



R.M.K. ENGINEERING COLLEGE

(An Autonomous Institution)

R.S.M Nagar, Kavaraipettai, Gummidipoondi Taluk, Thiruvallur District, Tamil Nadu- 601206

Affiliated to Anna University, Chennai / Approved by AICTE, New Delhi/Accredited by NAAC with A+ Grade

An ISO 9001:2015 Certified Institution / All the Eligible UG Programs are Accredited by NBA, New Delhi



B.E. / B.TECH- CIVIL ENGINEERING REGULATIONS – 2022 CHOICE BASED CREDIT SYSTEM

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

1. Graduates will succeed in Civil Engineering profession and in allied Engineering fields.
2. Graduates will come out with cost effective & sustainable design of various infrastructure using modern technical tools meeting social needs.
3. Graduates will exhibit professional ethics, leadership quality, team work and adaptability to changes.

PROGRAM OUTCOMES (POs)

After the successful completion of the program, the graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

MAPPING OF PROGRAM SPECIFIC OBJECTIVES WITH PROGRAMME OUTCOMES

A broad relation between the Program Specific Objectives and the outcomes is given in the following table

PROGRAMME SPECIFIC OBJECTIVES	PROGRAMME OUTCOMES											
	1	2	3	4	5	6	7	8	9	10	11	12
1	X	X	X									
2	X	X	X	X	X							X
3				X	X	X	X	X	X	X	X	X
4	X	X				X	X	X	X	X	X	X

Contribution

1: Reasonable

2: Significant

3: Strong

B.E. CIVIL ENGINEERING
REGULATIONS – 2022
CHOICE BASED CREDIT SYSTEM
I - VIII SEMESTER CURRICULUM

SEMESTER –I								
Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY COURSES WITH LABORATORY COMPONENT								
1	22MA101	Matrices and Calculus	BSC	5	3	0	2	4
2	22PH101	Physics for Civil Engineering	BSC	5	3	0	2	4
3	22CS101	Problem Solving using C++	ESC	5	3	0	2	4
4	22CS102	Software Development Practices	ESC	5	3	0	2	4
5	22EE101	Basic Electrical, Electronics and Instrumentation Engineering	ESC	5	3	0	2	4
6	22HS101	Professional Communication	HSMC	4	2	0	2	3
LABORATORY COURSES								
7	22ME111	Product Development Lab - I	EEC	2	0	0	2	1
MANDATORY COURSES								
8	22CH104	Environmental Sciences and Sustainability (Non Credit)	MC	2	2	0	0	0
9		Induction Program (Non Credit)	MC	3 Weeks				
TOTAL				33	19	0	14	24

SEMESTER –II								
Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY COURSES								
1	20ME201	Engineering Mechanics	ESC	3	3	0	0	3
THEORY COURSES WITH LABORATORY COMPONENT								
2	22MA201	Transforms and Numerical Methods	BSC	5	3	0	2	4
3	22CH202	Chemistry for Civil Engineering	BSC	5	3	0	2	4
4	22CE201	Construction and Building Materials	ESC	4	2	0	2	3
5	22IT201	Problem solving and Python Programming	ESC	5	3	0	2	4
LABORATORY COURSES WITH THEORY COMPONENT								
6	22ME202	Computer aided Engineering Graphics	ESC	3	1	0	2	2
LABORATORY COURSES								
7	22ME211	Product Development Lab-2	EEC	2	0	0	2	1
AUDIT COURSES								
8		Yoga for Stress Management	AC	1	1	0	0	0
TOTAL				28	16	0	12	21

SEMESTER – III								
Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY COURSES								
1	22MA303	Fourier Analysis and Partial Differential Equations	BSC	3	3	0	0	3
THEORY COURSES WITH LABORATORY COMPONENT								
2	22CE301	Mechanics of Materials	PCC	5	3	0	2	4
3	22CE302	Fluid Mechanics	PCC	5	3	0	2	4
4	22CE303	Concrete Technology and Construction Practices	PCC	5	3	0	2	4
5	22CE304	Engineering Surveying	PCC	5	3	0	2	4
LABORATORY COURSES WITH THEORY COMPONENT								
6	22CE305	Computer aided Building drawing	PCC	3	1	0	2	2
LABORATORY COURSES								
7		Communication Lab	HSMC	4	0	0	4	2
EMPLOYABILITY ENHANCEMENT COURSES								
8		Aptitude and Coding Skills I	EEC	2	0	0	2	1
9	22ME311	Product Development Lab-3	EEC	2	0	0	2	1
AUDIT COURSES								
10		Value Education (Non Credit)	AC					0
TOTAL				34	16	0	18	25

