SHIV NADAR
UNIVERSITY
CHENNAI

SSN School of Engineering

DEPARTMENT OF CIVIL AND INFRASTRUCTURE ENGINEERING

Bachelor of Technology
Civil Engineering

CURRICULUM

REGULATIONS 2026

VISION AND MISSION OF THE DEPARTMENT

VISION

To be a centre of excellence in academics, research, and innovation in the field of Civil Engineering and produce talented and globally competent engineers.

MISSION

- To impart quality education in Civil Engineering and produce engineers of global competence.
- To impart essential knowledge and skill sets to enhance employability and entrepreneurial capabilities.
- To offer state-of-the-art laboratory facilities in the field of civil engineering to enable faculty and students to carry out research beneficial to the industry and the society.
- To promote research and entrepreneurial activities to achieve sustainable development goals.
- To produce graduates with academic excellence, high professional and ethical standards.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Equip the students with engineering knowledge and skills required for successful career in Civil or allied engineering industries or being an entrepreneur.

PEO 2: Impart analytical skills and comprehension to solve complex engineering problems through research-based projects which pave the way to pursue higher studies in institutions of higher learning and to work in Research organizations or Academic Institutions.

PEO3: Inculcate ethical leadership qualities and lifelong professional knowledge acquisition to adapt to the changing global needs in their field of work.

PROGRAM OUTCOMES (POs)

Program outcomes are the skills and knowledge which the students should have acquired at the time of graduation. A program outcome indicates what a student can do from course-wise knowledge acquired during the program. Students who graduate from this program shall exhibit the following:

PO	Graduate Attribute	Programme Outcome
1	Engineering Knowledge	Apply the knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization to develop to the solution of complex Engineering problems (WK 1 to 4).
2	Problem Analysis	Identify, formulate, review research literature, and analyze complex Engineering problems reaching substantiated conclusions with consideration for sustained development (WK 1 to 4).
3	Design/Development of solutions	Design creative solutions for complex Engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required (WK5).
4	Conduct Investigations of Complex Problems	Conduct investigations of complex Engineering problems using research-based knowledge including design of experiments, modelling, analysis and interpretation of data to provide valid conclusions (WK8).
5	Engineering Tool Usage:	Create, select, and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling, recognizing their limitations to solve complex Engineering problems (WK2 and WK6).
6	The Engineer and The World	Analyze and evaluate societal and environmental aspects while solving complex Engineering problems for their impact on sustainability with reference to economy, health, safety, legal framework, culture and environment (WK1, WK5 and WK7).
7	Ethics	Apply ethical principles and commit to professional ethics, human

		values, diversity and inclusion; adhere to national & international laws (WK9).
8	Individual and Collaborative Teamwork.	Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
9	Communication	Communicate effectively and inclusively within the engineering community and the society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.
10	Project Management and Finance	Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multi-disciplinary environments.
11	Life-long learning	Recognize the need for and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1	Graduates will demonstrate in-depth knowledge and excel in the core areas of civil engineering such as structural, geotechnical, water resources and environmental engineering
PSO2	Graduates will be able to conceptualize, plan, design and develop sustainable civil engineering infrastructure considering present challenges and utilizing advanced technologies.

PEO - PO/PSO Mapping

PEO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
PEO1	3	3	3	2	3	2	2	3	2	2	3	3	2
PEO2	3	3	2	3	2	1	3	3	3	3	3	3	2
PEO3	1	1	1	1	3	3	2	1	2	2	3	2	2

Mapping Programme Outcomes with Graduate Attributes

Programme Outcomes		NBA's GAs
PO1:	**Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop the solution of complex engineering problems.	**GA1**
PO2:	**Problem Analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4).	**GA2**
PO3:	**Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/ processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society, and environment as required. (WK5).	**GA3**
PO4:	**Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).	**GA4**
PO5:	**Engineering Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6).	**GA5**
PO6:	**The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture, and environment. (WK1, WK5, and WK7).	**GA10**
PO7:	**Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity, and inclusion; adhere to national & international laws. (WK9).	**GA10**

