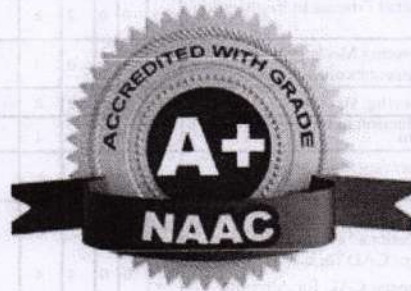




TULSIRAMJI GAIKWAD-PATIL College of Engineering & Technology

Mohgaon, Wardha Road, Nagpur - 441 108



Bachelor of Technology SoE and Syllabus 2023-24 (Department of Civil Engineering)

Vision of Institute

To emerge as a learning Center of Excellence in the National Ethos in domains of Science, Technology and Management.

Mission of Institute

- M1- To strive for rearing standard and stature of the students by practicing high standards of professional ethics, transparency and accountability.
- M2- To provide facilities and services to meet the challenges of Industry and Society.
- M3- To facilitate socially responsive research, innovation and Entrepreneurship.
- M4- To ascertain holistic development of the students and staff members by inculcating knowledge and profession as work practices.



Tulsiramji Gaikwad - Patil College of Engineering and Technology

Wardha Road, Nagpur - 441 108 Accredited with NAAC A+ Grade

Approved by AICTE, New Delhi, Govt. of Maharashtra

(An Autonomous Institution Affiliated to RTM Nagpur University)



Scheme of Instruction for First Year of B. Tech. (UG) Programme Group-B Semester - I EE/ME/CE/AE/BT

Mandatory 03-Weeks Induction Program in the First Semester for every student

SN	Sem	Type	Bo/ Deptt	Sub. Code	Subject	T/P	Contact Hours				Credits	% Weightage			ESE Duration Hours
							L	SL	P	Hrs		CT/IA	CA	ESE	
FIRST SEMESTER (GROUP-B)															
1	1	BSC	S&H	BSH31101	Algebra and Calculus	T	4	2	0	6	4	30	10	60	3
2	1	BSC	S&H	BSH31104	Chemical Process in Engineering	T	3	2	0	5	3	30	10	60	3
3	1	BSC	S&H	BSH31105	Chemical Process in Engineering -Lab	P	0	0	2	2	1	25	-	25	-
4	1	ESC	CE/BT	BCE31101/ BBT31101	Engineering Mechanics / Fundamentals of Biotechnology	T	3	2	0	5	3	30	10	60	3
5	1	ESC	ME	BEE31101	Engineering Workshop	P	0	0	2	2	1	25	-	25	-
6	1	BSC	S&H	BSH31X08	Introduction to Indian Knowledge System	T	2	2	0	4	2	14	6	30	2
7	1	ESC	ME	BME31X01	Engineering and Computer Graphics Lab	P	0	0	2	2	1	25	-	25	-
8	1	PCC	EE/ME/CE/AE/BT	BEE31101/ BME31102/ BCE31102/ BAE31101/ BBT31102	Electrical Wiring and Installations / Computer Aided Design/ CAD for Civil Engineers/ CAD for Aircraft Component/ Biotechnological Skill Lab	P	0	0	4	4	2	25	-	25	-
9	1	VSEC	CS	BCS31102	Web Designing	P	0	2	4	6	2	25	-	25	-
10	1	CC	S&H	BSH31X09	Business Communication	P	0	4	4	4	2	25	-	25	-
TOTAL FIRST SEM							12	10	18	40	21				
SECOND SEMESTER (GROUP-B)															
1	2	BSC	S&H	BSH31201	Differential Equation and Statistics	T	4	2	0	6	4	30	10	60	3
2	2	BSC	S&H	BSH31208	Solid State Physics & Optics	T	3	2	0	5	3	30	10	60	3
3	2	BSC	S&H	BSH31209	Solid State Physics & Optics -Lab	P	0	0	2	2	1	25	-	25	-
4	2	ESC	EE	BEE31202	Principles of Electrical Engineering	T	3	2	0	5	3	30	10	60	3
5	2	ESC	EE	BEE31203	Principles of Electrical Engineering-Lab	P	0	0	2	2	1	25	-	25	-
6	2	ESC	IT	BIT31103	Programming for Problem Solving using 'C'	T	2	1	0	3	2	14	06	30	2
7	2	ESC	IT	BIT31104	Programming for Problem Solving using 'C'-Lab	P	0	0	4	4	2	25	-	25	-
8	2	VSEC	EE/ME/CE/AE/BT	BEE31204/ BME31201/ BCE31201/ BAE31201/ BBT31201	Power SIM / CNC Machine and Programing / Building Maintenance Lab/ Basics of Aircraft Design/ Environmental Biotechnology Lab	P	0	0	4	4	2	25	-	25	-
9	2	AEC	S&H	BSH31X04	Communication for Personality Development-Lab	P	0	1	4	5	2	25	-	25	-
10	2	CC	S&H	BSH31X05	Integrated Personality Development Course-I	P	0	0	4	4	2	25	-	25	-
TOTAL SECOND SEM							12	08	20	40	22				

