Course and Examination Scheme
of NEP 2020 Curriculum

Bachelor of Technology in Civil Engineering
(Faculty of Science and Technology)

GONDWANA UNIVERSITY, Gadchiroli
MIDC Road Complex, Gadchiroli
PIN-442 605, (M.S.)

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Key Features of Curriculum

1. Multiple exit options after every year.
2. Provision for Open Electives (OE), Vocational and Skill Enhancement Courses (VSEC), Ability Enhancement Courses (AEC), Indian Knowledge System (IKS), Value Education Courses (VEC), Co-Curricular Courses (CC) in addition to program core courses.
3. Mandatory internship of one semester.
4. Credits for Value education courses, Ability Enhancement Courses, Co-Curricular Curricular Activities.
5. Interdisciplinary and multidisciplinary education through minors and open electives.
6. Skill based courses.
7. Provision for learning in online mode through Swayam/NPTEL etc. courses
8. Opportunity for learner to choose courses of their interest in all disciplines.
9. Provision of Skill Based Courses and internship/Field project/mini projects for exit options at each level.
10. Flexibility for all types of learners i.e. Good, Normal and Exit

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Credit Distribution for each year and Exit Option

NCrF Level	Year/ Semester	Exit Option	Credits	Additional Credits for exit students	Total Credits
4.5	Semester I & II	One Year U.G. Certificate in Engg./Tech.	44	04	48
5.0	Semester III & IV	Two Year U.G. Diploma in Engg./Tech.	88	08	96
5.5	Semester V & VI	Three Years Bachelor's Degree in Vocation (B. Voc.) Or B.Sc. (Engg./Tech.)	132	08	140
6.0	Semester VII & VIII	B. Tech. Major with Multidisciplinary Minor	174	--	174

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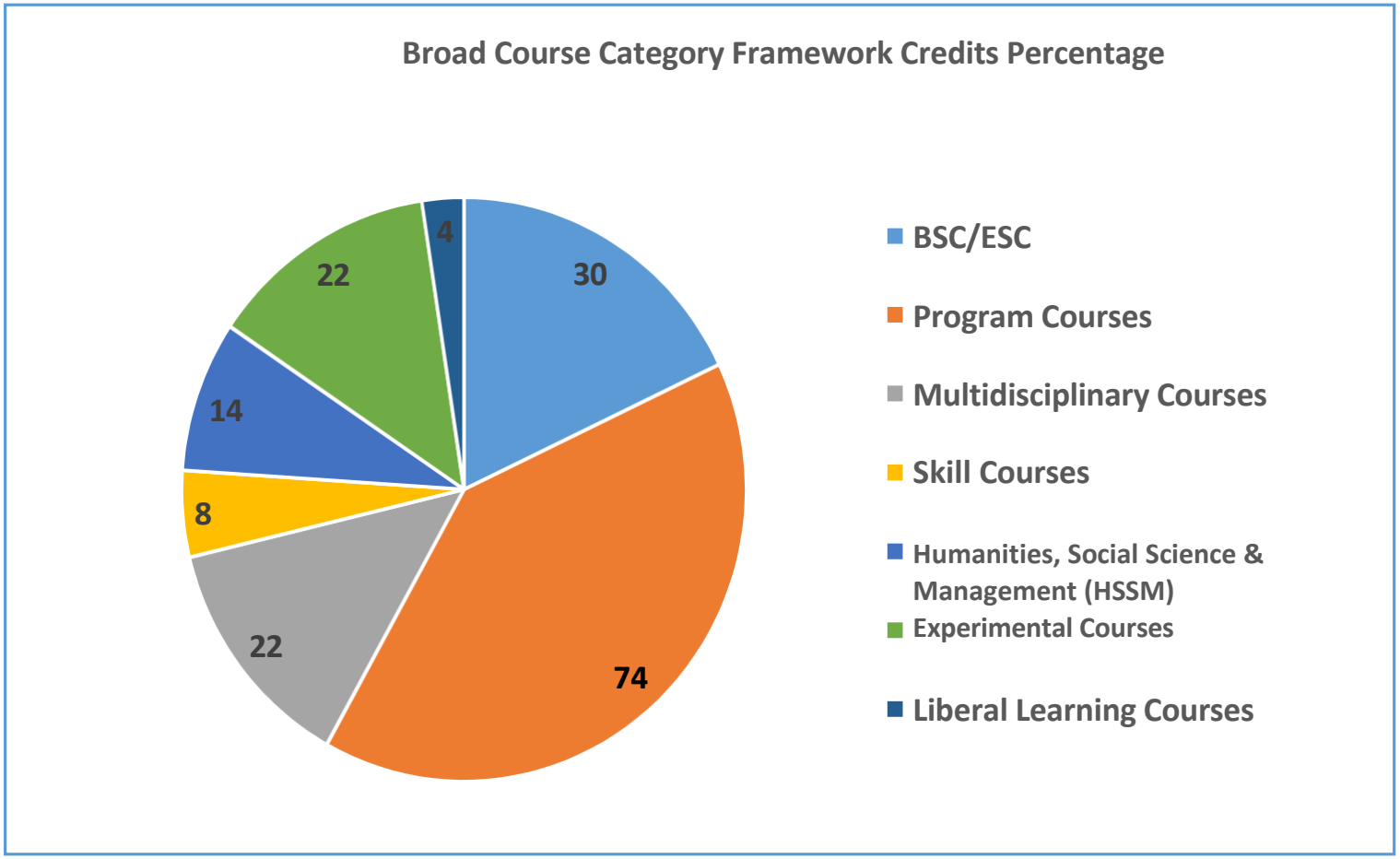
Course Category-wise Credit Distribution