PO8:	**Individual and Collaborative Teamwork:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams	**GA6**
PO9:	**Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences.	**GA8**
PO10:	**Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.	**GA7**
PO11:	**Life-Long Learning:** Recognize the need for and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8).	**GA9, G11**

Washington Accord Knowledge Levels (WK)	Attributes
WK1	Natural sciences and social sciences
WK2	Conceptually based mathematics
WK3	Engineering fundamentals
WK4	Engineering specialist knowledge
WK5	Engineering design and operations
WK6	Engineering Practice (Technology)
WK7	Engineering knowledge in society, public safety and sustainable development
WK8	Research based knowledge
WK9	Professional ethics, inclusive behaviour and conduct

Complex Engineering Problems (WP)	Attributes
WP1	Depth of knowledge required
WP2	Range of conflicting requirements
WP3	Depth of analysis required
WP4	Familiarity of issues
WP5	Extent of applicable codes
WP6	Extent of stakeholder involvement and conflicting requirements
WP7	Interdependence

Complex Engineering Activities (EA)	Attributes
EA1	Range of resources
EA2	Level of interactions
EA3	Innovation
EA4	Consequences to the society and environment
EA5	Familiarity

Sustainable Development Goals (SDG)	Details	Sustainable Development Goals (SDG)	Details
SDG 1	No poverty	SDG 10	Reducing inequality
SDG 2	Zero hunger	SDG 11	Sustainable cities and communities
SDG 3	Good health and well-being	SDG 12	Responsible consumption and production
SDG 4	Quality education	SDG 13	Climate action
SDG 5	Gender equality	SDG 14	Life below water
SDG 6	Clean water and sanitation	SDG 15	Life on land

SDG 7	Affordable and clean energy	SDG 16	Peace, justice and strong institutions
SDG 8	Decent work and economic growth	SDG 17	Partnerships for the goals
SDG 9	Industry, innovation and infrastructure		

COURSE SUMMARY

The listed courses in the curriculum are broadly classified as per the recommendations from the UGC.

Sl. No	Broad Category of Course	Minimum Credit Requirement
1	Major Core (MC)	80
2	Minor Stream (MS)	32
3	Multidisciplinary (MD)	09
4	Ability Enhancement Course (AEC)	08
5	Skill Enhancement Course (SEC)	09
6	Value Added Courses (VAC)	08
7	Summer Internship (SI)	02
8	Project Dissertation (PD)	12
Total		**160**

The semester wise credit breakup of the Curriculum based on the above credit breakup proposed by the UGC is as follows:

Semester\Category	MC	MS	MD	AEC	SEC	VAC	SI	PD	TOTAL
1	6	-	6	3	2	4	-	-	21
2	11	-	3	3	2	2	-	-	21
3	12	5	-	-	4	-	-		21
4	17	2	-	-	1	1	-	-	21
5	14	6	-	-	-	1	-	-	21
6	13	6	-	-	-	-	-	4	23
7	7	8	-	2	-	-	2	6	25
8	-	5	-	-	-	-	-	2	7
Total	80	32	9	8	9	8	2	12	**160**

Credit Breakup of Proposed Curriculum across Course Categories - Detailed

Semester	MC			MS			MD	AEC	SEC	VAC	SI	PD	TOTAL
	SSNSoE	*Dept Major*	*Program Major*	*SSNSoE*	*Dept Minor*	*Program Minor*	*SSNSoE*	*SSNSoE*	*Dept / Program*	*Dept / Program*	*Dept / Program*	*Dept / Program*	
1		6					6	3	2	4			21
2	3	8					**3**	3	2	2			21
3		12		3	2				4				21
4		14	3		2				1	1			21
5			14		6					1			21
6			13			6						4	23
7			7			8		2			2	6	25
8						5						2	7
Total	3	40	37	3	10	19	9	8	9	8	2	12	**160**

