrical quantities in complicated electric circuits using various methods of analysis
<b>CO4</b>	To learn how to analyze an electrical circuit using simulation software
<b>CO5</b>	To wiring, and electric circuits





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## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

### B.E., - Mechanical Engineering – 2<sup>nd</sup> semester

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20EL201 - Technical English
2.	2	Theory	20MA201 - Engineering Mathematics – II
3.	2	Theory	20PH202 - Physics for Mechanical Engineering
4.	2	Theory	20CH202 - Chemistry for Mechanical Engineering
5.	2	Theory	20ME205 - Core II - Engineering Mechanics
6.	2	Theory	20ME206 - Core III: Fundamentals of Manufacturing Processes
7.	2	Practical	20PC111 - Physics and Chemistry Laboratory
8.	2	Practical	20CS212 - Advanced C Programming Laboratory
9.	2	Practical	20EL211 - Advanced Reading and Writing Lab

## Second Semester B.E., / ME

<b>20EL201 - Technical English</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course learners will be able to:</b>
<b>CO1</b>	Read technical texts and write area- specific texts effortlessly.
<b>CO2</b>	Listen and comprehend lectures and talks in their area of specialization successfully.
<b>CO3</b>	Speak appropriately and effectively in varied formal and informal contexts.
<b>CO4</b>	Write reports and winning job applications.

<b>20MA201-Engineering Mathematics - II</b>	
<b>COs</b>	<b>Course Outcome: After the successful completion of the course, the student will be able to</b>
<b>CO1</b>	Solve the higher order linear differential equations.
<b>CO2</b>	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
<b>CO3</b>	Apply Laplace Transforms method for solving linear ordinary differential equation.
<b>CO4</b>	Construct ananalytic function and analyze conformal mapping.
<b>CO5</b>	Evaluate the real integrals using complex integration

<b>20PH202 - Physics for Mechanical Engineering</b>	
<b>COs</b>	<b>Course Outcome: On completion of this course, the students will be able to</b>
<b>CO1</b>	know the principle, construction and working of lasers and their applications in fibre optic communication.
<b>CO2</b>	comprehend the concepts of thermal properties of materials and properties of matter.
<b>CO3</b>	recognize and apply basic knowledge of crystals, their structures and defects.
<b>CO4</b>	analyze the properties of magnetic and superconducting materials.
<b>CO5</b>	understand and apply the basics of nanomaterials and carbon nanotubes.
<b>CO6</b>	understand the basics of properties of various materials and apply knowledge for various applications there by helps in finding the solution for specific needs by design.

### 20CH202- Chemistry for Mechanical Engineering

COs	Course Outcome: Upon completion of the course, the students will be able to:
CO1	Describe the potential impact of hardness in boiler feed water and methods of softening.
CO2	Explain the basic concepts of thermodynamics.
CO3	Discuss various types of fuels and their combustion processes
CO4	Comprehend the properties and uses of engineering materials such as lubricants, refractories and composites.
CO5	Construct and to analyse phase equilibrium diagram of one and two component systems.

### 20ME205 - Core II - Engineering Mechanics

COs	Course Outcome: On successful completion of this course, the student will be able to
CO1	Illustrate the vectorial and scalar representation of forces and moments
CO2	Analyze the rigid body in equilibrium
CO3	Evaluate the properties of surfaces and solids
CO4	Apply dynamic forces exerted in rigid body
CO5	Solve the friction and the effects by the laws of friction
CO6	Apply the effort of force and moment in the various design functions of rigid body

### 20ME206-Core III - Fundamentals of Manufacturing Processes

COs	Course Outcome: On successful completion of this course, the students will be able to
CO1	Explain different metal casting processes, associated defects, merits and demerits
CO2	Compare the different metal joining processes
CO3	Summarize various hot working and cold working methods of metals
CO4	Demonstrate the various sheet metal making processes
CO5	Distinguish various methods of manufacturing plastic components and interpret the principles of Additive manufacturing
CO6	Suggest the suitable chip-less forming processes for an identified product.