Course Category	As per NEP GR	University Credits	CC	As per NEP GR	University Credits
BSC/ESC	30	30	BSC	14-18	17
			ESC	16-12	13
Program Courses	64 -76	74	PCC	44-56	54
			PEC	20	20
Multidisciplinary Courses	22	22	MDM	14	14
			OE	8	8
Skill Courses	8	8	VSEC	8	8
Humanities, Social Science & Management (HSSM)	14	14	AEC	4	4
			EM	4	4
			IKS	2	2
			VEC	4	4
Experiential Courses	22	22	RM	4	4
			CEP	2	2
			PR	4	4
			IN/OJT	12	12
Liberal Learning Courses	4	4	CC	4	4
Total Credits	**164 - 176**	**174**		**164-176**	**174**

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Semester-wise Credit Distribution:

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Sr. No.	SEM	I	II	III	IV	V	VI	VII	VIII	Total Credits	NEP Requirement
1	Basic Science Course (BSC)	8	9							17	14-18
2	Engineering Science Course (ESC)	6	7							13	16-12
3	Program Core Course (PCC)	2		10	10	13	09	4	04	52	44-56
4	Program Elective Course (PEC)					4	8	2	6	20	20
5	Multidisciplinary Minor Course (MDM)			2	2	3	3	2	2	14	14
6	Open /School Elective Course (OE)			4	2	2				8	8
7	Vocational & Skill Enhancement Course (VSEC)	2	2		2		2			8	8
8	Ability Enhancement Course (AEC)	2			2					4	4
9	Entrepreneurship/ Management Courses (EMC)			2	2					4	4
10	Indian Knowledge System (IKS)		2							2	2
11	Value Education Course (VEC)			2	2					4	4
12	Research Methodology (RM)								4	4	4
13	Community Engagement Activity/Field Project (CEP)			2						2	2
14	Project (PR)								4	4	4
15	Internship (IN)							12		12	12
16	Co-Curricular Course (CC)	2	2							4	4
	Total Credits	**22**	**22**	**22**	**22**	**22**	**22**	**20**	**20**	**172**	**164 – 176**

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General Instructions:

1. **Multi-Disciplinary Minor (MDM) track:**

   i. The Multi-Disciplinary Minor (MDM) course offered under the NEP curriculum is introduced to encourage students to gain knowledge and skills in areas beyond their major discipline. This approach promotes learning across multiple disciplines.

   ii. Minor subject title will be reflected in the student's **degree certificate** (e.g., B.Tech. in Civil Engineering with Minor in Data Science).

   iii. In the third semester, students must select one track from the MDM basket, that is outside the scope of their parent discipline. For example, a Computer Science and Engineering student should choose an MDM track offered by departments like Instrumentation Engineering, Mechanical Engineering, or Civil Engineering etc., but not permitted to select a track provided by the Computer Science and Engineering department itself.

   iv. Once a track is selected, it cannot be changed throughout the duration of the course.

   v. The offering of any Multi-Disciplinary Minor (MDM) course track shall be subject to a minimum enrollment of fifteen (15) students.

2. **Open Electives:**

   i. In the third, fourth, and fifth semesters, students must choose an open elective subject from the open elective basket.

   ii. Students from any discipline are allowed to opt for any open elective subject offered in the open elective basket.

   iii. The offering of any Open Elective (OE) course shall be subject to a minimum enrollment of fifteen (15) students.

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3. **The online course is to be completed through SWAYAM/ NPTEL/ equivalent portal. The Evaluation mechanism will be decided by the Board of Studies (BoS) Mechanical Engineering. In this case –**

   i. It is mandatory for students to register for and complete online courses in the respective semester as per the curriculum. Students must successfully complete the course and submit the certificate within the stipulated period.

   ii. If a student fails in the online course examination, the student has to appear for the examination as decided by the Board of Studies (BoS), Civil Engineering.

4. In Seventh semester, the students have to complete mandatory internship of one semester in the company/organization approved by the Departmental Faculty Board (DFB).

5. In addition to program specific courses, the students have to complete vocational skill courses, internship, field projects connected to major degree.

6. **Exit Option:** The exit option at the end of each year will be available to students after even semester, i.e. 2nd semester, 4th semester & 6th semester and will be awarded from AY 2024-25 for UG Certificate, AY 2025-26 for UG Diploma, AY 2026-27 for B. Voc./B. Sc. Engineering degree. Students opting for exit at any level will have to earn additional four/eight credits before exit in skill based vocational courses and internship/apprenticeship/mini-project to make them eligible to get UG certificate/UG Diploma or B.Voc./B. Sc. (Engg./Tech) degree as per eligibility.

7. **Regarding Practical Examination:** To pass the practical course, a student must appear for the university practical examination. Absence from this examination will result in failure, irrespective of the marks obtained in the college assessment.