SEMESTER – IV								
Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY COURSES								
1	22MA403	Statistics and Boundary Value Problems	BSC	3	3	0	0	3
2	22CE401	Advanced Mechanics of Materials	PCC	3	2	2	0	3
THEORY COURSES WITH LABORATORY COMPONENT								
3	22CE402	Applied Hydraulic Engineering	PCC	5	3	0	2	4
4	22CE403	Soil Mechanics	PCC	5	3	0	2	4
5		Professional Elective I	PEC	3	3	0	0	3
6		UHV II	HSMC	3	3	0	0	3
EMPLOYABILITY ENHANCEMENT COURSES								
7		Aptitude and Coding Skills II	EEC	2	0	0	2	1
8	22ME411	Product Development Lab-4	EEC	2	0	0	2	1
AUDIT COURSES								
9		Yoga/Personality	AC					0
TOTAL				26	17	2	8	22

SEMESTER – V								
Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY COURSES								
1		Professional Elective II	PEC	3	3	0	0	3
2		Professional Elective III	PEC	3	3	0	0	3
3		Open Elective I	OEC	3	3	0	0	3
THEORY COURSES WITH LABORATORY COMPONENT								
4	22CE501	Reinforced Concrete Design	PCC	5	3	0	2	4
5	22CE502	Environmental Engineering	PCC	5	3	0	2	4
6	22CE503	Foundation Engineering	PCC	5	3	0	2	4
EMPLOYABILITY ENHANCEMENT COURSES								
7		Advanced Aptitude and Coding Skills I	EEC	2	0	0	2	1
8	22CE511	Internship*	EEC	0	0	0	2	1
MANDATORY COURSES								
9		Indian Constitution (Non Credit)	MC					0
TOTAL				26	18	0	10	23

*2 weeks for one credit. Internship during 4 Semester Summer Vacation

SEMESTER – VI								
Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY COURSES								
1	22CE601	Design of Steel Structures	PCC	4	2	2	0	3
2		Management Elective	HSMC	3	3	0	0	3
3		Professional Elective IV	PEC	3	3	0	0	3
4		Professional Elective V	PEC	3	3	0	0	3
5		Open Elective II	OEC	3	3	0	0	3
THEORY COURSES WITH LABORATORY COMPONENT								
6	22CE602	Structural Analysis	PCC	5	3	0	2	4
EMPLOYABILITY ENHANCEMENT COURSES								
7		Advanced Aptitude and Coding Skills II	EEC	2	0	0	2	1
8	22CE611	Building Information Modeling Laboratory	EEC	4	0	0	4	2
TOTAL				27	17	2	8	22

SEMESTER – VII								
Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY COURSES								
1		Professional Ethics	HSMC	2	2	0	0	2
2		Professional Elective VI	PEC	3	3	0	0	3
3		Open Elective III	OEC	3	3	0	0	3
4		Open Elective IV	OEC	3	3	0	0	3
THEORY COURSES WITH LABORATORY COMPONENT								
5	22CE701	Estimation, Costing and Valuation Engineering	PCC	5	3	0	2	4
6	22CE702	Highway and Pavement Engineering	PCC	3	2	0	2	3
MANDATORY COURSES								
7		Essence of Indian Knowledge Tradition (Non Credit)	MC					0
TOTAL				19	7	0	13	18

SEMESTER – VIII								
Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
EMPLOYABILITY ENHANCEMENT COURSES								
	22CE811	Project Work	EEC	16	0	0	16	8
TOTAL				16	0	0	16	8

CREDIT SUMMARY

S. No.	Subject Area	Credits Per Semester								Credit Total	Percentage
		I	II	III	IV	V	VI	VII	VIII		
1	HSMC	3	-	2	3	-	3	2	-	13	
2	BSC	8	8	3	3	-	-	-	-	22	
3	ESC	12	12				-		-	24	
4	PCC	-	-	18	11	12	7	7	-	55	
5	PEC	-	-		3	6	6	3	-	18	
8	OEC	-	-			3	3	6	-	12	
7	EEC	1	1	2	2	2	3	-	8	19	
	Total	24	21	25	22	23	22	18	8	163	

HSMC – Humanities and Social Sciences including Management courses; **BSC** – Basic Science Courses; **ESC** – Engineering Science Courses including workshop, drawing, basics of electrical/mechanical/computer etc.; **PCC** – Professional Core Courses; **PEC** – Professional Elective Courses relevant to chosen specialization/branch; **OEC** – Open Subjects–Electives from other technical and/or emerging subjects **EEC** – Project Work, Seminar and Internship in Industry or elsewhere

