



DEPARTMENT OF CIVIL ENGINEERING

COURSE STRUCTURE and SYLLABUS- 2020 PATTERN

Profile: Sanjivani College of Engineering was established in the year 1983. The Civil Engineering Department is a part of the institute since its inception. The Department has grown over the years with qualified teaching faculty members who are passionate to impart quality education. The department laboratories are fully equipped with latest equipment, software and with all necessary teaching aids. It is now recognized as one of the prominent departments and known for academic excellence under the Pune University. The department is having valid Accreditation by 'NBA' from 31 July 2015 to 31 June 2021. Besides high quality teaching and instruction at UG, PG and Ph. D., the department is actively involved in basic and applied research and consultancy services. The department is providing quality technical and advisory support through consultancy to various private construction agencies, State Government, Central Government projects.

Apart from academic knowledge, we also, train our students to face the challenges in their profession by providing value added courses like Communication and Presentation skills, building of Team Spirit through field study, expert talk etc. The department also, provides an opportunity to learn software like AUTOCAD, REVIT ARCHITECTURE, STAD- PRO, ETAB, MS-PROJECT etc. to make our students more digitalized.

We arrange regular interaction of our stake holders like students, parents and faculty along with a Training and Placement cell which works full time for bright future of our students. The results are consistently above 90% and considerable number of student ranks in SPPU merit list. Students from Civil department have made incredible mark national and international levels and we are sure will continue in times to come.

The Infrastructure development in India is growing at a faster rate and there are many career paths for civil engineers. Civil engineers are essential in government sector, public and private sector and Multinational companies, to build various mega projects like highways, Industrial structures, smart cities, and reservoirs etc. The next decade will be most demanding and rewarding for Civil engineers.



Civil Engineering Department

VISION

- To become a premier source of competent Civil Engineering Professionals for providing service to the Nation.

MISSION

- To provide quality education in Civil Engineering profession.
- To impart knowledge to students for socio-economic growth of India.
- To promote Civil Engineering Graduates to become an entrepreneur.
- To motivate Civil Engineering Professionals towards competitive services, higher studies and research.

Program Educational Objectives: (PEOs)

PEO 1: Excellence in civil engineering profession by acquiring knowledge of advanced civil engineering technologies.

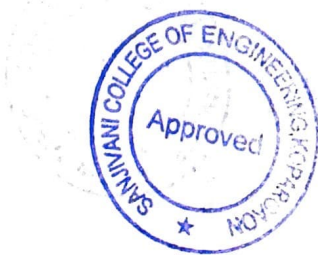
PEO 2: Capable to identify, analyze and design solutions for civil engineering problems in context of social, environmental, ethical and economic growth of the nation

PEO 3: To improve their technical and professional skills through value addition programs, software's to develop a long term productive career in industry, Govt Services or an entrepreneur.

Program Outcomes (POs):

Engineering 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.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with 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.
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.
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 Specific outcomes: (PSOs)

PSO1: Graduates will be able to model, analyze and design Civil Engineering Infrastructures using modern tools and technologies.

PSO2: Graduates will be able to identify and provide innovative and sustainable solutions to water, soil, and environmental problems needs including construction planning, project managements and Transportation systems.



SEMESTER-I

Group-A (Mechanical, Civil, Structural)		Group- B (Computer, IT, ETC, Electrical, Mechatronics)	
Subject code	Name of the subject	Subject code	Name of the subject
LA101	Linear Algebra and Stochastic Processes	LA101	Linear Algebra and Stochastic Processes
EP102	Engineering Physics	EC103	Engineering Chemistry
CF105	Computer Fundamentals and Programming	BE104	Basic Electrical and Electronics Engineering
EM110	Engineering Mechanics	EG106	Engineering Graphics
BM108	Basic Mechanical Engineering and Workshop Practice	CS107	Communication Skills

