RAJALAKSHMI ENGINEERING COLLEGE

(An Autonomous Institution Affiliated to Anna University Chennai)

DEPARTMENT OF CIVIL ENGINEERING

CURRICULUM REGULATION – 2023

B.E. CIVIL ENGINEERING

CHOICE BASED CREDIT SYSTEM

VISION:

To be a department imparting knowledge in Civil Engineering education, research, entrepreneurship and industry outreach services for creating sustainable infrastructure and enhancing quality of life with professional and ethical values.

MISSION:

- To provide an effective teaching – learning environment enabling students to be a competent civil engineer.
- To motivate research and entrepreneurial initiatives in the field of Civil Engineering.
- To inculcate ethical values to serve the society with high order professionalism.

PROGRAMME EDUCATIONAL OBJECTIVES: (PEO's)

1. Graduates will possess fundamental knowledge in all fields of Civil Engineering and be able to apply in the profession in Public and Private Sectors.
2. Graduates will have knowledge and preparation to tackle real-life Complex Problems and provide sustainable solutions to Civil Engineering Industry.
3. Graduates will have the ability to update themselves with developments and new technologies, pursue higher studies to face the Challenges.
4. Graduates will become Entrepreneurs, to meet the infrastructural needs of the society, following professional and ethical values.
5. Graduates will be enthusiastic in pursuing lifelong learning and involve themselves in Research and Development.

CURRICULUM

SEMESTER I

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY COURSES								
1.	GE23117	தமிழர் மரபு / Heritage of Tamils	HS	1	0	0	1	1
2.	HS23111	Technical Communication I	HS	2	0	0	2	2
3.	MA23112	Algebra and Calculus	BS	3	1	0	4	4
4.	CE23111	Building Materials	PC	3	0	0	3	3
5.	CE23112	Engineering Drawing for Civil Engineers	PC	2	0	4	6	4
LAB ORIENTED THEORY COURSES								
6.	PH23131	Physics of Materials	BS	3	0	2	5	4
LABORATORY COURSES								
7.	GE23121	Engineering Practices - Civil and Mechanical	ES	0	0	2	2	1
MANDATORY COURSE								
8.	MC23112	Environmental Science and Engineering	MC	3	0	0	3	0
			TOTAL	**17**	**1**	**8**	**26**	**19**

SEMESTER II

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY COURSES								
1.	GE23217	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	HS	1	0	0	1	1
2.	MA23212	Differential Equations and Complex Variables	BS	3	1	0	4	4
3.	GE23211	Engineering Mechanics	ES	2	1	0	3	3
LAB ORIENTED THEORY COURSES								
4.	CY23233	Engineering Chemistry	BS	3	0	2	5	4
5.	EE23133	Basic Electrical and Electronics Engineering	ES	3	0	2	5	4
6.	GE23231	Programming Using Python	ES	1	0	4	5	3
LABORATORY COURSES								
7.	CE23221	Computer Aided Building Drawing for Civil Engineers	PC	0	0	4	4	2
8.	HS23221/ HS23222	Technical Communication II / English for Professional Competence	HS	0	0	2	2	1
9.	GE23122	Engineering Practices – Electrical and Electronics	ES	0	0	2	2	1
MANDATORY COURSE								
10.	MC23111	Indian Constitution and Freedom Movement	MC	3	0	0	3	0
			TOTAL	**16**	**2**	**16**	**34**	**23**

SEMESTER III

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY COURSES								
1.	CE23311	Strength of Materials I	PC	3	0	0	3	3
2.	CE23312	Fluid Mechanics	PC	3	0	0	3	3
3.	CE23313	Construction Techniques, Equipment and Practice	PC	3	0	0	3	3
LAB ORIENTED THEORY COURSES								
4.	CE23331	Surveying	PC	3	0	2	5	4
5.	MA23331	Transforms and Statistics	BS	3	0	2	5	4
LABORATORY COURSES								
6.	CE23321	Construction Materials Laboratory	PC	0	0	4	4	2
7.	CS23422	Python Programming for Machine Learning	ES	0	0	4	4	2
			TOTAL	**15**	**0**	**12**	**27**	**21**

SEMESTER IV

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY COURSES								
1.	CE23411	Strength of Materials II	PC	3	0	0	3	3
2.	CE23412	Hydraulics and Irrigation Structures	PC	3	0	0	3	3
3.	CE23413	Water Supply Engineering	PC	3	0	0	3	3
4.	CE23414	Highway and Railway Engineering	PC	3	0	0	3	3
LAB ORIENTED THEORY COURSES								
5.	CE23431	Soil Mechanics	PC	3	0	2	5	4
OPEN ELECTIVES								
6.		Open Elective I	OE	3	0	0	3	3
LABORATORY COURSES								
7.	CE23421	Strength of Materials and Hydraulic Engineering Laboratory	PC	0	0	4	4	2
8.	GE23327	Soft Skills – I	EEC	0	0	2	2	1
			TOTAL	**18**	**0**	**8**	**26**	**22**