Course Category	BSC/ESC (Basic Science Course/ Engineering Science Course.)	PCC (Programme Core courses)	Multidisciplinary courses	VSEC (Skill Course)	Humanities Social Science & Management		Experiential Learning Courses	CC (Co-Curricular Courses)
					AEC (Ability Enhancement Course)	IKS (Indian Knowledge System)		
Credits SEM-I	08 / 05	02	--	02	--	02	--	02
Credits SEM-II	08 / 08	--	--	02	02	--	--	02
Cumulative Sum	16 / 13	02	--	04	02	02	--	04

PROGRESSIVE TOTAL CREDITS :21+22=43

				Aug. 2023	1.00	Applicable for AY 2023-24 Onwards
Chairperson	Dean Academics	Vice Principal	Principal	Date of Release	Version	

Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

SCHEME OF INSTRUCTION & SYLLABI

Programme: Civil Engineering

Scheme of Instructions: Second Year B.Tech. in Civil Engineering (As Per NEP 2020)

Semester – III

SN	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs.		CT/IA	CA	ESE		
1	III	PCC	CE	BCE32301	Mechanics of Solids	T	3	0	3	3	30	10	60	3 Hrs.	100
2	III	PCC	CE	BCE32302	Fluid Mechanics	T	3	0	3	3	30	10	60	3 Hrs.	100
3	III	MDM	SH	BSH32303	Numerical Methods for Engineers	T	2	0	2	2	14	06	30	2 Hrs.	50
4	III	HSSM	BA	BBA32306	Engineering Economics	T	2	0	2	2	14	06	30	2 Hrs.	50
5	III	VEC	SH	BSH32308	Ethics in Engineering Practice	T	2	0	2	2	14	06	30	2 Hrs.	50
6	III	OEC		B\$\$323XX	Open Elective-I	T	4	0	4	4	30	10	60	3 Hrs.	100
7	III	PCC	CE	BCE32303	Mechanics of Solids - Lab	P	0	2	2	1	-	25	25	-	50
8	III	PCC	CE	BCE32304	Fluid Mechanics - Lab	P	0	2	2	1	-	25	25	-	50
9	III	CEP	CE	BCE32305	Community Engineering Project	P	0	4	4	2	-	50	-	-	50
							16	08	24	20	132	148	320	15 Hrs.	600

Course Category	BSC/ ESC (Basic Science Course/ Engineering Science Course.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	Multidisciplinary courses	SEC (Skill Course)	Humanities Social Science & Management	Experiential Learning Courses	CC (Liberal Learning Courses)
Credits (3 rd sem)	--	08	--	06	--	04	02	--
Cumulative Sum	16 / 13	10	--	06	04	08	02	04

PROGRESSIVE TOTAL CREDITS: 43+20=63

				Aug, 2023	1.00	Applicable for AY 2023-24 Onwards
Chairperson	Vice Principal/ Director Academics	Director Administration	Principal	Date of Release	Version	

Department of Civil Engineering
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SCHEME OF INSTRUCTION & SYLLABI

Programme: Civil Engineering

Scheme of Instructions: Second Year B.Tech. in Civil Engineering (As Per NEP 2020)