SEMESTER-II

Group-A (Mechanical, Civil, Structural)		Group- B (Computer, IT, ETC, Electrical, Mechatronics)	
Subject code	Name of The subject	Subject code	Name of The subject
MC109	Multivariate Calculus	MC109	Multivariate Calculus
EC103	Engineering Chemistry	EP102	Engineering Physics
BE104	Basic Electrical and Electronics Engineering	CF105	Computer Fundamentals and Programming
EG106	Engineering Graphics	EM110	Engineering Mechanics
CS107	Communication Skills	BM108	Basic Mechanical Engineering and Workshop Practice
PE111	Physical Education and Sport	PE111	Physical Education and Sport
ES112	Environmental Science	ES112	Environmental Science



F.Y. B. TECH. REVISED COURSE STRUCTURE-2020

SEMESTER-I : 2020-21

Course Type	Course Code	Course Title	Course type	Teaching Scheme			Credits	Max marks				
				L (hrs.)	T (hrs.)	P (hrs.)		TW	TA	ISE	ESE	Total
BSC	LA101	Linear Algebra and Partial differentiation	TH	4	1	--	5	25	20	30	50	125
BSC	EP102 / EC103	Engineering Physics/ Engineering Chemistry	TH	3	--	2	4	25	20	30	50	125
EFC	CF 105/ BE104	Computer Fundamentals and Programming /Basic Electrical and Electronics Engineering	TH	3	--	2	4	25	20	30	50	125
EFC	EM110 / EG106	Engineering Mechanics/ Engineering Graphics	TH	3	--	2	4	25	20	30	50	125
HSMC/ EFC	BM108 / CS107	Basic Mechanical Engg and Workshop Practice / Communication Skills	TH	2	--	2	3	25	20	30	50	125
IP		Induction Program	--	--	--	--	--	--	--	--	--	--
Total				16	1	8	20	125	100	150	250	625

SEMESTER-II : 2020-21

Course Type	Course Code	Course Title	Course type	Teaching Scheme			Credits	Max marks				
				L (hrs)	T (hrs)	P (hrs)		TW	TA	ISE	ESE	Total
BSC	MC109	Multivariate Calculus	TH	4	1	--	5	25	20	30	50	125
BSC	EC103 / EP102	Engineering Chemistry/ Engineering Physics	TH	3	--	2	4	25	20	30	50	125
EFC	BE104 / CF105	Basic Electrical and Electronics Engineering/Computer Fundamentals and Programming	TH	3	--	2	4	25	20	30	50	125
EFC	EG106 / EM110	Engineering Graphics / Engineering Mechanics	TH	3	--	2	4	25	20	30	50	125
EFC/ HSMC	CS107/ BM108	Communication Skills/ Basic mechanical Engg. and Workshop Practice	TH	2	--	2	3	25	20	30	50	125
HSMC	PE111	Physical Education and Sport	TH	1		2	2	50	--	--	--	50
MLC	ES112	Environmental Science	TH	2	--	--	0	--	--	--	--	--
Total				19	1	10	22	175	100	150	250	675

Group A: Mechanical, Civil, Structural (06 Divisions)

Group B: Computer, IT, ETC, Electrical, Mechatronics(06 Divisions)



COURSE STRUCTURE and SYLLABUS- 2020 PATTERN

SECOND YEAR B. TECH., SEM-I

(W.e.f June 2021)

Board of Studies in Civil Engineering, June 2021

LIST OF ABBREVIATIONS			
Abbreviation	Full Form	Abbreviation	Full Form
ESC	Engineering Science	HSC	Humanity Science
PCC	Professional Core	CIA	Continuous Internal Assessment
PEC	Professional Elective	OR	Oral Examination
OE	Open Elective	PR	Practical Examination
ISE	In-Semester Evaluation	TW	Continuous Term work Evaluation
ESE	End-Semester Evaluation	MLC	Mandatory Learning Course
BSC	Basic Science Course	PRJ	Project/Seminar/Internship/Online Course