SEMESTER V

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY COURSES								
1.	CE23511	Design of Reinforced Concrete StructuralElements	PC	3	1	0	4	4
2.	CE23512	Foundation Engineering	PC	3	0	0	3	3
3.	CE23513	Waste Water Engineering	PC	3	0	0	3	3
LAB ORIENTED THEORY COURSES								
4.	CE23531	Structural Analysis	PC	3	0	2	5	4
PROFESSIONAL ELECTIVE COURSES								
5.		Professional Elective I	PE	3	0	0	3	3
OPEN ELECTIVES								
6.		Open Elective – II	OE	3	0	0	3	3
LABORATORY COURSES								
7.	CE23521	Water and Waste Water Analysis Laboratory	PC	0	0	4	4	2
8.	CE23522	Survey Camp (2 weeks)	PC	0	0	2	2	1
9.	GE23427	Soft Skills – II	EEC	0	0	2	2	1
			TOTAL	**18**	**1**	**10**	**29**	**24**
(* Two weeks at the end of Semester IV)								

SEMESTER VI

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY COURSES								
1.	CE23611	Design of Steel Structural Elements	PC	3	1	0	4	4
2.	CE23612	Construction, Planning, Scheduling and Management	PC	3	0	0	3	3
3.	CE23613	Structural Dynamics and Earthquake Engineering	PC	3	0	0	3	3
PROFESSIONAL ELECTIVE COURSES								
4.		Professional Elective II	PE	3	0	0	3	3
LAB ORIENTED THEORY COURSES								
5.	CE23631	Structural Design and Drawing	PC	3	0	2	5	4
6.	CE23632	Design Thinking for innovation in Civil Engineering	BS	1	0	2	3	2
LABORATORY COURSES								
8.	CE23622	Internship*	EEC	0	0	2	2	1
9.	GE23627	Problem Solving Techniques	EEC	0	0	2	2	1
TOTAL				**16**	**1**	**8**	**25**	**21**
(* Two weeks at the end of Semester V)								

SEMESTER VII

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY COURSES								
1.	CE23711	Estimation, Costing and Valuation Engineering	PC	3	0	0	3	3
2.	CE23712	Hydrology	PC	3	0	0	3	3
PROFESSIONAL ELECTIVE COURSES								
3.		Professional Elective III	PE	3	0	0	3	3
4.		Professional Elective IV	PE	3	0	0	3	3
LABORATORY COURSES								
5.	CE23721	Building Information Modelling	PC	0	0	4	4	2
6.	CE23722	Design Project	EEC	0	0	4	4	2
7.	CE23723	Artificial Intelligence and Machine Learning for Civil Engineers	BS	0	0	4	4	2
			TOTAL	**12**	**0**	**12**	**24**	**18**

SEMESTER VIII

S. NO.	COURSE CODE	COURSE TITLE	CATE-GORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
PROFESSIONAL ELECTIVE COURSES								
1.		Professional Elective V	PE	3	0	0	3	3
2.		Professional Elective VI	PE	3	0	0	3	3
LABORATORY COURSES								
3.	CE23821	Project Work	EEC	0	0	12	12	6
			TOTAL	**6**	**0**	**12**	**18**	**12**

Summary

SEMESTER	HS	BS	ES	PC	EEC	PE	OE	TOTAL
I	3	8	1	7				19
II	2	8	11	2				23
III		4	2	15				21
IV				18	1		3	22
V				17	1	3	3	24
VI		2		14	2	3		21
VII		2		8	2	6		18
VIII					6	6		12
Total	**5**	**24**	**15**	**80**	**12**	**18**	**6**	**160**

VERTICALS

Vertical 1	Vertical 2	Vertical 3	Vertical 4	Vertical 5	Vertical 6
Structural Engineering	**Environmental Engineering**	**Construction Materials and Management**	**Geotechnical Engineering**	**Geo-Informatics**	**Transportation Engineering**
CE23A11 - Advanced Structural Analysis	CE23B11 - Municipal Solid Waste Management	CE23C11 - Advanced Construction Techniques	CE23D11 - Analysis of Deep Foundation	CE23E11 - Cartography	CE23F11 - Intelligent Transport System
CE23A12 - Maintenance, Repair and Rehabilitation of Structures	CE23B12 - Industrial Wastewater Treatment	CE23C12 - Sustainable Construction and Lean Construction	CE23D12 - Ground Improvement Techniques	CE23E12 - Remote Sensing	CE23F12 - Design of Pavements
CE23A13 - Design of Bridges	CE23B13 - Air and Noise Pollution Control Engineering	CE23C13 - Characterization of Materials	CE23D13 - Geoenvironmental Engineering	CE23E13 - Geographic Information System	CE23F13 - Smart cities
CE23A14 - Prestressed Concrete Structures	CE23B14 - Solid and Hazardous Waste Management	CE23C14 - Structural Health Monitoring	CE23D14 - Geosynthetic Engineering	CE23E14 - Global Navigational Satellite System	CE23F14 - Urban Planning and Development
CE23A15 - Smart Materials and Structures	CE23B15 - Environmental and Social Impact Assessment	CE23C15 - Energy Efficient Buildings	CE23D15 - Soil exploration and field testing	CE23E15 - Hydrographic Surveying	CE23F15 - Transport Management System
CE23A16 - Pre-Engineered/ Pre-Fabricated Structures	CE23B16 - Marine Pollution and Control	CE23C16 - Safety in Construction	CE23D16 - Rock Mechanics	CE23E16 - Photogrammetry	CE23F16 - Airport and Harbour Engineering
CE23A17 - Tall Structures	CE23B17 - Global Climate Change	CE23C17 - Project management	CE23D17 - Machine Foundation	CE23E17 - RS and GIS applications in Water Resources Engineering	CE23F17 - Traffic Engineering