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Multiple exits: Following options are available for multiple exists:

Option	NCrF Level	Qualification Title	Additional credit requirement	Bridge courses
Exit-1	4.5	One-year UG certificate in Engineering/Technology	4	Exit offline courses offered by department **OR** 2 Month Internship **OR** Two online skill courses (ITI level) from NSQF / ESSC / ANY Other agency which provides certification. **OR** Technical Project
Exit-2	5.0	Two-year UG Diploma in Engineering/Technology	8	Exit offline courses offered by department **OR** 2 Month Internship **OR** Two online skill courses (diploma level) from NSQF / ESSC / ANY Other agency which provides certification. **OR** Technical Project
Exit-3	5.5	Three-year Bachelor Degree in Vocation (B.Voc) or B.Sc. (Engineering/Technology)	8	Exit offline courses offered by department **OR** 2 Month Internship **OR** Two online skill courses (diploma level) from NSQF / ESSC / ANY Other agency which provides certification. **OR** Technical Project

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SEMESTER–III																	
Course Category	**Board of Studies**	**Course Code**	**Name of the Course**	**Teaching Scheme**				**Examination Scheme**									**Credit**
				Hours per week				**Theory Marks**						**Practical Marks**			
				L	**T**	**P**	**T**	**Duration in hrs.**	**MSE (CA)**	**IE (CA)**	**ESE (UA)**	**Total**	**Min (CA+UA)**	**CA**	**UA**	**Total**	**Min (CA+UA)**	
MDM	Civil Engineering	STMDMCEC301	Multi-disciplinary Minor-I	2	--	--	2	2	5	5	40	50	20	--	--	--	--	2
OE	Civil Engineering	STOECEC302	Open Elective- I	4	--	--	4	3	10	10	80	100	40	--	--	--	--	4
HSSM (VEC)	Science and Humanities	STVECSHC303	Introduction to Constitution of India	2	--	--	2	2	5	5	40	50	20	--	--	--	--	2
PCC	Civil Engineering	STPCCCEC304	Strength of Material	4	--	--	4	3	10	10	80	100	40	--	--	--	--	4
PCC	Civil Engineering	STPCCCEC305	Fluid Mechanics	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC306	Strength of Material Lab	--	--	2	2	2	--	--	--	--	--	25	25	50	25	1
PCC	Civil Engineering	STPCCCEC307	Fluid Mechanics Lab	--	--	2	2	--	--	--	--	--	--	25	25	50	25	1
PCC	Civil Engineering	STPCCCEC308	AutoCAD Drawing	--	--	2	2	--	--	--	--	--	--	25	25	50	25	1
HSSM (EMC)	Civil Engineering	STEMCCEC309	Ethical Human Values	-	1	2	3	-	-	-	-	-	-	50	-	50	25	2
CEP	Civil Engineering	STCEPCEC310	Innovation ,Creativity & Entrepreneurship in civil Engineering	--	--	4	4	--	--	--	--	--	--	50	--	50	25	2
Total				**15**	**1**	**12**	**28**	**--**	**40**	**40**	**320**	**400**	**--**	**125**	**75**	**200**	**--**	**22**
Marks Grand Total				**600**														

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SEMESTER–III		
LIST OF OPEN ELECTIVES – I COURSE		
Sr.	**Course Code**	**Name of the course**
A	STOECEC302	Mathematical Transform and Statistical Methods
B	STOESHC302B	Transform Methods in Engineering Mathematics
C	STOESHC302C	Probability and Statistics
D	STOEINS302	Signals and Systems
E	STOECEC302	Building Constructions and Materials
F	STOEELE302	Modelling and Design of EV

Note: The offering of any open elective course shall be subject to a minimum enrollment of fifteen (15) students.

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SEMESTER–IV																	
Course Category	**Board of Studies**	**Course Code**	**Name of the Course**	**Teaching Scheme**				**Examination Scheme**									**Credit**
				Hours per week				**Theory Marks**						**Practical Marks**			
				L	**T**	**P**	**T**	**Duration in hrs.**	**MSE (CA)**	**IE (CA)**	**ESE (UA)**	**Total**	**Min (CA+UA)**	**CA**	**UA**	**Total**	**Min (CA+UA)**	
MDM	Civil Engineering	STMDMCEC401	Multi-disciplinary Minor-II	2	--	--	2	2	5	5	40	50	20	--	--	--	--	2
OE	Civil Engineering	STOECEC402	Open Elective- II	2	--	--	2	2	5	5	40	50	20	--	--	--	--	2
PCC	Civil Engineering	STPCCCEC403	Concrete Technology	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC404	Surveying	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC405	Concrete Technology Lab	--	--	2	2	--	--	--	--	--	--	25	25	50	25	2
PCC	Civil Engineering	STPCCEC406	Surveying Lab	--	--	2	2	--	--	--	--	--	--	25	25	50	25	2
HSSM (EMC)	Civil Engineering	STHSSMCEC407	Human Resource Management	--	--	4	4	--	--	--	--	--	--	50	--	50	25	2
VSEC	Civil Engineering	STVSECCEC408	Workshop Practice – III	--	--	2	2	--	--	--	--	--	--	25	25	50	25	2
HSSM (AEC)	Civil Engineering	STAECCEC409	Modern Indian/ Foreign Language	--	--	4	4	--	--	--	--	--	--	50	--	50	25	2
HSSM (VEC)	Civil Engineering	STVECCEC410	Lifestyle for Holistic Health	--	--	4	4	--	--	--	--	--	--	50	--	50	25	2
Total				**10**	**0**	**18**	**28**	**--**	**30**	**30**	**240**	**300**	**--**	**225**	**75**	**300**	**--**	**22**
Marks Grand Total				**600**														

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SEMESTER–IV		
LIST OF OPEN ELECTIVES – II COURSE		
Sr.	**Course Code**	**Name of the course**
A	STOEMEC402	Industrial Management
B	STOEETC402	Digital System Design
C	STOECSE402	Design Thinking
D	STOEINS402	Chemical and Analytical Instrumentation
E	STOECEC402	Building Automation
F	STOEELE402	EV Design Analysis and Control

Note: The offering of any open elective course shall be subject to a minimum enrollment of fifteen (15) students.