## Laboratory

20PC111-Physics & Chemistry Laboratory	
<b>COs</b>	<b>Course Outcome: Upon completion of the course, based on hands-on experience of the students, they will be able to</b>
<b>CO1</b>	determine the wavelength of mercury spectrum and also determine the wavelength of a laser source, particle size, divergence angle of semiconductor laser source using diffraction grating and to analyze the numerical aperture and acceptance angle of an optical fibre.
<b>CO2</b>	examine the Young's modulus of a beam by uniform and non-uniform bending and to estimate the moment of inertia of the disc and rigidity modulus of wire by torsional pendulum.
<b>CO3</b>	determine the band gap of a semiconductor.
<b>CO4</b>	Analyse the given hard water sample, change in conductivity of an acid(s) when added with base .
<b>CO5</b>	Examine the change in pH when an acid is added with a base, Understand the redox reactions and its impact on emf values.
<b>CO6</b>	Assess the corrosion rate of a given metal, Construct an electrochemical cell to determine the concentration of the given solution.

20CS212 - Advanced C Programming Laboratory	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Apply array and string concepts to solve problems.
<b>CO2</b>	Employ pointers to solve various problems.
<b>CO3</b>	Implement dynamic memory allocation.
<b>CO4</b>	Understand file manipulations.
<b>CO5</b>	Design and develop real-world applications utilizing the concepts of arrays, strings, pointers, dynamic memory allocation and files.

20EL211 Advanced Reading and Writing Lab	
<b>COs</b>	<b>Course Outcome : At the end of the course learners will be able to</b>
<b>CO1</b>	Write different types of essays.
<b>CO2</b>	Write winning job applications.
<b>CO3</b>	Read and evaluate texts critically
<b>CO4</b>	Display critical thinking in various professional contexts.



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## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

### B.Tech. - Information Technology – 2<sup>nd</sup> semester

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20EL201 - Technical English
2.	2	Theory	20MA201 - Engineering Mathematics – II
3.	2	Theory	20CH102 - Environmental Science and Engineering
4.	2	Theory	20ME103 - Computer Aided Engineering Graphics
5.	2	Theory	20CS201 - Data Structures
6.	2	Theory	20CS202 - Python Programming (Lab Integrated)
7.	2	Practical	20EM111 - Engineering Practices Laboratory
8.	2	Practical	20CS211 - Data Structures Laboratory
9.	2	Practical	20EL211 - Advanced Reading and Writing Laboratory

## Second Semester B.Tech. / IT

<b>20EL201 - Technical English</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course learners will be able to:</b>
<b>CO1</b>	Read technical texts and write area- specific texts effortlessly.
<b>CO2</b>	Listen and comprehend lectures and talks in their area of specialization successfully.
<b>CO3</b>	Speak appropriately and effectively in varied formal and informal contexts.
<b>CO4</b>	Write reports and winning job applications.

<b>20MA201-Engineering Mathematics - II</b>	
<b>COs</b>	<b>Course Outcome: After the successful completion of the course, the student will be able to</b>
<b>CO1</b>	Solve the higher order linear differential equations.
<b>CO2</b>	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
<b>CO3</b>	Apply Laplace Transforms method for solving linear ordinary differential equation.
<b>CO4</b>	Construct an analytic function and analyze conformal mapping.
<b>CO5</b>	Evaluate the real integrals using complex integration

<b>20CH102 - Environmental Science and Engineering</b>	
<b>COs</b>	<b>Course Outcome : Upon completion of the course, the students will be able to:</b>
<b>CO1</b>	Illustrate the importance and conservation of natural resources.
<b>CO2</b>	Assess the impact of various pollutants and suggest appropriate pollution control methods.
<b>CO3</b>	Explain the basic structure of ecosystem and the conservation of biodiversity.
<b>CO4</b>	Analyze the social issues related to environment and recommend suitable solutions.
<b>CO5</b>	Investigate the trends in population explosion and assess its impact.

### 20ME103 - Computer Aided Engineering Graphics

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Illustrate the fundamentals and standards of engineering drawing and apply the concepts of orthographic projections using CAD software.
CO2	Interpret and construct various plane curves.
CO3	Develop orthographic projections of points, lines and plane surfaces.
CO4	Make use of concepts in projection to draw projections of solids and interpret the concept in section of solids.
CO5	Interpret and visualize development of surfaces.
CO6	Interpret and visualize isometric projection of simple solids.