Semester – IV

SN	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs.		CT/IA	CA	ESE		
1	IV	PCC	CE	BCE32401	Structural Analysis	T	3	0	3	3	30	10	60	3 Hrs.	100
2	IV	PCC	CE	BCE32402	Surveying	T	3	0	3	3	30	10	60	3 Hrs.	100
3	IV	PCC	CE	BCE32403	Concrete Technology	T	3	0	3	3	30	10	60	3 Hrs.	100
4	IV	MDM	ECE	BEC32406	Instrumentation & Sensor Technologies for Engineering Applications	T	2	0	2	2	14	06	30	2 Hrs.	50
5	IV	OEC		BSS324XX	Open Elective-II	T	2	0	2	2	14	06	30	2 Hrs.	50
6	IV	HSSM	CE	BCE32404	Project Management	T	2	0	2	2	14	06	30	2 Hrs.	50
7	IV	PCC	CE	BCE32405	Surveying - Lab	P	0	2	2	1	-	25	50	-	50
8	IV	VSEC	CE	BCE32406	Structural Software Training	P	0	4	4	2	-	50	50	-	100
9	IV	AEC	CE	BCE32407	Professional Communication	P	0	4	4	2	-	50	50	-	100
10	IV	VEC	CE	BCE32408	Introduction to Earth Sciences	P	0	4	4	2	-	50	50	-	100
							15	14	29	22	132	223	445	15 Hrs.	800

Course Category	BSC/ ESC (Basic Science Course/ Engineering Science Course.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	Multidisciplinary courses	SEC (Skill Course)	Humanities Social Science & Management	Experiential Learning Courses	CC (Liberal Learning Courses)
Credits (4 th sem)	--	10	--	04	02	06	--	--
Cumulative Sum	16 / 13	20	--	10	06	14	02	04

PROGRESSIVE TOTAL CREDITS: 63+22=85

				Aug. 2023	1.00	Applicable for AY 2023-24 Onwards
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SCHEME OF INSTRUCTION & SYLLABI

Programme: Civil Engineering

Scheme of Instructions: Third Year B.Tech. in Civil Engineering (As Per NEP 2020)

Semester – V

SN	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs.		CT/IA	CA	ESE		
1	V	PCC	CE	BCE33501	Design of Steel Structures	T	3	0	3	3	30	10	60	3 Hrs.	100
2	V	PCC	CE	BCE33502	Environmental Engineering	T	3	0	3	3	30	10	60	3 Hrs.	100
3	V	PCC	CE	BCE33503	Geotechnical Engineering	T	3	0	3	3	30	10	60	3 Hrs.	100
4	V	PEC	CE	BCE33506-09	Program Elective – I	T	3	0	3	3	30	10	60	3 Hrs.	100
5	V	MDM	IT	BIT33516	Cyber Security & Laws	T	4	0	4	4	30	10	60	3 Hrs.	100
6	V	OEC		B\$\$\$335XX	Open Elective-III	T	2	0	2	2	14	06	30	2 Hrs.	50
7	V	PCC	CE	BCE33504	Environmental Engineering - Lab	P	0	2	2	1	-	25	25	-	50
8	V	PCC	CE	BCE33505	Geotechnical Engineering - Lab	P	0	2	2	1	-	25	25	-	50
							18	4	22	20	164	106	380	17 Hrs.	650

Course Category	BSC/ ESC (Basic Science Course/ Engineering Science Course.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	Multidisciplinary courses	SEC (Skill Course)	Humanities Social Science & Management	Experiential Learning Courses	CC (Liberal Learning Courses)
Credits (5 th sem)	--	11	03	06	--	--	--	--
Cumulative Sum	16 / 13	31	03	16	06	14	02	04

PROGRESSIVE TOTAL CREDITS: 85+20=105

				Aug, 2023	1.00	Applicable for AY 2023-24 Onwards
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SCHEME OF INSTRUCTION & SYLLABI

Programme: Civil Engineering

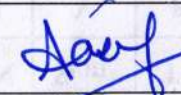
Scheme of Instructions: Third Year B.Tech. in Civil Engineering (As Per NEP 2020)