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EXIT CRITERIA FOR U. G. DIPLOMA (AFTER SECOND YEAR)																			
Course Category	**Board of Studies**	**Course Code**	**Name of the Course**	**Teaching Scheme**				**Examination Scheme**											**Credit**
				Hours per week				**Theory Marks**						**Practical Marks**					
				L	**T**	**P**	**T**	**Duration in hrs.**	**MSE (CA)**	**IE (CA)**	**ESE (UA)**	**Total**	**Min (CA+UA)**	**CA**	**UA**	**Total**	**Min (CA+UA)**		
Exit offline courses offered by department (Student may choose and enroll in any one of these courses)																			
PCC	Civil Engineering	STEXCEC411	Quantity Surveying and Estimation	--	--	8	8	--	--	--	--	--	--	--	--	100	50	4	
OR																			
PCC	Civil Engineering	STEXCEC412	Fundamentals of structural design	--	--	8	8	--	--	--	--	--	--	--	--	100	50	4	
OR																			
PCC	Civil Engineering	STEXCEC413	Internship/Technical Project	--	--	8	8	--	--	--	--	--	--	--	--	100	50	4	
Total				--	--	8	8	--	--	--	--	--	--	--	--	100	50	4	
Marks Grand Total				100															

@ Evaluation based on seminar, internship report, technical project report, skill courses certification.

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SEMESTER– V																		
Course Category	**Board of Studies**	**Course Code**	**Name of the Course**	**Teaching Scheme**				**Examination Scheme**										**Credit**
				Hours per week				**Theory Marks**						**Practical Marks**				
				L	**T**	**P**	**T**	**Duration in hrs.**	**MSE (CA)**	**IE (CA)**	**ESE (UA)**	**Total**	**Min (CA+UA)**	**CA**	**UA**	**Total**	**Min (CA+UA)**	
MDM	Civil Engineering	STMDMCEC501	Multi-disciplinary Minor-III	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
OE	Civil Engineering	STOECEC502	Open Elective- III	2	--	--	2	2	5	5	40	50	20	--	--	--	--	2
PCC	Civil Engineering	STPCCCEC503	Theory of Structure	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC504	Geotechnical Engineering	3	1	--	4	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC505	Water supply Engineering	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PEC	Civil Engineering	STPECCEC506A/B	Program Elective – I	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC507	Geotechnical Engineering Lab	--	--	2	2	--	--	--	--	--	--	25	25	50	25	2
PCC	Civil Engineering	STPCCCEC508	Water supply Engineering Lab	--	--	2	2	--	--	--	--	--	--	25	25	50	25	2
PEC	Civil Engineering	STPECCEC509A/B	Program Elective – I Lab	--	--	2	2	--	--	--	--	--	--	25	25	50	25	1
Total				**17**	**1**	**6**	**24**	**--**	**55**	**55**	**440**	**550**	**--**	**75**	**75**	**150**	**--**	**22**
Marks Grand Total				**700**														

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SEMESTER–V						
LIST OF OPEN ELECTIVES – III COURSE			**LIST OF PROGRAM ELECTIVES – I**		**LIST OF PROGRAM ELECTIVES – I LAB**	
Sr.	**Course Code**	**Name of the course**	**Course Code**	**Name of the course**	**Course Code**	**Name of the course**
A	STOEMEC502	Operations Research Techniques	STPECCEC506	Transportation Engg. I	STPECCEC509	Transportation Engg .I
B	STOEETC502	Automotive Electronics	STPECCEC506	Hydrology	STPECCEC509	Hydrology
C	STOECSE502	Software Project Management				
D	STOEINS502	Power Plant Instrumentation				
E	STOECEC502	Remote Sensing and GIS				
F	STOEELE502	Introduction to Smart Grid				

Note:

1. Note: The offering of any open elective or Program elective course shall be subject to a minimum enrollment of fifteen (15) students.
2. If a student opts for Program Elective – I (Serial No. A), they will be eligible only for the corresponding Program Elective – I Lab (Serial No. A); the same applies for serial no. B

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SEMESTER– VI																	
Course Category	**Board of Studies**	**Course Code**	**Name of the Course**	**Teaching Scheme**				**Examination Scheme**									**Credit**
				Hours per week				**Theory Marks**						**Practical Marks**			
				L	**T**	**P**	**T**	**Duration in hrs.**	**MSE (CA)**	**IE (CA)**	**ESE (UA)**	**Total**	**Min (CA+UA)**	**CA**	**UA**	**Total**	**Min (CA+UA)**	
MDM	Civil Engineering	STMDMCEC601	Multi-disciplinary Minor-IV	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC602	Design of Steel Structure	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC603	Design of RC Structure	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC604	Estimating and Costing	2	--	--	2	2	5	5	40	50	20	--	--	--	--	2
PEC	Civil Engineering	STPECCEC605A/B	Program Elective – II	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PEC	Civil Engineering	STPECCEC606A/B	Program Elective – III	3	--	--	3	3	10	10	80	100	40	--	--	--	--	3
PCC	Civil Engineering	STPCCCEC607	Estimating and Costing Lab	--	--	2	2	--	--	--	--	--	--	25	25	50	25	1
PEC	Civil Engineering	STPECCEC608A/B	Program Elective – II Lab.	--	--	2	2	--	--	--	--	--	--	25	25	50	25	1
PEC	Civil Engineering	STPECCEC609A/B	Program Elective – III Lab.	--	--	2	2	--	--	--	--	--	--	25	25	50	25	1
VSEC	Civil Engineering	STVSECCEC610	Design Practice of RC and Steel Structure	--	1	2	3	--	--	--	--	--	--	50	--	50	25	2
Total				**16**	**1**	**8**	**25**	**--**	**55**	**55**	**440**	**550**	**--**	**125**	**75**	**200**	**--**	**22**
Marks Grand Total				**750**														

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Note:

1. Note: The offering of any Program elective course shall be subject to a minimum enrollment of fifteen (15) students.
2. If a student opts for Program Elective – II or III (Serial No. A), they will be eligible only for the corresponding Program Elective – II or III Lab (Serial No. A); the same applies for serial no. B

SEMESTER–VI			
LIST OF PROGRAM ELECTIVES – II		**LIST OF PROGRAM ELECTIVES – II LAB**	
Course Code	**Name of the course**	**Course Code**	**Name of the course**
STPECCEC605	Industrial Waste Water Treatment	STPECCEC608	Industrial Waste Water Treatment
STPECCEC605	Environmental Pollution and Control	STPECCEC608	Environmental Pollution and Control

LIST OF PROGRAM ELECTIVES – III		LIST OF PROGRAM ELECTIVES – III LAB	
Course Code	**Name of the course**	**Course Code**	**Name of the course**
STPECCEC606	Pavement Design	STPECCEC609	Pavement Design
STPECCEC606	Foundation Engg.	STPECCEC609	Foundation Engg.

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EXIT CRITERIA FOR BACHELOR DEGREE IN VOCATION (AFTER THIRD YEAR)																			
Course Category	**Board of Studies**	**Course Code**	**Name of the Course**	**Teaching Scheme**				**Examination Scheme**											**Credit**
				Hours per week				**Theory Marks**						**Practical Marks**					
				L	**T**	**P**	**T**	**Duration in hrs.**	**MSE (CA)**	**IE (CA)**	**ESE (UA)**	**Total**	**Min (CA+UA)**	**CA**	**UA**	**Total**	**Min (CA+UA)**		
Exit offline courses offered by department (Student may choose and enroll in any one of these courses)																			
PCC	Civil Engineering	STEXCEC611	Construction Management and Safety	--	--	8	8	--	--	--	--	--	--	--	--	100	50	4	
OR																			
PCC	Civil Engineering	STEXCEC612	Railways, airport and tunnel Engineering	--	--	8	8	--	--	--	--	--	--	--	--	100	50	4	
OR																			
PCC	Civil Engineering	STEXCEC613	Internship/Technical project	--	--	8	8	--	--	--	--	--	--	--	--	100	50	4	
Total						**8**	**8**									**100**	**50**	**4**	
Marks Grand Total				100															

@ Evaluation based on seminar, internship report, technical project report, skill courses certification.

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SEMESTER– VII																		
Course Category	**Board of Studies**	**Course Code**	**Name of the Course**	**Teaching Scheme**				**Examination Scheme**										**Credit**
				Hours per week				**Theory Marks**						**Practical Marks**				
				L	**T**	**P**	**T**	**Duration in hrs.**	**MSE (CA)**	**IE (CA)**	**ESE (UA)**	**Total**	**Min (CA+UA)**	**CA**	**UA**	**Total**	**Min (CA+UA)**	
MDM	Civil Engineering	STMDMCEC701	Multi-disciplinary Minor-V	2	--	--	2	--	--	50	--	50	20	--	--	--	--	2
PEC	Civil Engineering	STPECCEC702	MOOC-I	2	--	--	2	--	--	50	--	50	20	--	--	--	--	2
PCC	Civil Engineering	STPCCCEC703	MOOC-II	4	--	--	4	--	--	50	--	50	20	--	--	--	--	4
IN	Civil Engineering	STINMEC704	Internship / OJT	--	--	24	24	--	--	--	--	--	--	100	200	300	150	12
Total				**8**	**--**	**24**	**32**	**--**	**--**	**250**	**--**	**250**	**--**	**100**	**200**	**300**	**--**	**20**
Marks Grand Total				**550**														

Note:

Program Elective-IV and V is 12-week online certificate courses conducted by NPTEL / SWAYAM / MOOC / OTHERS in the area approved by DFB
Internship Guide Teaching load: 4 hrs/week

***Courses to be mentored and assessed by faculty members**

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SEMESTER– VIII																		
Course Category	**Board of Studies**	**Course Code**	**Name of the Course**	**Teaching Scheme**				**Examination Scheme**										**Credit**
				Hours per week				**Theory Marks**						**Practical Marks**				
				L	**T**	**P**	**T**	**Duration in hrs.**	**MSE (CA)**	**IE (CA)**	**ESE (UA)**	**Total**	**Min (CA+UA)**	**CA**	**UA**	**Total**	**Min (CA+UA)**	
MDM	Civil Engineering	STPCCCEC801	Multi-disciplinary Minor-VI	2	--	--	2	--	--	50	--	50	20	--	--	--	--	2
PCC	Civil Engineering	STPCCCEC802	Irrigation Engineering	3	--	--	3	3	10	10	80	100	40	---	---	---	---	3
PEC	Civil Engineering	STPECCEC803	Program Elective-VI	3		--	3	3	10	10	80	100	40	---	---	---	---	3
PEC	Civil Engineering	STPECCEC804	Program Elective – VII	3		--	3	3	10	10	80	100	40	---	---	---	---	3
RM	Civil Engineering	STPECCEC805	Research Methodology	4			4											4
PCC	Civil Engineering	STPECCEC806	Irrigation Engineering Lab	--	--	2	2	--	--	--	--	--		25	25	50	25	1
ELC	Civil Engineering	STELCCEC808	Project	---	---	4	4	---	---	---	---	---	---	100	100	200	100	4
Total				**15**	**3**	**08**	**22**	**--**	**40**	**40**	**320**	**400**	**--**	**150**	**150**	**300**	**--**	**20**
Marks Grand Total				**650**														

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Semester - VIII	
LIST OF PROGRAM ELECTIVES - VI	
Course Code	**Name of the course**
STPECCEC802	Advanced Design of Water Treatment Plant
STPECCEC803	Advance Design Of RCC Structures

Semester - VIII	
LIST OF PROGRAM ELECTIVES - VII	
Course Code	**Name of the course**
STPECCEC802	Railway, Tunnels and Airport Engineering
STPECCEC802	Advanced Construction Management

Note: The offering of any Program elective course shall be subject to a minimum enrollment of fifteen (15) students.