SEMESTER-III

Cat	Code	Course Title	Hrs./Week			Credits	Evaluation Scheme-Marks						
			L	T	P		Theory			OR	PR	TW	Total
							ISE	ESE	CIA				
BSC	BS202	Engineering Mathematics-III	3	1	-	4	30	50	20	-	-	-	100
PCC	CE201	Solid Mechanics	3	-	-	3	30	50	20	-	-	-	100
PCC	CE203	Surveying	3	-	-	3	30	50	20	-	-	-	100
PCC	CE204	Building Technology and Materials	3	-	-	3	30	50	20	-	-	-	100
HSC	HS205	Universal Human Values and Ethics	3	-	-	3	30	50	20	-	-	-	100
PCC	CE206	Solid Mechanics Lab	-	-	2	1	-	-	-	50	-	-	50
PCC	CE207	Surveying Lab	-	-	2	1	-	-	-	-	50	-	50
PCC	CE208	Building Technology and Basics of AUTO CAD Lab	-	-	2	1	-	-	-	-	-	50	50
PCC	CE209	Building Technology and Basics of AUTO CAD Lab	-	-	2	1	-	-	-	50	-	-	50
MLC	MC210	Mandatory Course - III	2	-	-	No Credits	-	-	-	-	-	-	-
		Total	17	01	08	20	150	250	100	100	50	50	700

MC210	Mandatory Course-III	Constitution of India – Basic features and fundamental principles
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COURSE STRUCTURE and SYLLABUS- 2020 PATTERN

SECOND YEAR B. TECH., SEM-II

(W.e.f June 2021)

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Abbreviation	Full Form	Abbreviation	Full Form
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SEMESTER-IV

Cat	Code	Course Title	Hrs./Week			Credits	Evaluation Scheme-Marks						
			L	T	P		Theory			OR	PR	TW	Total
							ISE	ESE	CIA				
PCC	CE211	Programming in Civil Engineering	3	-	-	3	30	50	20	-	-	-	100
PCC	CE212	Concrete Technology	3		-	3	30	50	20	-		-	100
PCC	CE213	Geotechnical Engineering	4	-	-	4	30	50	20	-	-	-	100
PCC	CE214	Analysis of Structures	3	1	-	4	30	50	20	-	-	-	100
PCC	CE215	Computer Aided Architectural building drawing	1	-	-	1	15	25	10	-	-	-	50
PCC	CE216	Programming in Civil Engineering (Lab)	-	-	2	1	-	-	-	-	-	50	50
PCC	CE217	Concrete Technology Lab	-	-	2	1	-	-	-	50	-	-	50
PCC	CE218	Geotechnical Engg. Lab	-	-	2	1	-	-	-	-	50	-	50
PCC	CE219	Computer Aided Architectural building drawing Lab	-	-	4	2	-	-	-	50	-	-	50
PRJ	CE220	Seminar	-	-	4	2	-	-	-	50	-	-	50
MLC	MC221	Mandatory Course-IV	-	-	2	No Credits	-	-	-	-	-	-	-
		Total	14	1	16	22	135	225	90	150	50	50	700

MC221	Mandatory Course-IV	Innovation - Project based – Sc., Tech, Social, Design & Innovation
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COURSE STRUCTURE and SYLLABUS- 2020 PATTERN

THIRD YEAR B. TECH.

(W.e.f June 2022)

Board of Studies in Civil Engineering

LIST OF ABBREVIATIONS			
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SEMESTER-V

Cat	Code	Course Title	Hrs./Week			Credits	Evaluation Scheme						
			L	T	P		Theory			OR	PR	TW	Total
							CIA	ISE	ESE				
PCC	CE301	Design of Steel Structures	4	-	-	4	20	30	50	-	-	-	100
PCC	CE302	Fluid Mechanics	4		-	4	20	30	50	-	-	-	100
PCC	CE303	Project Management and Economics	3	-	-	3	20	30	50	-	-	-	100
PCC	CE304	Engineering Geology	3	-	-	3	20	30	50	-	-	-	100
PEC	PE305	Professional Elective-I	3	-	-	3	20	30	50	-	-	-	100
PCC	CE306	Design of Steel Structures Lab	-	-	2	1	-	-	-	50	-		50
PCC	CE307	Fluid Mechanics Lab	-	-	2	1	-	-	-	50		-	50
PCC	CE308	Engineering Geology Lab	-	-	2	1	-	-	-	-	50	--	50
PROJ	CE309	Mini Project Based on Skill based credit course	-	-	2	1			-			50	50
MLC	MC310	Mandatory Course-V: (Field Practices in Civil Engineering)	(1)	-	-	Non Credits	-	-	-	-	-	-	Pass / Fail
		Total	18	---	08	21	150	250	100	100	50	50	700

Professional Elective- I : (PEC305)

- I. (PE305-a): Advanced Analysis of Structures
- II. (PE305-b): Advance Foundation Engineering
- III. (PE305-c): Infrastructure Engineering and Construction Techniques
- IV. (PE305-d): Sustainable Building Planning



COURSE STRUCTURE and SYLLABUS- 2020 PATTERN

THIRD YEAR B. TECH.