SEMESTER I

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW&SL	TH	C
1		Mathematical Foundations - I	MD	3	30	15	0	45	90	3
2		Engineering Chemistry	MD	4	30	0	30	30	90	3
3		Communicative English	AEC	4	30	0	30	30	90	3
4		Engineering Graphics	MC	3	15	0	30	45	90	3
5		Engineering Mechanics for Civil Engineering	MC	3	45	0	0	45	90	3
6		Professional Ethics and Human Values	VAC	2	30	0	0	30	60	2
7		Programming in Python for Data Science	VAC	3	15	0	30	15	60	2
PRACTICALS										
8		Makers Space Laboratory	SEC	3	0	0	45	15	60	2
TOTAL				**25**	**195**	**15**	**165**	**255**	**630**	**21**

SEMESTER II

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW&SL	TH	C
1		Mathematical Foundations - II	MC	3	45	0	0	45	90	3
2		English for Engineers	AEC	4	30	0	30	30	90	3
3		Engineering Physics	MD	4	30	0	30	30	90	3
4		Environmental Engineering	VAC	2	30	0	0	30	60	2
5		Civil Engineering Fundamentals and Practices	MC	5	45	0	30	75	150	5
6		Basic Electrical and Electronics Engineering	MC	3	45	0	0	45	90	3
PRACTICALS										
7		Sustainability Practices Laboratory	SEC	2	0	0	30	30	60	2
TOTAL				**23**	**225**	**0**	**120**	**285**	**630**	**21**

SEMESTER III

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Computational Methods for Civil Engineering	MS	4	30	0	30	30	90	3
2		Strength of Materials	MC	3	45	0	0	45	90	3
3		Construction Techniques and Practices	MS	2	30	0	0	30	60	2
4		Construction Materials	MC	3	45	0	0	45	90	3
5		Design Thinking, Innovation and Entrepreneurship	SEC	5	15	0	60	15	90	3
6		Fluid Mechanics	MC	3	45	0	0	45	90	3
PRACTICALS										
7		Strength of Materials Laboratory	MC	2	0	0	30	15	45	1.5
8		Construction Materials Laboratory	MC	2	0	0	30	15	45	1.5
9		Computer Aided Civil Engineering Drawing	SEC	2	0	0	15	15	30	1
TOTAL				**26**	**210**	**0**	**170**	**250**	**630**	**21**

SEMESTER IV

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Surveying Theory and Practice	MC	5	45	0	30	45	120	4
2		Concrete Technology	MC	3	45	0	0	45	90	3
3		Applied Hydraulics Engineering	MC	5	45	0	30	45	120	4
4		Soil Mechanics	MC	3	45	0	0	45	90	3
5		Material and Energy Science for Buildings	MS	2	30	0	0	30	60	2
6		Structural Analysis	MC	3	45	0	0	45	90	3
PRACTICALS										
7		Computational Mechanics Laboratory	SEC	2	0	0	15	15	30	1
8		Independent Research /Extra	VAC	2	0	0	15	15	30	1

		Academic Activity								
TOTAL				**25**	**255**	**0**	**90**	**285**	**630**	**21**

SEMESTER V

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Design of Reinforced Concrete Structures	MC	3	45	0	0	45	90	3
2		Construction Project management	MC	5	45	0	30	45	120	4
3		Foundation Engineering and Practices	MC	5	45	0	30	45	120	4
4		Water Supply Engineering	MC	3	45	0	0	45	90	3
5		Irrigation Engineering	MS	3	45	0	0	45	90	3
6		Machine Learning Techniques for Civil Engineers	MS	4	30	0	30	30	90	3
PRACTICALS										
7		Independent Research /Extra Academic Activity	VAC	2	0	0	15	15	30	1
TOTAL				**25**	**255**	**0**	**105**	**270**	**630**	**21**

Note: Students Pursuing GPP should register for an additional course on Project Management and Planning (3 credits) under MS category during V semester and this additional credit earned will be adjusted during VIII semester by exempting a minor course of 3 credits.