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LIST OF OPEN ELECTIVE COURSE (BASKET OF OPEN ELECTIVE)			
	OPEN ELECTIVE-I	**OPEN ELECTIVE -II**	**OPEN ELECTIVE -III**
A	STOESHC302A Mathematical Transform and Statistical Methods	STOEMEC402 Industrial Management	STOEMEC502 Operations Research Techniques
B	STOESHC302B Transform Methods in Engineering Mathematics	STOEETC402 Digital System Design	STOEETC502 Automotive Electronics
C	STOESHC302C Probability and Statistics	STOECSE402 Design Thinking	STOECSE502 Software Project Management
D	STOEINS302 Signals and Systems	STOEINS402 Chemical and Analytical Instrumentation	STOEINS502 Power Plant Instrumentation
E	STOECEC302 Building Constructions and Materials	STOECEC402 Building Automation	STOECEC502 Remote Sensing and GIS
F	STOEELE302 Modelling and Design of EV	STOEELE402 EV Design Analysis and Control	STOEELE502 Introduction to Smart Grid

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	LIST OF PROGRAM ELECTIVES						
Name of course	**Program Elective - I**	**Program Elective - II**	**Program Elective - III**	**Program Elective - IV**	**Program Elective - V**	**Program Elective - VI**	**Program Elective - VII**
Code	STPECCEC506	STPECCEC605	STPECCEC606	STPECCEC702	STPECCEC703	STPECCEC803	STPECCEC804
A	Transportation Engg .I	Industrial Waste Water Treatment	Pavement Design	NPTEL / SWAYAM / MOOC / OTHERS	NPTEL / SWAYAM / MOOC / OTHERS	Advanced Design of Water Treatment Plant	Railway, Tunnels and Airport Engineering
B	Hydrology	Environmental Pollution and Control	Foundation Engg.	NPTEL / SWAYAM / MOOC / OTHERS	NPTEL / SWAYAM / MOOC / OTHERS	Advance Design Of RCC Structures	Advanced Construction Management

SWAYAM/NPTEL etc. portal Courses should be approved by DFB and **at least of 12 weeks** including tutorials.

LIST OF PROGRAM ELECTIVES LABS			
Name of course	**Program Elective – I Lab**	**Program Elective – II Lab**	**Program Elective – III Lab**
Code	STPECCEC509	STPECCEC608	STPECCEC609
A	Transportation Engg .I	Industrial Waste Water Treatment	Pavement Design
B	Hydrology	Environmental Pollution and Control	Foundation Engg.

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LIST OF MULTI DICIPLINARY MINOR COURSE TRACK (MDM BASKET)

Sr. No.	Offering Department	Name of Minor Course (Track)	Students from Department Who can register
1	Mechanical Engineering (MEC)	Industrial IoT and Smart Manufacturing	All branches except Mechanical Engineering
2	Instrumentation Engineering (INS)	Industrial Automation	All branches except Instrumentation Engineering
3	Electronics and Telecommunication Engg.(ETC)	IoT and Drone Technology	All branches except Electronics and Telecommunication Engineering
4	Electrical Engineering (ELE)	Power System Engineering	All branches except Electrical Engineering
5	Computer Science & Engineering (CSE)	Data Science	All branches except Computer Science & Engineering
6	Civil Engineering (CEC)	Environmental Engineering	All branches except Civil Engineering

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LIST OF MULTI DICIPLINARY MINOR COURSES (MDM BASKET)

Name of Minor Course	Mechanical Engineering	Instrumentation Engineering	Electronics & Telecommunication Engineering	Electrical Engineering	Computer Science and Engineering	Civil Engineering
	TRACK-I **Industrial IoT and Smart Manufacturing**	**TRACK-I** **Industrial Automation**	**TRACK-I** **IoT and Drone Technology**	**TRACK-I** Power System Engineering	**TRACK-I** Data Science	**TRACK-I** Environmental Engineering
Multi-disciplinary Minor -I	STMDMMEC301 Additive Manufacturing	STMDMINS301 Industrial Measurements	STMDMETC301 IoT Sensors and Actuators	STMDMELE301 DC Machines and Transformer	STMDMCSE301 Introduction to Data Science	STMDMCEC301 Basics of Environmental Engineering
Multi-disciplinary Minor -II	STMDMMEC401 Mechatronics Systems	STMDMINS401 Control System Components	STMDMETC401 Basics of Drone Technology	STMDMELE401 AC Machines	STMDMCSE401 Tools for Data Science	STMDMCEC401 Drinking Water Quality and Water Pollution
Multi-disciplinary Minor -III	STMDMMEC501 PLC and Automation	STMDMINS501 Control System Engineering	STMDMETC501 IoT Architecture and Protocol	STMDMELE501 Electrical Drives	STMDMCSE501 Data Visualization and Data Analytics	STMDMCEC501 Air Pollution
Multi-disciplinary Minor -IV	STMDMMEC601 Industrial Robotics	STMDMINS601 Process Automation	STMDMETC601 Interfacing Programming of IoT and Drone	STMDMELE601 Power System Protection	STMDMCSE601 Machine Learning	STMDMCEC601 Soil, Sound and Solid Waste Pollution
Multi-disciplinary Minor -V	STMDMMEC701 NPTEL / SWAYAM / MOOC 8 Week online course related to track	STMDMINS701 NPTEL / SWAYAM / MOOC 8 Week online course related to track	STMDMETC701 NPTEL / SWAYAM / MOOC 8 Week online course related to track	STMDMELE701 NPTEL / SWAYAM / MOOC 8 Week online course related to track	STMDCSEC701 NPTEL / SWAYAM / MOOC 8 Week online course related to track	STMDMCEC701 NPTEL / SWAYAM / MOOC 8 Week online course related to track
Multi-disciplinary Minor -VI	STMDMMEC801 IoT in Automotive Engineering	STMDMINS801 Process Control	STMDMETC801 IoT and Drones Application	STMDMELE801 Digital Signal Processing	STMDMCSE801 Data Science in Practice	STMDMCEC801 Advance Air Pollution and Solid waste Management