PROFESSIONAL ELECTIVE (PE)

SEMESTER IV

ELECTIVE –I (GEOINFORMATICS)

S.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	22CE901	Advanced Surveying	PE	3	3	0	0	3
2.	22CE902	Drone Surveying	PE	3	3	0	0	3
3.	22CE903	Geographic Information System	PE	3	3	0	0	3
4.	22CE904	Remote Sensing	PE	3	3	0	0	3
5.	22CE905	Geoinformatics Applications	PE	3	3	0	0	3
6.	22CE906	Urban planning and Smart cities	PE	3	3	0	0	3

SEMESTER V**ELECTIVE –II (WATER RESOURCES AND ENVIRONMENTAL ENGINEERING)**

S.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	22CE907	Irrigation Engineering	PE	3	3	0	0	3
2.	22CE908	Groundwater Engineering	PE	3	3	0	0	3
3.	22CE909	Hydrology and Water Resources Systems Engineering	PE	3	3	0	0	3
4.	22CE910	Water Resources Systems Engineering	PE	3	3	0	0	3
5.	22CE911	Climate Change and its Impact	PE	3	3	0	0	3
6.	22CE912	Air Pollution and Control Engineering	PE	3	3	0	0	3

SEMESTER V**ELECTIVE –III (CONSTRUCTION ENGINEERING)**

S.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	22CE913	Formwork Engineering	PE	3	3	0	0	3
2.	22CE914	Computer Applications in Construction Engineering and planning	PE	3	3	0	0	3
3.	22CE915	Housing planning and architecture	PE	3	3	0	0	3
4.	22CE916	Green Building Design	PE	3	3	0	0	3
5.	22CE917	Construction Planning and Scheduling	PE	3	3	0	0	3
6.	22CE918	Building services	PE	3	3	0	0	3

SEMESTER VI**ELECTIVE –IV (GEO TECHNICAL AND TRANSPORTATION)**

S.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	22CE919	Ground Improvement Techniques	PE	3	3	0	0	3
2.	22CE920	Introduction to Soil Dynamics and Machine Foundations	PE	3	3	0	0	3
3.	22CE921	Railways, Metros Airports, & Seaports	PE	3	3	0	0	3
4.	22CE922	Traffic and Transportation Engineering	PE	3	3	0	0	3
5.	22CE923	Intelligent Transportation System	PE	3	3	0	0	3
6.	22CE924	Disaster management	PE	3	3	0	0	3

SEMESTER VI**ELECTIVE –V (BASIC STRUCTURAL ENGINEERING)**

S.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	22CE925	Maintenance, Repair and Rehabilitation of Structures	PE	3	3	0	0	3
2.	22CE926	Advanced Structural Analysis	PE	3	3	0	0	3
3.	22CE927	Computer Aided Design of Structures	PE	3	3	0	0	3
4.	22CE928	Fundamentals of Structural dynamics	PE	3	3	0	0	3
5.	22CE929	Advanced Reinforced Concrete Design	PE	3	3	0	0	3
6.	22CE930	High Rise Building Design	PE	3	3	0	0	3

SEMESTER VII**ELECTIVE –VI (ADVANCED STRUCTURAL ENGINEERING)**

S.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	22CE931	Prefabricated Structures	PE	3	3	0	0	3
2.	22CE932	Prestressed Concrete Structures	PE	3	3	0	0	3
3.	22CE933	Bridge Engineering	PE	3	3	0	0	3
4.	22CE934	Finite Element analysis	PE	3	3	0	0	3
5.	22CE935	Design & Construction of Steel Buildings	PE	3	3	0	0	3
6.	22CE936	Earthquake Resistant Structural Design	PE	3	3	0	0	3

MANAGEMENT ELECTIVES

Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1		Principles of Management	HSMC	3	3	0	0	3
2		Total Quality Management	HSMC	3	3	0	0	3
3		Professional Ethics	HSMC	3	3	0	0	3
4		Introduction to Innovation, IP Management and Entrepreneurship	HSMC	3	3	0	0	3
5		Supply Chain Management	HSMC	3	3	0	0	3

OPEN ELECTIVES (OE)**(Offered to other Departments)**

S.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	22CE001	Climate Change and its Impact	OE	3	3	0	0	3
2.	22CE002	Green Building Design	OE	3	3	0	0	3
3.	22CE003	Geographic Information System	OE	3	3	0	0	3
4.	22CE004	Air Pollution and Control Engineering	OE	3	3	0	0	3
5.	22CE005	Waste Water Treatment	OE	3	3	0	0	3