SEMESTER VI

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Design of Steel Structures	MC	3	45	0	0	45	90	3
2		Railways, Airports and Harbour Engineering	MC	3	45	0	0	45	90	3
3		Wastewater Engineering and Laboratory	MC	5	45	0	30	45	120	4
4		Quantity Surveying and Costing	MC	3	45	0	0	45	90	3
5		Minor Stream Course 1	MS	3	45	0	0	45	90	3

6		Minor Stream Course 2	MS	3	45	0	0	45	90	3
PRACTICALS										
7		Capstone Project Phase 1	PD	8	0	0	60	60	120	4
TOTAL				**28**	**270**	**0**	**90**	**330**	**690**	**23**

SEMESTER VII

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Highway Engineering and Practice	MC	5	45	0	30	45	120	4
2		Green Built Environment	MC	3	45	0	0	45	90	3
3		Minor Stream Course 3	MS	3	45	0	0	45	90	3
4		Minor Stream Basket 1	MS	3	45	0	0	45	90	3
5		Minor Stream Basket 2	MS	2	30	0	0	30	60	2
6		Introduction to Building Information Modeling	AEC	3	15	0	30	15	60	2
PRACTICALS										
7		Capstone Project Phase 2	PD	12	0	0	90	90	180	6
8		Summer Internship	SI	4	0	0	30	30	60	2
TOTAL				**35**	**225**	**0**	**180**	**345**	**750**	**25**

SEMESTER VIII

S. No.	COURSE CODE	COURSE TITLE	COURSE CATEGORY	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Minor Stream Basket 3	MS	2	30	0	0	30	60	2
2		Minor Stream Basket 4	MS	3	45	0	0	45	90	3
PRACTICALS										
3		Capstone Project Phase 3	PD	4	0	0	30	30	60	2
TOTAL				**9**	**75**	**0**	**30**	**105**	**210**	**7**

Major Core Courses

Department Core Courses

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Engineering Graphics	1	4	30	0	30	30	90	3
2		Engineering Mechanics for Civil Engineering	1	3	45	0	0	45	90	3
3		Civil Engineering Fundamentals & Practices	2	7	45	0	60	45	150	5
4		Basic Electrical and Electronics Engineering	2	3	45	0	0	45	90	3
5		Strength of Materials + Lab.	3	6	45	0	30	60	135	4.5
6		Construction Materials+ Lab.	3	6	45	0	30	60	135	4.5
7		Fluid Mechanics	3	45	0	0	45	45	90	3
8		Surveying Theory and Practice	4	5	45	0	30	45	120	4
9		Concrete Technology	4	3	45	0	0	45	90	3
10		Applied Hydraulics Engineering	4	5	45	0	30	45	120	4
11		Soil Mechanics	4	3	45	0	0	45	90	3

Programme Core Courses

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Structural Analysis	4	3	45	0	0	45	90	3
2		Design of Reinforced Concrete Structures	5	3	45	0	0	45	90	3
3		Construction Project Management	5	5	45	0	30	45	120	4
4		Foundation Engineering and Practices	5	5	45	0	30	45	120	4
5		Water Supply Engineering	5	3	45	0	0	45	90	3
6		Design of Steel Structures	6	3	45	0	0	45	90	3
7		Railways, Airports and Harbour Engineering	6	3	45	0	0	45	90	3
8		Wastewater Engineering and Laboratory	6	5	45	0	45	30	120	4
9		Quantity Surveying and Costing	6	3	45	0	0	45	90	3
10		Highway Engineering and Practice	7	5	45	0	30	45	120	4
11		Green Built Environment	7	3	45	0	0	45	90	3

Department Minor Stream Courses

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Computational Methods for Civil Engineering	3	4	30	0	30	30	90	3
2		Construction Techniques and Practices	3	2	30	0	0	30	60	2
3		Material and Energy Science for Buildings	4	2	30	0	0	30	60	2
4		Irrigation Engineering	5	3	45	0	0	45	90	3
5		Machine Learning Techniques for Civil Engineers	5	4	30	0	30	30	90	3

MINOR STREAMS

The Department of Civil and Infrastructure Engineering offers the following list of Minor Streams.