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STMDMMEC301

Title of Course: **Multi-Disciplinary Minor - I (MDM)**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
2	--	--	2	2	2	5	5	40	50

The Detail Syllabus for the Multidisciplinary Minor (MDM) course is provided separately under Multi-disciplinary Minors (MDM) Basket.

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STOESHC302

Title of Course: **Open Elective - I**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
4	--	--	4	4	3	10	10	80	100

The Detail Syllabus for the Open Elective - I course (OE) is provided separately under "Open Electives" Basket.

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STVECSHC303

Title of Course: **Introduction to Constitution of India**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
2	--	--	2	2	--	30	20	--	50

Course outcomes:

After completing the course, the students will be able to;

CO1 Explain the value of the fundamental rights and duties for becoming a responsible citizen of India.

CO2 Analyze the functioning of the three wings of the government i.e., legislative, executive and judiciary.

CO3 Discuss the decentralization of power between the central, state and local self-government.

CO4 Describe the functioning of urban and rural administration in India.

Unit	Content	Hours
I	**Constitution: Meaning and Importance** Introduction to the Constitution of India, history, social, political, economic, and spiritual influences in the development of the constitution, Nature and special features: Equality and social justice- various kinds of freedoms-social control, Citizenship, Preamble, Fundamental Rights, Fundamental Duties, Directive Principles of State Policy (Article 41 to 47)	8
II	**The Central Government of India** The levels of government, Indian Federation, Center-state relationship: Legislative, Administrative and Financial, Roles and positions of President, PM, Council of union ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha.	8
III	**The State Government** Roles and positions of Governor, CM, and Council of ministers of states: Legislative, and Executive Control, Secretariat and Directorates: organization, structure, and functions, District Administration and the role of District Collector: Legislative, and Executive Control.	7

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	The Supreme Court and High Court: Powers and Functions.	
IV	**Urban and Rural Administration** Role and importance of District's administrative head, the role of Mayor and elected representative, Role and functioning of the Municipal Corporation and Municipalities, Zila Panchayat, Gram Panchayat, Block level governance, democracy at the grass root level, The Election Commission of India: Introduction to the role and functioning of the Election Commission of India, Overview of the electoral procedure.	7

Reference Books:

1. Introduction to the Constitution of India by Durga Das Basu, Prentice Hall of India Pvt. Ltd., New Delhi
2. Indian Constitution by Subash Kashyap, National Book Trust
3. Constitution of India by Dr. P. K. Agrawal and Dr. K. N. Chaturvedi, Prabhat Prakashan 2017
4. Constitution of India by V. N. Shukla, Eastern Book Company

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STPCCCEC304

Title of Course: **Strength of Material: Theory**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
4	0	0	4	4	3	10	10	80	100

Course Outcomes:

CO1 Demonstrate fundamental knowledge about various types of loading and stresses induced

CO2 Draw the SFD and BMD for different types of loads and support conditions

CO3 Estimate the strain energy in mechanical elements and analyze the deflection in beams

CO4 Design shaft for various loading conditions

CO5 Understand theory of failure of thin cylinders

Unit	Content	Hours
I	**Mechanical properties and uni-axial problems:** Types of force distribution, concept of stress and strain, stress strain behavior of ductile and brittle material in uni-axial state of stress. Elastic, plastic and strain hardened zones stress – strain relations, elastic constants, relation between elastic constants. Uni-axial loading and deformation of simple cases of statically indeterminate problems under axial loading. Thin walled pressure vessel, cylindrical and spherical shells subjected to internal pressure.	09
II	**Axial force, shear force and bending moment diagram:** Concept of free body diagram, types of loads, determination of axial forces and shear forces and bending moment at a section.Axial forces SF and BM diagram in beams, differential relation between shear force and bending moments, Relation between load and shear force	09
III	**Stresses in beam**: Bending stresses in simple beam. Assumptions and derivation of simple bending theory, relation between bending moment, bending stress and curvature of homogeneous and composite beams. Shear stresses in simple beams, shear flow and shear stress distribution, shear Stress in	09

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	composite beams. Combine effect of BM and axial force.	
IV	**Torsion of Shafts:** Torsion of circular sections, assumptions and derivation of relations between torsional moment, shear stresses and angle of twist. Torsional stress in solid and circular sections, torsion in thin walled hollow section closely coiled helical springs. Leaf spring. Deflection of Beams: Derivation of differential equation of moment curvature relation, deflection of beams by integration, Macauley's method.	09
V	**State of stress In Two Dimensions:** State of stress in two dimensions, differential equation of equilibrium, transformation of stresses , principal stresses, maximum shear stresses, Mohr's circle, combined bending and torsion, combined effect of Torsion and Shear. Shear flow in thin walled sections, concept of shear center of thin walled section, Unsymmetrical bending.	

