



SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY
An Autonomous Institution, Affiliated to Anna University
Coimbatore - 641 008

DEPARTMENT OF CIVIL ENGINEERING



CURRICULUM AND SYLLABI
BE CIVIL ENGINEERING
REGULATION 2022

SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY

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VISION AND MISSION OF THE DEPARTMENT

Our Vision

To be a center of excellence in Civil Engineering Education through full-fledged learning experience along with research.

Our Mission

To accomplish our vision, we are committed to

- M1: Faculty experts from all specialization of Civil Engineering to facilitate teaching learning process
- M2: Excellent infrastructure facilities to apply Civil Engineering knowledge and perform societal based research
- M3: Exposure to latest technologies in Civil Engineering through industry-institute interaction and professional bodies
- M4: Environs to develop their innovative thoughts, ethics, communication, inter- and intra-personal skills
- M5: Enthusiasm towards self-learning, social responsibility and entrepreneurship

Program Outcomes (POs):-

At the time of their graduation students of Civil Engineering Program should be in possession of the following Program Outcomes

- PO 1. **Engineering knowledge:** Apply the knowledge of mathematics, science and engineering fundamentals for the solution of complex Civil Engineering problems.
- PO 2. **Problem analysis:** Identify, formulate and analyse complex Civil Engineering problems reaching substantiated conclusions using first principles of mathematics and engineering sciences.
- PO 3. **Design/development of solutions:** Design solutions for complex Civil Engineering problems and design system components with appropriate consideration for public health & safety, cultural, societal and environmental considerations.

- PO 4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis & interpretation of data and synthesis of the information to provide valid conclusions.
- PO 5. **Modern tool usage:** Create, select & apply appropriate techniques, resources, modern engineering and IT tools, including prediction and modeling to complex Civil Engineering activities, with an understanding of the limitations.
- PO 6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal & cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO 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.
- PO 8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities as well as norms of the engineering practice.
- PO 9. **Individual and team work:** Function effectively as an individual, a member or leader in diverse teams and in multidisciplinary settings.
- PO 10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO 11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO 12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Educational Objectives (PEOs):-

The following Program Educational Objectives are designed based on the department mission

1. To apply knowledge of mathematics, science and engineering to solve existing problems in the area of Structural, Geotechnical, Water Resources, Environmental, Transportation, Urban Planning, Construction Materials and Management in Civil Engineering
2. To analyze, design, construct Civil Engineering traditional and modern structures

3. To perform investigation on any complicated Civil Engineering problems by conducting research using modern equipment's and software tools
4. To communicate and develop strong inter- and intra- personal skills to prepare them for placement and higher studies
5. To be self-motivated towards lifelong learning and entrepreneurship

Mapping of POs to PEOs

Program Educational Objectives	Program Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
PEO 1	3	2	3	2	2	3	2	2	3	3	3	2
PEO 2	3	3	2	2	3	2	2	2	2	2	2	3
PEO 3	3	3	3	2	3	3	2	2	2	3	2	3
PEO 4	3	3	2	2	3	2	2	2	2	2	2	3
PEO 5	3	3	3	2	3	3	2	2	2	3	2	3

1	Reasonably agreed	2	Moderately agreed	3	Strongly agreed
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Program Specific Outcomes (PSOs):-

At the end of the Program, Graduate shall have

- PSO 1 **Analytical Knowledge and Practical Skills** The ability to analyse, design and interpret by applying the concepts of mathematics and physical sciences in the core areas of Civil Engineering.
- PSO 2 **Civil Engineer and Sustainability** The propensity to excel in portfolio of waste management, sanitation, housing and construction management for the sustainable environment.
- PSO 3 **Environment and Social Commitment** The ability to acquire and update knowledge continuously and offer engineering solutions to meet the environmental and societal needs.

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

SEMESTER I									
SL. No.	Course Code	Course	L	T	P	Contact hrs./wk.	C	Ext / Int	Cat.
1.	22CE101	Introduction to Civil Engineering	3	0	0	3	3	60 / 40	HSMC
2.	22MA101	Engineering Mathematics I	3	1	0	4	4	60 / 40	BSC
3.	22EE113	Fundamentals of Electrical and Electronics Engineering	3	0	0	3	3	60 / 40	ESC
4.	22PH104	Applied Physics	3	0	2	5	4	50 / 50	BSC
5.	22EN101	Technical Communication Skills	2	0	2	4	3	50 / 50	BSC
6.	22CS101	Problem solving using C++	3	0	2	5	4	50 / 50	ESC
7.	22CE102	Engineering Practices Laboratory	0	0	4	4	2	40/60	ESC
8.	22EE115	Fundamentals of Electrical and Electronics Engineering Laboratory	0	0	2	2	1	40/60	ESC
9.	22MC101	Mandatory Course I	3 WEEKS				0	0/100	MC
		Total	17	1	12	30	24	900	

