SIPNA COLLEGE OF ENGINEERING & TECHNOLOGY, AMRAVATI

An Autonomous Institute Affiliated to

Sant Gadge Baba Amravati University, Amravati, Maharashtra (India)

(Approved by AICTE, New Delhi and Recognized by DTE, Maharashtra)

(Accredited With 'A+' Grade by NAAC)

Bachelor of Technology (B. Tech.)

Credit Distribution Structure (NEP)

Department of Civil Engineering

B. Tech. Civil Engineering with Multidisciplinary Minor

(Semester Pattern)

Effective from Academic Year 2024-25

Prepared by: Board of Studies - Civil Engineering

Approved by: Academic Council - Sipna COET, Amravati

			31/08/2024	1.00
Chairman Board of Studies	Dean Academics	Chairman Academic Council	Date of Release	Version

Index

APPROVED in 1st Academic Council Meeting
Dated:- 31/08/2024

About the Department:

Civil engineering is a professional engineering discipline that deals with the design, construction and maintenance of the physical and naturally built environment, including works like roads, bridges, canals, dams, and buildings. Civil engineering is the oldest engineering discipline after military engineering, and it was defined to distinguish non-military engineering from military engineering. It is traditionally broken into several sub-disciplines. Civil engineering takes place on all levels: public sector from municipal to international companies.

Courses offered

Course	Intake
Bachelor of Technology	60
Master of Technology (Civil-Structural Engineering)	18

Institute Vision

- To provide quality professional education and conducive environment to students to emerge as a model proficient institute.

Institute Mission

- To create scholarly and vibrant environment for professional excellence.
- To contribute to advancement of knowledge in basic and applied areas of engineering and technology.
- To be an institute of choice in the region by developing, managing and transferring contemporary technologies.
- To build mutually valuable terms with industry, society, and alumni.

Department Vision

- To provide quality professional education for creating reputed civil technocrats and entrepreneurs for the sustainable infrastructure development and cater the need of the society.

Department Mission

- To provide state of the art resources that contributes to a competitional learning environment.
- To contribute to advancement of knowledge through regular interaction with industries and offer solution to their problems.
- To remain updated with contemporary technology and develop managerial skills.
- To inculcate moral and ethical values among the students to fulfill society's needs.

APPROVED in 1st Academic Council Meeting
Dated:- 31/08/2024

Key Features of Curriculum

1. Provision for Open Electives Courses (OEC), Vocational and Skill Enhancement Courses (VSEC), Ability Enhancement Courses (AEC), Indian Knowledge System (IKS), Value Education Courses (VEC), Basic Science Courses (BSC), Engineering Science Courses (ESC), Co-curricular Courses (CC) in addition to program core courses.
2. Mandatory internship of one semester (06 Months)
3. Credits for Value Education Courses, Ability Enhancement Courses, Co-curricular and Extra Curricular Activities.
4. Interdisciplinary and multidisciplinary education through single minor, double minors and open electives.
5. Provision for learning courses in online mode through Swayam / MOOCS / NPTEL etc.
6. Provision for B.Tech. degree with Honors/ Double Minors.
7. Opportunity for learners to choose courses of their interest in all the disciplines.
8. Provision of Field Project.
9. Multiple Entry and Exit option after every year.

Programme Outcomes (POs):

Engineering Graduates will be able to:

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 to the solution of complex engineering problems.

PO2: Problem Analysis:
Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

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)

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).

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)

APPROVED in 1st Academic Council Meeting
Dated:- 31/08/2024

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).

PO7: Ethics:
Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

PO8: Individual and Collaborative Team work:
Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

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.

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.

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)

Program Education Objectives (PEOs):

Student will be able to

PEO-1	Acquire the fundamental knowledge in basic sciences and civil engineering to solve real life problems.
PEO-2	Succeed in getting engineering positions in government, public and private construction sector.
PEO-3	Succeed in the pursuit of higher studies and continue with life-long learning.
PEO-4	Get aware of social responsibility, ethical standards and environmental issues to serve the society.

APPROVED in 1st Academic Council Meeting
Dated:- 31/08/2024

Programme Specific Outcomes (PSOs):

Engineering graduates will be able to

PSO.1: Design and analyze various civil engineering structures that are based on sound principles which considers its functionality, safety, cost effectiveness and sustainability.

PSO.2: Investigate properties of construction materials using standard testing methods.

PSO.3: Enhance employability and entrepreneurial skills.

PSO.4: Use appropriate modern materials and equipments to provide solution related to environmental challenges.

General Course Structure

A. Definition of Credit

1 Hr. Lecture (L) per week	1 Credit
1 Hr. Tutorial (T) per week	1 Credit
2 Hours Practical (P) per week	1Credit

B. Total Credits for the completion of B.Tech. in Civil Engineering:

The total number of credits proposed for the four-year B.Tech. in Civil Engineering (CE) with one Multidisciplinary minor (Compulsory) degree is **172** as per the structure given below**:**

Students can opt for any of the following as per the rules and regulations given by the institute:

1. B. Tech. Civil Engineering with Multidisciplinary Minor = Total 172 Credits
2. B. Tech. Civil Engineering with Multidisciplinary Minor and Honors Specialization =Total 190 Credits
3. B. Tech. Civil Engineering with Multidisciplinary Minor and Honors with Research =Total 190 Credits
4. B. Tech. Civil Engineering with Multidisciplinary Minor and Specialisation Minor (Double Minors) = Total 190 Credits