### 20CS201 - Data Structures

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement abstract data types for linear data structures.
CO2	Apply the appropriate linear data structures to solve problems.
CO3	Identify and use appropriate tree data structures in problem solving.
CO4	Choose appropriate Graph representations and solve real-world applications.
CO5	Critically analyze the various sorting and searching algorithms.

### 20CS202 - Python Programming (Lab Integrated)

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement simple Python programs.
CO2	Develop Python programs using functions.
CO3	Represent and solve compound data using Python lists, tuples, dictionaries.
CO4	Implement and perform operations on files, modules and packages.
CO5	Apply Exceptions, Standard Libraries and IDE for application development.

## Laboratory

20EM111 - Engineering Practices Laboratory	
<b>COs</b>	<b>Course Outcome : On successful completion of this course, the student will be able to</b>
<b>CO1</b>	Develop carpentry components and pipe connections including plumbing works.
<b>CO2</b>	Make use of welding equipments to join the structures
<b>CO3</b>	Analyse the basic machining operations
<b>CO4</b>	Develop the models using sheet metal works
<b>CO5</b>	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings
<b>CO6</b>	Fabricate carpentry components and pipe connections including plumbing works.
<b>CO7</b>	Carry out simple wiring as per the layout given
<b>CO8</b>	Measures various electrical parameters like Voltage, Current, Power factor, Energy, Earth resistance etc.
<b>CO9</b>	Calculate ripple factor of a given waveform, use logic gates for simple applications.

20CS211 - Data Structures Laboratory	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Write functions to implement linear and non-linear data structure operations.
<b>CO2</b>	Suggest and use appropriate linear / non-linear data structure operations for solving a given problem.
<b>CO3</b>	Implement different operations of search trees.
<b>CO4</b>	Implement appropriate Graph representations and traversals to solve real-world applications.
<b>CO5</b>	Implement and analyze the various searching and sorting algorithms. Write programs for simple applications making use of basic constructs, arrays and strings.

20EL211 - Advanced Reading and Writing Laboratory	
<b>COs</b>	<b>Course Outcome : At the end of the course learners will be able to</b>
<b>CO1</b>	Write different types of essays.
<b>CO2</b>	Write winning job applications.
<b>CO3</b>	Read and evaluate texts critically
<b>CO4</b>	Display critical thinking in various professional contexts.





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## DEPARTMENT OF SCIENCE & HUMANITIES

Course Outcomes – Even semester - 2021 -22

### **B.Tech. - Artificial Intelligence & Data Science – 2<sup>nd</sup> semester**

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20EL201 - Technical English
2.	2	Theory	20MA201 - Engineering Mathematics – II
3.	2	Theory	20CH102 - Environmental Science and Engineering
4.	2	Theory	20ME103 - Computer Aided Engineering Graphics
5.	2	Theory	20CS201 - Data Structures
6.	2	Theory	20CS202 - Python Programming (Lab Integrated)
7.	2	Practical	20EM111 - Engineering Practices Laboratory
8.	2	Practical	20CS211 - Data Structures Laboratory
9.	2	Practical	20EL211 - Advanced Reading and Writing Laboratory

## Second Semester B.Tech. / ADS

<b>20EL201 - Technical English</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course learners will be able to:</b>
<b>CO1</b>	Read technical texts and write area- specific texts effortlessly.
<b>CO2</b>	Listen and comprehend lectures and talks in their area of specialization successfully.
<b>CO3</b>	Speak appropriately and effectively in varied formal and informal contexts.
<b>CO4</b>	Write reports and winning job applications.