SEMESTER II									
SL. No.	Course Code	Course	L	T	P	Contact hrs./wk.	C	Ext / Int	Cat.
1.	22GE201	Universal Human Values	3	0	0	3	3	60/40	HSMC
2.	22ME101	Engineering Mechanics	3	0	0	3	3	60/40	ESC
3.	22MA201	Engineering Mathematics II	3	1	0	4	4	60/40	BSC
4.	22CH101	Engineering Chemistry	3	0	2	5	4	50/50	BSC
5.	22CS201	Data Structures and Algorithms	3	0	2	5	4	50/50	ESC
6.	22TA101	Heritage of Tamils	1	0	0	1	1	60/40	HSMC
7.	22CE201	Engineering Graphics Laboratory	0	0	4	4	2	40/60	ESC
8.	22MCxxx	Mandatory Course II	2	0	0	2	0	0/100	MC
		Total	18	1	8	27	21	800	

SEMESTER III									
SL. No.	Course Code	Course	L	T	P	Contact hrs./wk.	C	Ext / Int	Cat.
1.	22CE301	Surveying and Geomatics	3	1	0	4	4	60/40	PCC
2.	22MA301	Probability and Numerical Methods	3	1	0	4	4	60/40	BSC
3.	22CE302	Architectural Planning and Building Drawing	3	0	3	6	4.5	50/50	ESC
4.	22CE303	Strength of Materials	3	0	3	6	4.5	50/50	PCC
5.	22IT311	Introduction to Python programming	1	0	4	5	3	50/50	ESC
6.	22TA201	Tamils and Technology	1	0	0	1	1	60/40	HSMC
7.	22CE304	Surveying and Geomatics Laboratory	0	0	3	3	1.5	40/60	PCC
8.	22MCxxx	Mandatory Course III	2	0	0	2	0	0/100	MC
		Total	16	2	13	31	22.5	800	

SEMESTER IV									
SL. No.	Course Code	Course	L	T	P	Contact hrs./wk.	C	Ext / Int	Cat.
1.	22CE401	Environmental Engineering	3	0	0	3	3	60/40	PCC
2.	22xxxxx	Open Elective I	1 or 3	0 or 0	4 or 0	5 or 3	3	50/50 or 60/40	OEC
3.	22CE402	Construction Materials and Technology	3	0	3	6	4.5	50/50	PCC
4.	22CE403	Fluid Mechanics and Hydraulic Machinery	3	0	3	6	4.5	50/50	PCC
5.	22CE404	Structural Analysis	3	0	3	6	4.5	50/50	PCC
6.	22CE405	Environmental Engineering Laboratory	0	0	3	3	1.5	40/60	PCC
7.	22EES101	Employability Enhancement Skills (Internship / Training – 2 weeks)					1	40/60	EES
8.	22MCxxx	Mandatory Course IV	2	0	0	2	0	0/100	MC
		Total	15	0	16	31	22	800	

SEMESTER V									
SL. No.	Course Code	Course	L	T	P	Contact hrs./wk.	C	Ext / Int	Cat.
1.	22CE501	Geotechnical Engineering	3	1	0	4	4	60/40	PCC
2.	22CExxx	Professional Elective I	3	0	0	3	3	60/40	PEC
3.	22xxxxx	Open Elective II	1 or 3	0 or 0	4 or 0	5 or 3	3	50/50 or 60/40	OEC
4.	22CE502	Design of Reinforced Concrete Structures	3	0	3	6	4.5	50/50	PCC
5.	22CE503	Transportation Engineering	3	0	3	6	4.5	50/50	PCC
6.	22CE504	Soil Mechanics Laboratory	0	0	3	3	1.5	40/60	PCC
7.	22EES102	Employability Enhancement Skills (Internship / Training – 2 weeks)					1	40/60	EES
		Total	13	1	13	27	21.5	700	