(W.e.f June 2022)

Board of Studies in Civil Engineering

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SEMESTER-VI

Cat	Code	Course Title	Hrs./Week			Credits	Evaluation Scheme						
							Theory			OR	PR	TW	Total
							CIA	ISE	ESE				
PCC	CE311	Hydrology and Water Resource Engineering	3	-	-	3	20	30	50	-	-	-	100
PCC	CE312	Design of Reinforced Concrete Structures	4	-	-	4	20	30	50	-	-	-	100
PCC	CE313	Advance Analysis of Structures	3	-	-	3	20	30	50	-	-	-	100
PEC	PE314	Professional Elective-II	3	-	-	3	20	30	50	-	-	-	100
HSMC	HS315	Corporate Readiness	2	-	-	2	50	-	-	-	-	-	50
PRJ	PR316	IPR and EDP	2	-	-	2	20	-	20	-	-	-	50
PCC	CE317	Hydrology and Water Resource Engineering Lab	-	-	2	1	-	-	-	50	-	-	50
PCC	CE318	Design of Reinforced Concrete Structures Lab	-	-	2	1	-	-	-	50	-	-	50
PEC	PE319	Professional Elective-II (Lab)	-	-	2	1	-	-	-	-	-	50	50
PRJ	CE320	Creational Activity	-	-	2	1	-	-	-	-	-	50	50
MLC	MC321	Mandatory Course-VI: (Formwork in Constructions)	1	-	-	No Credits	-	-	-	-	-	-	Pass / Fail
		Total	18	-	08	21	120	230	150	100	-	100	700



EC	PE314	Professional Elective-II
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PE314-a: Water Treatment and Distribution

PE314-b: Hydraulics and Hydraulic Machinery

PE314-c Advanced Surveying

PE314-d: Advanced Concrete Technology



Sanjivani College of Engineering Kopargaon-423603
Department of Civil Engineering
COURSE STRUCTURE and SYLLABUS- 2020 PATTERN

FINAL YEAR B. TECH.

(W.e.f August 2023)

Board of Studies in Civil Engineering, August 2023

LIST OF ABBREVIATIONS

Abbreviation	Full Form	Abbreviation	Full Form
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OEC	Open Elective	PR	Practical Examination
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SEMESTER-VII

Course		Course Title	Teaching Scheme				Evaluation Scheme / Marks						
Cat	Code		Hrs /Week			Credits	Theory			OR	PR	TW	Total
			L	T	P		CIA	ISE	ESE				
PCC	CE401	Waste Water Treatment, Disposal and Recycling	3	-	-	3	20	30	50	-	-	-	100
PCC	CE402	Transportation Engineering	3	-	-	3	20	30	50	-	-	-	100
PCC	CE403	Quantity Survey, Contracts & Tenders	3	-	-	3	20	30	50	-	-	-	100
PEC	PE404	Professional Elective - III	3	-	-	3	20	30	50	-	-	-	100
PEC	PE405	Professional Elective - IV	3	-	-	3	20	30	50	-	-	-	100
LC	CE406	Characterization of Wastewater Lab	-	-	2	1	-	-	-	50	-	-	50
LC	CE407	Transportation Engineering Lab	-	-	2	1	-	-	-	-	-	25	25
LC	CE408	Professional Practice Lab	-	-	2	1	-	-	-	50	-	-	50
LC	CE409	Professional Elective-III Lab	-	-	2	1	-	-	-	25	-	-	25
PROJ	CE410	Project Stage-I	-	-	6	3	-	-	-	50	-	100	150
MLC	MC411	Mandatory Learning Course-VII (Financially Smart)	1	-	-	Non Credit	-	-	-	-	-	-	Pass/ Fail
		Total	16	-	14	22	100	150	250	175	-	125	800