<b>20MA201-Engineering Mathematics - II</b>	
<b>COs</b>	<b>Course Outcome: After the successful completion of the course, the student will be able to</b>
<b>CO1</b>	Solve the higher order linear differential equations.
<b>CO2</b>	Determine the gradient of a scalar field, divergence and curl of a vector fields and interpret their physical meaning and evaluate line, surface and volume integrals by vector integration.
<b>CO3</b>	Apply Laplace Transforms method for solving linear ordinary differential equation.
<b>CO4</b>	Construct ananalytic function and analyze conformal mapping.
<b>CO5</b>	Evaluate the real integrals using complex integration

<b>20CH102 - Environmental Science and Engineering</b>	
<b>COs</b>	<b>Course Outcome : Upon completion of the course, the students will be able to:</b>
<b>CO1</b>	Illustrate the importance and conservation of natural resources.
<b>CO2</b>	Assess the impact of various pollutants and suggest appropriate pollution control methods.
<b>CO3</b>	Explain the basic structure of ecosystem and the conservation of biodiversity.
<b>CO4</b>	Analyze the social issues related to environment and recommend suitable solutions.
<b>CO5</b>	Investigate the trends in population explosion and assess its impact.

### 20ME103 - Computer Aided Engineering Graphics

COs	Course Outcome : At the end of this course, the students will be able to:
CO1	Illustrate the fundamentals and standards of engineering drawing and apply the concepts of orthographic projections using CAD software.
CO2	Interpret and construct various plane curves.
CO3	Develop orthographic projections of points, lines and plane surfaces.
CO4	Make use of concepts in projection to draw projections of solids and interpret the concept in section of solids.
CO5	Interpret and visualize development of surfaces.
CO6	Interpret and visualize isometric projection of simple solids.

### 20CS201 - Data Structures

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement abstract data types for linear data structures.
CO2	Apply the appropriate linear data structures to solve problems.
CO3	Identify and use appropriate tree data structures in problem solving.
CO4	Choose appropriate Graph representations and solve real-world applications.
CO5	Critically analyze the various sorting and searching algorithms.

### 20CS202 - Python Programming (Lab Integrated)

COs	Course Outcome: At the end of this course, the students will be able to:
CO1	Implement simple Python programs.
CO2	Develop Python programs using functions.
CO3	Represent and solve compound data using Python lists, tuples, dictionaries.
CO4	Implement and perform operations on files, modules and packages.
CO5	Apply Exceptions, Standard Libraries and IDE for application development.

## Laboratory

<b>20EM111 - Engineering Practices Laboratory</b>	
<b>COs</b>	<b>Course Outcome : On successful completion of this course, the student will be able to</b>
<b>CO1</b>	Develop carpentry components and pipe connections including plumbing works.
<b>CO2</b>	Make use of welding equipments to join the structures
<b>CO3</b>	Analyse the basic machining operations
<b>CO4</b>	Develop the models using sheet metal works
<b>CO5</b>	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings
<b>CO6</b>	Fabricate carpentry components and pipe connections including plumbing works.
<b>CO7</b>	Carry out simple wiring as per the layout given
<b>CO8</b>	Measures various electrical parameters like Voltage, Current, Power factor, Energy, Earth resistance etc.
<b>CO9</b>	Calculate ripple factor of a given waveform, use logic gates for simple applications.

<b>20CS211 - Data Structures Laboratory</b>	
<b>COs</b>	<b>Course Outcome: At the end of the course, the students will be able to:</b>
<b>CO1</b>	Write functions to implement linear and non-linear data structure operations.
<b>CO2</b>	Suggest and use appropriate linear / non-linear data structure operations for solving a given problem.
<b>CO3</b>	Implement different operations of search trees.
<b>CO4</b>	Implement appropriate Graph representations and traversals to solve real-world applications.
<b>CO5</b>	Implement and analyze the various searching and sorting algorithms. Write programs for simple applications making use of basic constructs, arrays and strings.

<b>20EL211 - Advanced Reading and Writing Laboratory</b>	
<b>COs</b>	<b>Course Outcome : At the end of the course learners will be able to</b>
<b>CO1</b>	Write different types of essays.
<b>CO2</b>	Write winning job applications.
<b>CO3</b>	Read and evaluate texts critically
<b>CO4</b>	Display critical thinking in various professional contexts.



# R.M.K. ENGINEERING COLLEGE (An Autonomous Institution)



R.S.M Nagar, Kavaraipettai, Gummidipoondi Taluk, Thiruvallur Dt- 601206.