SEMESTER VI									
SL. No.	Course Code	Course	L	T	P	Contact hrs./wk.	C	Ext / Int	Cat.
1.	22CE601	Construction Planning and Management	3	1	0	4	4	60/40	PCC
2.	22Cexxx	Professional Elective II	3	0	0	3	3	60/40	PEC
3.	22Cexxx	Emerging Elective I	3	0	0	3	3	60/40	EEC
4.	22Cexxx	Emerging Elective II	3	0	0	3	3	60/40	EEC
5.	22CE602	Construction Cost Estimation and Valuation	3	0	3	6	4.5	50/50	PCC
6.	22CE603	Design of Steel Structures	3	0	3	6	4.5	50/50	PCC
7.	22CE604	Project Planning and Development Laboratory	0	0	2	2	1	40/60	PCC
		Total	18	1	8	27	23	700	

SEMESTER VII									
SL. No.	Course Code	Course	L	T	P	Contact hrs./wk.	C	Ext / Int	Cat.
1.	22Cexxx	Professional Elective III	3	0	0	3	3	60/40	PEC
2.	22Cexxx	Professional Elective IV	3	0	0	3	3	60/40	PEC
3.	22Cexxx	Professional Elective V	3	0	0	3	3	60/40	PEC
4.	22Cexxx	Professional Elective VI	3	0	0	3	3	60/40	PEC
5.	22Cexxx	Emerging Elective III	3	0	0	3	3	60/40	EEC
6.	22Cexxx	Emerging Elective IV	3	0	0	3	3	60/40	EEC
7.	22CE701	Design Comprehensive Project	0	0	4	4	2	40/60	PROJ
Total			18	0	4	22	20	700	

SEMESTER VIII									
SL. No.	Course Code	Course	L	T	P	Contact hrs./wk.	C	Ext / Int	Cat.
PROJECT WORK									
1.	22CE801	Project Work	0	0	24	24	12	40/60	PROJ
Total			0	0	24	24	12	100	

L: Lecture T: Tutorial P: Practical C: Credit O: Outside Class hours Cat.: Category

HSMC : Humanities and Social Sciences including Management
BSC : Basic Science Courses
ESC : Engineering Science Courses
PCC : Professional Core Courses
PEC : Professional Elective Courses

OEC : Open Elective Courses
EEC :Emerging Elective Courses
EC :Emerging Courses
PROJ : Project Work
EES : Employability Enhancement Skills
MC : Mandatory Course

Definition of Credit:

L – Lecture 1 Hr. Lecture (L) per week 1 credit
T – Tutorial 1 Hr. Tutorial (T) per week 1 credit
P - Practical/Practice (Project and Industry based Courses) 1 Hr. Practical (P) per week 0.5 credit

SCHEME OF CREDIT DISTRIBUTION – SUMMARY

SL. No.	Stream	Credits/Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1.	Humanities & Social Sciences Including Management (HSMC)	3	4	1						8
2.	Basic Sciences (BSC)	11	8	4						23
3.	Engg. Sciences (ESC)	10	9	7.5						26.5
4.	Professional Core (PCC)			10	18	14.5	14			56.5
5.	Professional Electives (PEC)					3	3	12		18
6.	Open Electives (OEC) / Emerging Elective Courses (EEC)				3	3	6	6		18
7.	Project Work (PROJ) / (EES)				1	1		2	12	16
8.	Mandatory Course (MC)	Non-credit								0
Total		24	21	22.5	22	21.5	23	20	12	166

SEMESTER WISE CREDIT DISTRIBUTION: -

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	24	21	22.5	22	21.5	23	20	12	166

Total Credits: 166

STRUCTURE FOR UNDERGRADUATE ENGINEERING PROGRAMME

SL. No.	Course Work – Subject Area	AICTE Suggested Breakdown of Credits	SKCET Suggested Breakdown of Credits	Civil-SKCET Credits
1.	Humanities and Social Sciences including Management courses	12*	6-12	8
2.	Basic Science courses	25*	20-29	23
3.	Engineering Science courses including Workshop, Drawing, Basics of Electrical / Mechanical / Computer etc.	24*	15-32	26.5
4.	Professional core courses	48*	53-106.5	56.5
5.	Professional Electives courses relevant to the chosen specialization / branch	18*	15-18	18
6.	Open Subjects – Electives from other technical and / or emerging subjects	18*	6-18	18
7.	Project Work, Seminar and / or Internship in Industry or elsewhere.	15*	13-18 / 27	14
8.	Industrial Practice / Employability Enhancement Skills		2/1.5	2
9.	Mandatory Courses	Non-credit	Non-credit	Non-credit
Total		160*	167	166
<i>*Minor Variations is allowed as per need of the respective disciplines</i>				

HUMANITIES & SOCIAL SCIENCES INCLUDING MANAGEMENT (8 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22GE201	Universal Human Values	3/0/0	3	3	HSMC
2.	20CE101	Introduction to Civil Engineering	3/0/0	3	3	HSMC
3.	22TA101	Heritage of Tamils	1/0/0	1	1	HSMC
4.	22TA201	Tamils and Technology	1/0/0	1	1	HSMC