FINAL YEAR B. TECH. SEM-I Electives

PEC- Professional Elective-3 : (PE404)		PEC- Professional Elective-4 : (PE405)	
PE404-a	Design of Reinforced and Prestressed Concrete Structures	PE405-a	Dams & Hydraulic Structures
PE404-b	Air & Noise Pollution Control	PE405-b	Foundation Engineering
PE404-c	Advanced Concrete Technology	PE405-c	Solid Waste Management
PE404-d	Structural Audits & Retrofitting	PE405-d	Formwork Technology & Plumbing Systems
PE404-e	Construction Safety Management	PE405-e	Smart Cities Planning & Management

Dr. C.L. Jejurkar
Head of Department

Dr. A. B. Pawar
Dean Academics

Dr. A.G. Thakur
Director



DEPARTMENT OF CIVIL ENGINEERING
FINAL YEAR B. TECH. SEM-II
(W.e.f. Jan 2024)
Board of Studies in Civil Engineering, Jan 2024

LIST OF ABBREVIATIONS			
Abbreviation	Full Form	Abbreviation	Full Form
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SEMESTER-VIII

Course		Course Title	Teaching Scheme				Evaluation Scheme / Marks						
Cat	Code		Hrs /Week			Credits	Theory			OR	PR	TW	Total
			L	T	P		CIA	ISE	ESE				
OEC	OE412	Open Elective -1	3	-	-	3	25	-	75	-	-	-	100
OEC	OE413	Open Elective -2	3	-	-	3	25	-	75	-	-	-	100
OEC	OE414	Open Elective -3	2	-	-	2	25	-	75	-	-	-	100
PRJ	CE415	Professional Internship	-	-	12	6	-	-	-	50	-	100	150
PRJ	CE416	Project Stage-II	-	-	4	2	-	-	-	50	-	-	50
		Total	08	-	16	16	75	--	225	100	-	100	500

Dr.C.L. Jejurkar
BOS Chairman

Dr.A.B. Pawar
Dean Academics

Dr.A.G. Thakur
Director

OEC-OE412- Professional Elective- 1 through NPTEL

OEC-OE413- Professional Elective- 2 through NPTEL

OEC-OE414- Professional Elective- 3 through NPTEL



Sr.No.	Name of NPTEL Courses	NPTEL Link	Duration
OEC-OE412-Open Elective-I			
1)	Admixtures & Special Concrete	https://onlinecourses.nptel.ac.in/noc23_ce61/prev iew	12 Weeks
2)	Availability & Management of ground water	https://onlinecourses.nptel.ac.in/noc23_ce82/prev iew	12 Weeks
3)	Water Economics & Governance	https://onlinecourses.nptel.ac.in/noc23_ce86/prev iew	12 Weeks
4)	Integrated Cities Water Management for Smart cities	https://onlinecourses.nptel.ac.in/noc23_ce89/prev iew	12 Weeks
OEC-OE413-Open Elective-II			
1)	Pavement Materials	https://onlinecourses.nptel.ac.in/noc23_ce99/prev iew	12 Weeks
2)	Geosynthetics & Reinforced Soil structures	https://onlinecourses.nptel.ac.in/noc23_ce60/prev iew	12 Weeks
3)	Bridge Engineering	https://onlinecourses.nptel.ac.in/noc23_ce81/prev iew	12 Weeks
4)	Soft Skills	https://onlinecourses.nptel.ac.in/noc23_hs145/pre view	12 Weeks
OEC-OE414-Open Elective-III			
1)	Sustainable Engineering Concepts & Life Cycle Analysis	https://onlinecourses.nptel.ac.in/noc23_ce90/prev iew	8 Weeks
2)	Project Planning & Control	https://onlinecourses.nptel.ac.in/noc23_ce59/prev iew	8 Weeks
3)	Subsurface Exploration	https://onlinecourses.nptel.ac.in/noc23_ce69/prev iew	8 Weeks