APPROVED in 1st Academic Council Meeting
Dated:- 31/08/2024

C. Semester Wise Credit Distribution Structure for Four Year UG Program with One Multidisciplinary Minor.

Courses		No of Credits /Semester								Total Credits	% Credit Allotment
		1	2	3	4	5	6	7	8		
Basic Science Course	BSC/ESC	7	7	3						17	9.88
Engineering Science Course		8	9							17	9.88
Programme Core Course (PCC)	Program Courses		2	12	13	12	8	11		58	33.72
Programme Elective Course (PEC)						4	8	7		19	11.05
Multidisciplinary Minor (MD M)	Multidisciplinary Courses			3	3	3	3		2	14	8.13
Open Elective (OE) Other than a particular program				2	2	2				6	3.50
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	2	1		2		2			7	4.07
Ability Enhancement Course (AEC -01, AEC-02)	Humanities Social Science and Management (HSSMC)	1					1			2	6.4
Entrepreneurship /Economics/ Management Courses				2	2					4	
Indian Knowledge System (IKS)			2							2	
Value Education Course (VEC)		3								3	
Research Methodology	Experiential Learning Courses								4	4	12.21
Comm. Engg. Project (CEP)/Field Project (FP)						1				1	
Project								4		4	
Internship/ OJT									12	12	
Co-curricular Courses (CC)	Liberal Learning Courses	1	1							2	1.16
Total Credits		**22**	**22**	**22**	**22**	**22**	**22**	**22**	**18**	**172**	**100%**

APPROVED in 1st Academic Council Meeting
Dated:- 31/08/2024

1. Vocational and Skill Enhancement Courses (VSEC):07 Credits

VSEC Courses include hands-on training corresponding to the Major and/or Minor Subject. Vocational courses include skill based advanced laboratory practical of Major programme.

The Following courses are offered as Vocational and Skill Enhancement Courses by department of Civil engineering.

S.N.	Course Title	Semester	Credits
1	Fundamentals of AutoCAD	I	01
2	Design Thinking	I	01
3	Building Construction Practices	II	01
4	Computational Structural Analysis	IV	02
5	QGIS for Civil Engineering	VI	02
Total Credits			**07**

2. Humanities, Social Science and Management Courses [HSSMC]:12Credits

The following courses are offered as Humanities, Social Science and Management Courses by Civil Engineering Department.

S.N.	Category	Course Title	Semester	Credits
1	Ability Enhancement Course (AEC-I)	Professional Communication	I	2
2	Value Education Course (VEC-I)	Values and Ethics	I	1
3	Value Education Course (VEC-II)	Environmental Studies	I	2
4	Indian Knowledge System (IKS)	Indian Knowledge System	II	2
5	Ability Enhancement Course (AEC-II)	Principles of Management	VI	1
6	Entrepreneurship/Economics/ Management Courses	Entrepreneurship in Civil Engineering	III	2
7	Entrepreneurship/Economics/ Management Courses	Modern Indian Language	IV	2
		Total Credits		12

APPROVED in 1st Academic Council Meeting
Dated:- 31/08/2024

3. Multidisciplinary Minor Courses: 14 Credits

The MDM allows students majoring in an engineering discipline to take a minor from a different discipline, thereby gaining exposure beyond their core subject.

By offering minors, Sipna COET gives students the freedom to choose parts of their curriculum that align with their interests and career aspirations outside their main discipline.

Once a student registers for the selected track of the Multidisciplinary Minor (MDM) course in the 3rd semester, he/she is required to complete *all* the credits assigned to that chosen MDM track from the 3rd to the 8th semester.

Sr. No.	Course Category	Semester	Credits
1	Multidisciplinary Minor-I	III	3
2	Multidisciplinary Minor-II	IV	3
3	Multidisciplinary Minor-III	V	3
4	Multidisciplinary Minor-IV	VI	3
5	Multidisciplinary Minor-V (Capstone Project)	VIII	2
		Total Credits :14	

For the detailed syllabus of the Multi-Disciplinary Minor (MDM) courses click here.

4. Open Elective Courses: 06 Credits

The Open Elective allows students to choose a course outside of their engineering discipline, thereby enabling multidisciplinary exposure, creative thinking and the broadening of academic horizons.
Students will be given a curated basket of Open Elective courses starting from third semester, which they may select based on their interest and capacity. These courses carry academic credit and form part of the degree requirement.

Sr. No.	Course Category	Semester	Credits
1	Open Elective-I	III	2
2	Open Elective -II	IV	2
3	Open Elective-III	V	2
		Total Credits: 6	

For the detailed syllabus of the Open Electives courses click here.

APPROVED in 1st Academic Council Meeting Dated:- 31/08/2024

5. Honors/ Double Minors Degree Programs: 18 Credits

A student shall be eligible for the award of B.Tech. degree with Honors / Double Minors if he/she earns 18 credits in addition to the 172 credits of regular B.Tech. Programme within 4 years duration. It is not mandatory for any student to opt for the Honors /Double Minors Programme.

Honors and Double Minor courses are offered in various semesters as outlined below from the Academic Session 2024-25.

Sr. No.	Course Category	Semester	Credits
1	Honors/Double Minors-I	III	4
2	Honors/Double Minors-II	IV	4
3	Honors/Double Minors-III	V	4
4	Honors/Double Minors-IV	VI	4
5	Honors/Double Minors-V	VII	2
		Total Credits :18	

For Honors/Double Minors degree programmes refer syllabus and scheme click here .
The guidelines related to the Honors/ Double Minor Certification are provided as separate document: Rules and Regulations of Honors and Minors.

APPROVED in 1st Academic Council Meeting
Dated:- 31/08/2024