1. Infrastructure Engineering
2. Structural Engineering (For Civil Engineering students only)
3. Water Resources and Environmental Engineering

Each Minor Stream has seven courses worth 19 credits. The student must enroll in any one of the above three Minor Streams.

MINOR STREAM 1 - Infrastructure Engineering

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Urban Planning and Development	6	3	45	0	0	45	90	3
2		Alternative Building Materials and Technologies	6	3	45	0	0	45	90	3
3		Contract Laws and Administration	7	3	45	0	0	45	90	3
4		MINOR STREAM BASKET 1	7	3	45	0	0	45	90	3
5		MINOR STREAM BASKET 2	7	2	30	0	0	30	60	2
6		MINOR STREAM BASKET 3	8	2	30	0	0	30	60	2
7		MINOR STREAM BASKET 4	8	3	45	0	0	45	90	3

The following is the tentative list of courses that may be offered under the ***Minor Stream Baskets***:

Minor Stream Basket 1 (3 Credit courses)	***Minor Stream Basket 2 (2 Credit courses)***	***Minor Stream Basket 3 (2 Credit courses)***	***Minor Stream Basket 4 (3 Credit courses)***
Advanced Surveying	Remote Sensing Techniques and GIS	Robotics and Automation in Civil Engineering	Digital Operation Management and Building Information Modelling
Low Carbon Construction	Form work Engineering	Smart Cities	Construction Equipment and Machinery
Resilient and Sustainable Infrastructure	Watershed Conservation and Management	Geo-environmental Engineering	Ground Improvement Techniques
Traffic System Engineering	Plumbing (Water and Sanitation)	Air Quality Management	Pavement Engineering

MINOR STREAM 2 - Structural Engineering

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Advanced Reinforced Concrete Design	6	3	45	0	0	45	90	3
2		Prestressed Concrete Structures	6	3	45	0	0	45	90	3
3		Repair and Rehabilitation of Structures	7	3	45	0	0	45	90	3
4		MINOR STREAM BASKET 1	7	3	45	0	0	45	90	3
5		MINOR STREAM BASKET 2	7	2	30	0	0	30	60	2
6		MINOR STREAM BASKET 3	8	2	30	0	0	30	60	2
7		MINOR STREAM BASKET 4	8	3	45	0	0	45	90	3

The following is the tentative list of courses that may be offered under the ***Minor Stream Baskets***:

Minor Stream Basket 1 (3 Credit courses)	***Minor Stream Basket 2 (2 Credit courses)***	***Minor Stream Basket 3 (2 Credit courses)***	***Minor Stream Basket 4 (3 Credit courses)***
Finite Element Analysis	Structural Health Monitoring	Reinforced earth and Geosynthetics	Advanced Structural Analysis
Prefabricated Structures	Structural Design and Drawing	Disaster Preparedness and Management	Industrial Structures
Bridge Engineering	Tall Structures	Structural Dynamics and Earthquake Engineering	Advanced Foundation Engineering
Sustainable and Green Construction	Life Cycle Assessment	Composite structures	Cold form Steel Structures

MINOR STREAM 3 – Water resources and Environmental Engineering

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Industrial Waste Management	6	3	45	0	0	45	90	3
2		Municipal Solid Waste Management	6	3	45	0	0	45	90	3
3		Hydrology	7	3	45	0	0	45	90	3
4		MINOR STREAM BASKET 1	7	3	45	0	0	45	90	3
5		MINOR STREAM BASKET 2	7	2	30	0	0	30	60	2
6		MINOR STREAM BASKET 3	8	2	30	0	0	30	60	2
7		MINOR STREAM BASKET 4	8	3	45	0	0	45	90	3