BASIC SCIENCE COURSES (23 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22EN101	Technical Communication Skills	2/0/2	4	3	BSC
2.	22PH104	Applied Physics	3/0/2	5	4	BSC
3.	22CH101	Engineering Chemistry	3/0/2	5	4	BSC
4.	22MA101	Engineering Mathematics I	3/1/0	4	4	BSC
5.	22MA201	Engineering Mathematics II	3/1/0	4	4	BSC
6.	22MA301	Probability and Numerical Methods	3/1/0	4	4	BSC

ENGINEERING SCIENCE COURSES (26.5 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22EE111	Fundamentals of Electrical and Electronics Engineering	3/0/0	3	3	ESC
2.	22EE115	Fundamentals of Electrical and Electronics Engineering Laboratory	0/0/2	2	1	ESC
3.	22CS101	Problem solving using C++	3/0/2	5	4	ESC
4.	22CS201	Data Structures and Algorithms	3/0/2	5	4	ESC
5.	22IT311	Introduction to Python programming	1/0/4	5	3	ESC
6.	22ME101	Engineering Mechanics	3/0/0	3	3	ESC
7.	22CE102	Engineering Practices Laboratory	0/0/4	4	2	ESC
8.	22CE201	Engineering Graphics Laboratory	0/0/4	4	2	ESC
9.	22CE302	Architectural Planning and Building Drawing	3/0/3	6	4.5	ESC

PROFESSIONAL CORE COURSES (51 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22CE301	Surveying and Geomatics	3/1/0	4	4	PCC
2.	22CE303	Strength of Materials	3/0/3	6	4.5	PCC
3.	22CE401	Environmental Engineering	3/0/0	3	3	PCC
4.	22CE402	Construction Materials and Technology	3/0/3	6	4.5	PCC
5.	22CE403	Fluid Mechanics and Hydraulic Machinery	3/0/3	6	4.5	PCC
6.	22CE404	Structural Analysis	3/0/3	6	4.5	PCC
7.	22CE501	Geotechnical Engineering	3/1/0	4	4	PCC
8.	22CE502	Design of Reinforced Concrete Structures	3/0/3	6	4.5	PCC

9.	22CE503	Transportation Engineering	3/0/3	6	4.5	PCC
10.	22CE601	Construction Planning and Management	3/1/0	4	4	PCC
11.	22CE602	Construction Cost Estimation and Valuation	3/0/3	6	4.5	PCC
12.	22CE603	Design of Steel Structures	3/0/3	6	4.5	PCC

PROFESSIONAL LABORATORY COURSES (5.5 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22CE304	Surveying and Geomatics Laboratory	0/0/3	3	1.5	PCC
2.	22CE405	Environmental Engineering Laboratory	0/0/3	3	1.5	PCC
3.	22CE504	Soil Mechanics Laboratory	0/0/3	3	1.5	PCC
4.	22CE604	Project Planning and Development Laboratory	0/0/2	2	1	PCC

PROFESSIONAL ELECTIVE COURSES (18 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
Elective Stream I: Structural and Foundation Engineering						
1.	22CE901	Bridge Engineering and Design of Special Elements	3/0/0	3	3	PEC
2.	22CE902	Conditional Assessment and Rehabilitation of Structures	3/0/0	3	3	PEC
3.	22CE903	Design of Foundations and Retaining Structures	3/0/0	3	3	PEC
4.	22CE904	Green Building Technology	3/0/0	3	3	PEC
5.	22CE905	Ground Improvement and Geosynthetics	3/0/0	3	3	PEC
6.	22CE906	Prefabricated Structures	3/0/0	3	3	PEC
7.	22CE907	Pre-stressed Concrete Structures	3/0/0	3	3	PEC
8.	22CE908	Soil Dynamics and Earthquake Engineering	3/0/0	3	3	PEC
9.	22CE909	Smart Materials and Structures	3/0/0	3	3	PEC
Elective Stream II: Environmental and Water Resource Engineering						
1.	22CE910	Air and Noise Pollution	3/0/0	3	3	PEC
2.	22CE911	Assessment of Contaminated Site and Remediation	3/0/0	3	3	PEC
3.	22CE912	Computing Techniques In Environmental Engineering	3/0/0	3	3	PEC
4.	22CE913	Groundwater and surface water pollution	3/0/0	3	3	PEC
5.	22CE914	Irrigation and water resources engineering	3/0/0	3	3	PEC