(Affiliated to Anna University, Chennai/Approved by AICTE, New Delhi / ISO 9001:2015 Certified Institution/  
Accredited by NAAC with A+ Grade/ All the eligible UG Programs are accredited by NBA, New Delhi)

## DEPARTMENT OF SCIENCE & HUMANITIES

### Course Outcomes – Even semester - 2021 -22

### **B.Tech. - Computer Science & Business Systems – 2<sup>nd</sup> semester**

S. No.	Semester	Theory/ Practical	Course Code / Course Name
1.	2	Theory	20MA202 - Linear Algebra
2.	2	Theory	20MA203 - Statistical Methods + Lab
3.	2	Theory	20IT201 - Data Structures and Algorithms + Lab
4.	2	Theory	20EC241 - Principles of Electronics Engineering + Lab
5.	2	Theory	20IT202 - Fundamentals of Economics
6.	2	Theory	20EL202 - Business Communication and Value Sciences - II

## Second Semester - B.Tech. / CSBS

<b>20MA202 - Linear Algebra</b>	
<b>COs</b>	<b>Course Outcome: The student will be able to</b>
<b>CO1</b>	Solve the system of linear equations using crammers rule
<b>CO2</b>	Solve the system of equations using LU Decomposition method
<b>CO3</b>	Compute QR decomposition for a given matrix
<b>CO4</b>	Represent the linear transformation in matrix and to find eigen values and eigen vectors
<b>CO5</b>	Apply the concept of linear combinations in image processing and machine learning

<b>20MA203 - Statistical Methods + Lab</b>	
<b>COs</b>	<b>Course Outcome: The student will be able to</b>
<b>CO1</b>	Find the standard error and sample mean of the sampling distributions.
<b>CO2</b>	Identify and evaluate the unbiased estimators.
<b>CO3</b>	Compute correlation and regression curve.
<b>CO4</b>	Apply testing of hypothesis in real life problems.
<b>CO5</b>	Analyse ARIMA model and apply in real life situations.

<b>20IT201 - Data Structures and Algorithms + Lab</b>	
<b>COs</b>	<b>Course Outcome: Upon completion of the course, the students will be able to</b>
<b>CO1</b>	Analyse the various data structure concepts.
<b>CO2</b>	Apply the different linear data structures to problem solutions.
<b>CO3</b>	Apply the different non-linear data structures to problem solutions.
<b>CO4</b>	Critically analyse the various sorting algorithms.
<b>CO5</b>	Exemplify the concept of files and its operations.
<b>CO6</b>	Understand files accessing mechanisms.

<b>20EC241 - Principles of Electronics Engineering + Lab</b>	
<b>COs</b>	<b>Course Outcome: On completion of this course, the students will be able to</b>
<b>CO1</b>	Explain the characteristics of diode
<b>CO2</b>	Describe the equivalence circuits of transistors
<b>CO3</b>	Acquire the knowledge on feedback amplifiers and operational amplifiers.
<b>CO4</b>	Describe the simple digital logic circuits

<b>20IT202 - Fundamentals of Economics</b>	
<b>COs</b>	<b>Course Outcome: On completion of the course, students will be able to:</b>
<b>CO1</b>	Become familiar with both principles of micro and macroeconomics.
<b>CO2</b>	Understand about approaches to consumer behaviour and relation between production and cost function.
<b>CO3</b>	Describe and discuss on interaction of product and factor market.
<b>CO4</b>	Get awareness about importance and development of Indian economy and economic reforms.
<b>CO5</b>	Have thorough knowledge in the areas of inflation, unemployment, monetary policy, fiscal policy and international trade.

<b>20EL202 - Business Communication and Value Sciences - II</b>	
<b>COs</b>	<b>Course Outcome: Upon completion of the course, the students will be able to:</b>
<b>CO1</b>	Understand and use tools of structured written communication
<b>CO2</b>	Use electronic/social media to share concepts and ideas
<b>CO3</b>	Understand the basics of presentation and apply effective techniques to make presentations
<b>CO4</b>	Apply the basic concept of speed reading, skimming and scanning.
<b>CO5</b>	Identify individual personality types and role in a team
<b>CO6</b>	Understand the basic concepts of Morality and Diversity and argue on a topic based on morality and diversity
<b>CO7</b>	Articulate opinions on a topic with the objective of influencing others.