The following is the tentative list of courses that may be offered under the ***Minor Stream Baskets***:

Minor Stream Basket 1 (3 Credit courses)	***Minor Stream Basket 2 (2 Credit courses)***	***Minor Stream Basket 3 (2 Credit courses)***	***Minor Stream Basket 4 (3 Credit courses)***
Environmental Modeling	Climate Change and Modeling	Environment Social Impact Assessment	Environment Issue and Sustainability
Water Quality and Management	Environment, Health and Safety	Environment Laws and policy	Transport of Water and wastewater
Water Resources Engineering	Irrigation and Environment drawing	Urban Water Infrastructure	Groundwater Engineering
Hazard Waste Management	Noise Pollution Control Engineering	Air Pollution	Biological Process for Contaminant Removal

Multi-Disciplinary Courses

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW&SL	TH	C
1		Mathematical Foundations - I	1	3	30	15	0	45	90	3
2		Engineering Chemistry	1	4	30	0	30	30	90	3
3		Engineering Physics	2	4	30	0	30	30	90	3

Skill Enhancement Courses

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW&SL	TH	C
1		Sustainability Practices Laboratory	1	4	0	0	45	15	60	2
2		Makers Space Lab	2	4	0	0	45	15	60	2
3		Design, Thinking, Innovation & Entrepreneurship	3	4	30	0	30	30	90	3
4		Computer Aided Civil Engineering Drawing	3	2	0	0	20	10	30	1
5		Computational Mechanics Laboratory	4	2	0	0	20	10	30	1

Ability Enhancement Courses

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW&SL	TH	C
1		Communicative English	1	4	30	0	30	30	90	3
2		English for Engineers	2	4	30	0	30	30	90	3
3		Introduction to Building Information Modeling	7	3	15	0	30	15	60	2

Value Added Courses

S. No.	COURSE CODE	COURSE TITLE	SEMESTER	CONTACT PERIODS	Teaching and Learning Scheme (per semester)					
					L	T	P	TW& SL	TH	C
1		Professional Ethics and Human Values	1	2	30	0	0	30	60	2
2		Programming in Python for Data Science	1	3	15	0	30	15	60	2
3		Environmental Engineering	2	2	30	0	0	30	60	2
4		Independent Research / Extra Academic Activity	4	2	0	0	20	10	30	1
5		Independent Research / Extra Academic Activitiy	5	2	0	0	20	10	30	1

Micro-Specialization

The Department offers Micro-Specializations to Undergraduate students. Its salient features are as follows:

1. Each Micro-Specialization has a defined structure in terms of three sequential components:
    - **Component I** - One Foundation course that constitutes a mandatory requirement and also a prerequisite for subsequent components.
    - **Component II** - Two courses from a specified vertical.
    - **Component III** - Project/Design/Term Paper
2. A Student would be required to complete all three components (12-14 credits) from the specified stream to earn a Micro-Specialization.

Provisional List of Micro-Specialization Verticals

The following is the list of Micro-Specialization verticals offered to our undergraduate students:

1. Engineered concrete and circular economy
2. Steel and composite construction
3. Disaster mitigation strategies
4. Environmental Sustainability
5. Pre-engineered buildings

GRAND PROJECT PATHWAY

Semester	Course	Credit
III	Design Thinking, Innovation and Entrepreneurship	3
IV	Independent Research /Extra Academic Activity	1
V	Independent Research /Extra Academic Activity	1
V	Project Management and Planning	3
VI	Capstone Project Phase 1	4
VII	Capstone Project Phase 2	6
VIII	Capstone Project Phase 3	2
	Total Credit for GPP	**20**

L - Lecture, **T** - Tutorial, **P** - Practical, TW & SL – Term Work & Self Learning, TH – Total Hours and **C** – Credits