Semester – VI

SN	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs.		CT/IA	CA	ESE		
1	VI	PCC	CE	BCE33601	Reinforced Cement Concrete Structures	T	3	0	3	3	30	10	60	3 Hrs.	100
2	VI	PCC	CE	BCE33602	Transportation Engineering	T	3	0	3	3	30	10	60	3 Hrs.	100
3	VI	PCC	CE	BCE33603	Irrigation Engineering	T	2	0	2	2	14	06	30	2 Hrs.	50
4	VI	PEC	CE	BCE33606-09	Program Elective – II	T	3	0	3	3	30	10	60	3 Hrs.	100
5	VI	PEC	EE	BCE33610-13	Program Elective – III	T	3	0	3	3	30	10	60	3 Hrs.	100
6	VI	MDM	CE	BEE33613	Green Energy Technology	T	2	0	2	2	14	06	30	2 Hrs.	50
7	VI	PCC	CE	BCE33604	Transportation Engineering - Lab	P	0	2	2	1	-	25	25	-	50
8	VI	PCC	CE	BCE33605	Concrete Testing Lab	P	0	2	2	1	-	25	25	-	50
9	VI	PCC	CE	BCE33614	Geomatics Lab	P	0	2	2	1	-	25	25	-	50
10	VI	VSEC	CE	BCE33615	Building Information Modelling and Management	P	0	2	2	1	-	25	25	-	50
							16	08	24	20	148	152	400	16 Hrs.	700

Course Category	BSC/ ESC (Basic Science Course/ Engineering Science Course.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	Multidisciplinary courses	SEC (Skill Course)	Humanities Social Science & Management	Experiential Learning Courses	CC (Liberal Learning Courses)
Credits (6 th sem)	--	11	06	02	01	--	--	--
Cumulative Sum	16 / 13	42	09	18	07	14	02	04

PROGRESSIVE TOTAL CREDITS: 105+20=125

				Aug, 2023	1.00	Applicable for AY 2023-24 Onwards
Chairperson	Vice Principal/Director Academics	Director Administration	Principal	Date of Release	Version	

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Department of Civil Engineering
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SCHEME OF INSTRUCTION & SYLLABI

Programme: Civil Engineering

Scheme of Instructions: Fourth Year B.Tech. in Civil Engineering (As Per NEP 2020)

Semester – VII

SN	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs.		CT/IA	CA	ESE		
1	VII	PCC	CE	BCE34701	Estimating & Costing	T	3	0	3	3	30	10	60	3 Hrs.	100
2	VII	PEC	CE	BCE34702-05	Program Elective – IV	T	3	0	3	3	30	10	60	3 Hrs.	100
3	VII	PEC	CE	BCE34706-09	Program Elective – V	T	3	0	3	3	30	10	60	3 Hrs.	100
4	VII	MDM	BA	BBA34701	Professional Practices, Laws & Ethics	T	4	0	4	4	30	10	60	3 Hrs.	100
5	VII	PCC	CE	BCE34711	Foundation Engineering	T	3	0	3	3	30	10	60	3 Hrs.	100
6	VII	PCC	CE	BCE34712	Construction Management	T	3	0	3	3	30	10	60	3 Hrs.	100
7	VII	PCC	CE	BCE34713	Sustainable Development Goals	T	2	0	2	2	14	06	30	2 Hrs.	50
8	VII	PROJ	CE	BCE34710	Project	P	0	8	8	4	-	50	50	-	100
							21	8	29	25	194	116	440	20 Hrs.	750

Course Category	BSC/ ESC (Basic Science Course/ Engineering Science Course.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	Multidisciplinary courses	SEC (Skill Course)	Humanities Social Science & Management	Experiential Learning Courses	CC (Liberal Learning Courses)
Credits (7 th sem)	--	11	06	04	--	--	04	--
Cumulative Sum	16 / 13	53	15	22	07	14	06	04

PROGRESSIVE TOTAL CREDITS: 125+25=150

				Aug, 2023	1.00	Applicable for AY 2023-24 Onwards
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Department of Civil Engineering
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SCHEME OF INSTRUCTION & SYLLABI

Programme: Civil Engineering

Scheme of Instructions: Fourth Year B.Tech. in Civil Engineering (As Per NEP 2020)