6.	22CE915	Remote Sensing and GIS for Civil Engineering	3/0/0	3	3	PEC
7.	22CE916	Surface Water Hydrology	3/0/0	3	3	PEC
8.	22CE917	Solid and Hazardous waste Management	3/0/0	3	3	PEC
9.	22CE918	Operation and Maintenance of Water and Wastewater Treatment Systems	3/0/0	3	3	PEC
Elective Stream III: Infrastructural Engineering and Management						
1.	22CE919	Computer Simulation Applications in Transportation Engineering	3/0/0	3	3	PEC
2.	22CE920	Construction Personnel Management	3/0/0	3	3	PEC
3.	22CE921	Economics and Business Finance	3/0/0	3	3	PEC
4.	22CE922	Highway Construction and Management	3/0/0	3	3	PEC
5.	22CE923	Marketing Management	3/0/0	3	3	PEC
6.	22CE924	Lean Startup Management	3/0/0	3	3	PEC
7.	22CE925	Risk and Reliability Analysis of Civil Infrastructure Systems	3/0/0	3	3	PEC
8.	22CE926	Road Transport Management and Economics	3/0/0	3	3	PEC
9.	22CE927	Valuation of Real Properties	3/0/0	3	3	PEC

EMERGING ELECTIVE COURSES (12 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22CE007	Applications of Sensors and IoT in Civil Engineering	3/0/0	3	3	EEC
2.	22CE008	Building and Town Planning	3/0/0	3	3	EEC
3.	22CE009	Environmental Ethics and Management	3/0/0	3	3	EEC
4.	22CE010	Environmental Geotechnics	3/0/0	3	3	EEC
5.	22CE011	Low carbon Building Materials and Systems	3/0/0	3	3	EEC
6.	22CE012	Metro Rail Engineering and Infrastructure	3/0/0	3	3	EEC
7.	22CE013	Nanotechnology in Civil and Environmental Engineering	3/0/0	3	3	EEC
8.	22CE014	Project Formulation and Implementation	3/0/0	3	3	EEC
9.	22CE015	Rural Water Supply and Onsite Sanitation Systems	3/0/0	3	3	EEC
10.	22CE016	Smart City Planning and Development	3/0/0	3	3	EEC
11.	22CE017	Sustainable Construction Materials and Methods	3/0/0	3	3	EEC
12.	22CE018	Waste to Energy	3/0/0	3	3	EEC

OPEN ELECTIVE COURSES (6 Credits) [Offered to Other Branches]

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22CE001	Disaster Management	3/0/0	3	3	OEC
2.	22CE002	Engineering Risk and Uncertainty	3/0/0	3	3	OEC
3.	22CE003	Environmental Pollution and Global issues	3/0/0	3	3	OEC
4.	22CE004	Project Management	3/0/0	3	3	OEC
5.	22CE005	Industrial Safety	3/0/0	3	3	OEC
6.	22CE006	Research Methodology and IPR	3/0/0	3	3	OEC

PROJECT WORK (14 Credits)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22CE701	Design Comprehensive Project	0/0/4	4	2	PROJ
2.	22CE801	Project Work	0/0/24	24	12	PROJ

EMPLOYABILITY ENHANCEMENT SKILLS (2 Credits)

SL. No.	Course Code	Course Title	Duration	C	Cat.
1.	22EES101	Employability Enhancement Skills (Internship / Training)	2 Weeks	1	EES
2.	22EES102	Employability Enhancement Skills (Internship / Training)	2 Weeks	1	EES

MANDATORY COURSES (Non-credit)

SL. No.	Course Code	Course Title	L/T/P	Contact hrs./Wk.	C	Cat.
1.	22MC101	Induction Programme	3 WEEKS		0	MC
2.	22MC102	Environmental Sciences	2/0/0	2	0	MC
3.	22MC103	Soft Skills	2/0/0	2	0	MC
4.	22MC104	Management Organizational Behavior	2/0/0	2	0	MC
5.	22MC105	General Aptitude	2/0/0	2	0	MC

VALUE ADDED COURSES (Additional credit courses)

SL. No.	Course Code	Course Title	Course Credits
1.	22VA130	Effective Communication Skills	2
2.	22VA101	Building Function Design using AutoCAD	1
3.	22VA102	Total Station and GPS Surveying	1

4.	22VA103	Arc GIS for Civil Engineers	1
5.	22VA104	Structural Analysis and Design Using STAAD.Pro	1
6.	22VA105	Project Management Using Primavera	1
7.	22VA106	3DBuilding Modeling Using Revit Architecture	1