Semester – VIII

SN	Sem	Type	BoS/ Dept	Sub Code	Subject	T/P	Contact Hours			Credits	% Weightage			ESE Duration	Total Marks
							L	P	Hrs.		CT/IA	CA	ESE		
1	VIII	RM	ME	BME34802	Research Methodology	T	4	0	4	4	30	10	60	3 Hrs.	100
2	VIII	OJT	CE	BCE34803	Internship / On Job Training	P	0	24	24	12	-	50	50	-	100
							4	24	28	16	30	60	110	3 Hrs.	200

Course Category	BSC/ ESC (Basic Science Course/ Engineering Science Course.)	PCC (Programme Core courses)	PEC (Programme Elective courses)	Multidisciplinary courses	SEC (Skill Course)	Humanities Social Science & Management	Experiential Learning Courses	CC (Liberal Learning Courses)
Credits (8 th sem)	--	--	--	--	--	--	16	--
Cumulative Sum	16 / 13	52	16	22	07	14	22	04

PROGRESSIVE TOTAL CREDITS: 150+16=166

				Aug, 2023	1.00	Applicable for AY 2023-24 Onwards
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Program: Civil Engineering

List of Program Electives offered By Civil Engineering Department

Program Elective- I	Program Elective-II	Program Elective- III	Program Elective- IV	Program Elective- V
Semester V	Semester VI	Semester VI	Semester VII	Semester VII
BCE33506-Water Resources Engineering	BCE33606-Rural Water Supply and Sanitation	BCE33610- Building Construction Practice	BCE34702-Pavement Design	BCE34706-High Rise Structures
BCE33507-Water Quality Engineering	BCE33607-Environmental Laws and Policy	BCE33611- Advanced Building Construction Methods	BCE34703-Urban Transportation Planning	BCE34707-Industrial Structures
BCE33508-Surface Hydrology	BCE33608-Solid and Hazardous Waste Management	BCE33612- Structural Audit & Retrofitting of Structures	BCE34704-Airport Planning and Design	BCE34708-Prestressed Concrete
BCE33509-Flood Control & Drainage Engineering	BCE33609-Air and Noise Pollution Control	BCE33613- Construction Equipment & Automation	BCE34705-High Speed Rail Engineering	BCE34709-Earthquake Engineering

List of Open Electives offered By Civil Engineering Department

Open Elective-I	Open Elective-II	Open Elective-III
Semester-III	Semester-IV	Semester-V
BCE32306: Green Structures and Smart Cities	BCE32406: Plastic Waste Management	BCE33510: Railways & Airport Engineering

List of Multidisciplinary Minor Courses offered By Civil Engineering Department

SN	Sem	Type	BoS/ Dept	Sub. Code	Subject
1.	III	MDM-I	S&H	BSH32302	Numerical Methods for Engineers
2.	IV	MDM-II	ECE	BEC32406	Instrumentation & Sensor Technologies for Civil Engineering Applications
3.	V	MDM-III	IT	BIT33516	Cyber Security & Laws
4.	VI	MDM-IV	EE	BEE33613	Green Energy Technology
5.	VIII	MDM-V	BA	BBA34801	Professional Practices, Laws & Ethics

 Chairperson	 Vice Principal/ Director Academics	 Director Administration	 Principal	Aug, 2023	1.00	Applicable for AY 2023-24 Onwards
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Program: Civil Engineering

Course Category	BSC (Basic Science Course)	FSC (Engineering Science Course.)	PCC (Program Core courses)	PEC (Program Elective courses)	Multidisciplinary courses	VSEC (Skill Course)	Humanities Social Science & Management	Experiential Learning Courses	CC (Liberal Learning Courses)	Semester Wise Credits
Semester -I	08	05	02	--	--	02	02	--	02	21
Semester -II	08	08	--	--	--	02	02	--	02	22
Semester -III	--	--	08	--	06	--	04	02	--	20
Semester -IV	--	--	10	--	04	02	06	--	--	22
Semester -V	--	--	11	03	06	--	--	--	--	20
Semester -VI	--	--	11	06	02	01	--	--	--	20
Semester -VII	--	--	11	06	04	--	--	04	--	25
Semester -VIII	--	--	--	--	--	--	--	16	--	16
Cumulative Sum	16	13	53	15	22	07	14	22	04	166

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**Principal
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