Text Books:

1. Strength of Materials, S. Ramamrutham and R. Narayanan, Dhanpat Rai Publishing
2. Strength of Materials, R. K. Bansal, Laxmi Publications, New Delhi.
3. Strength of Materials, S. S. Rattan, Mcgraw Hill Education.

Reference Books:

1. Mechanics of Materials, Beer, Johnston, Dewolf and Mazurek, Tata McGraw- Hill
2. Elements of Strength of Materials by Timoshenko, S. P. and Young, D.H., East West Press,

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STPCCCEC305

Title of Course: **Fluid Mechanics: Theory**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
3	0	0	3	3	3	10	10	80	100

Course outcomes:

After completing the course, the students will be able to

CO1 ***Determine*** the various properties of fluid.

CO2 ***Apply*** the law of fluid statics and concept of buoyancy.

CO3 ***Identify*** types of fluid flow and terms associated in fluid kinematics.

CO4 ***Apply*** boundary layer theory and understand concept related to laminar and turbulent flow.

Unit	Content	Hours
I	**Properties of Fluid:** Physical properties of fluids: density, specific weight, specific volume, relative density, Newton's Law of Viscosity, dynamic and kinematic viscosity, Classification of fluids, Rheological diagram, Newtonian and Non Newtonian fluids, ideal and real fluids, compressibility, cohesion, adhesion, surface tension, capillarity, vapour pressure. **Dimensional Analysis and Model studies:** Dimensions of physical quantities, Dimensional homogeneity, important dimensionless parameters and their significance. Geometric; Kinematic and Dynamic similitude; Model laws, Type of models, Applications of dimensional analysis and studies to fluid flow problems.	09
II	**Fluid Statics:** The basic equation of hydrostatics, concept of pressure head, Measurement of pressure datum (absolute, gauge), Application of the basic equation of hydrostatics. Piezometers, Simple and differential manometers, inclined manometers, Introduction to pressure transducers, Total pressure, Center of pressure for plane and curved surfaces, Practical applications (gate, dams, lock gates). **Buoyancy and Floatation:** Principle of floatation and Buoyancy, Equilibrium of floating bodies, Stability of Floating bodies, metacentre, metacentric height and its determination (experimental and analytical), Stability of submerged bodies, Relative Equilibrium of liquids: Fluid masses subjected to uniform linear acceleration and rotational.	09
III	**Fluid Kinematics**: Methods for describing the motion of fluid; Velocity and acceleration of fluids, Type of flow: Steady and unsteady, uniform and nonuniform, Laminar and Turbulent, one, two and three dimensional flows in Cartesian co- ordinate, Equation for one dimensional flow along a streamline, Rotational and irrotational motions, Circulation and vorticity, Derivation of	

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	Cauchy's Riemann equation, Velocity potential, stream function and flow net, Euler's equation of motion along a streamline and its integration, Assumptions of Bernoulli's equation, Kinetic energy correction factor, Hydraulic Grade line and total energy line, Linear momentum equation and momentum correction factor, angular momentum, Application of continuity, Bernoulli and momentum equations. Flow through orifices and mouthpieces under free and submerged condition, venturi meter, orifice meter, Nozzle meter, rotameter and pitot tube. **Flow over Notches and Weirs:** Classification of notches and weirs, Discharges over a sharp crested rectangular notch, velocity approach, end contractions, discharges over a triangular notch, trapezoidal notch, Cippoletti notch.	09
IV	**Laminar Flow**: Reynolds Experiment, Laminar flow through a circular pipe, Flow between tow fixed parallel plates, Stoke's law, Methods of measurement of viscosity, Flow through porous media, Darcy's law, Transition from laminar to turbulent flow. Boundary Layer Theory: Development of boundary layer on a flat plate, Nominal, displacement, momentum and Energy thicknesses. Laminar, turbulent and transitional boundary layer, Application of momentum equation for boundary layer development, Local and mean drag coefficient, Hydro dynamically smooth and rough boundaries, Boundary layer separation and its control.	09
V	**Flow through Pipes:** Energy losses in pipe flow (major and minor losses) , Flow through pipes such as simple, compound, parallel, branched pipes and siphons, Dupit's equation, Hydraulic transmission of power through pipes, introduction to three reservoir problem and pipe network. **Turbulent Flow:** Characteristics of turbulent flow, instantaneous velocity, temporal velocity, scale of turbulence and intensity of turbulence , semi-empirical theories to estimates shear stress in turbulent flows using Boussinesq's theory, Prandtl's mixing length theory, velocity distribution in turbulent flow, Prandtl's velocity distribution equation, Karman Prandtl velocity distribution equations for smooth and rough boundaries, Equation for mean velocity for pipes, Darcy flow; Nikuradse's experiments on artificially roughened pipe, Friction factor for commercial pipes.	09

Reference Books:

1. Modi, P. N. and S. N. Seth " Hydraulics and Fluid Mechanics", Standard book house, New Delhi, ISBN: 978-81-89401-26-9.
2. Bernard Massey and John Ward Smith, " Mechanics of Fluids", Taylor and Francis, 8 Edition (2006) London and New York.
3. Douglas J. F. Gaisorek J. M. ,Swaffield J. A., "Fluid Mechanics" Addison-Weisley Harlow 1999.
4. Shames I. H., " Mehcanics of Fluids", McGraw-Hill, New York 1992.
5. R. J. Garde and Mirajgaonkar, " Fluid Mechanics Through Problems", New Age International.
6. Streeter V.L. Wylie E. Benjamin, "Fluid Mechanics ", McGrawHil, London, 1998.

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STPCCCEC306

Title of Course: **Strength of Material Lab**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	CA	UA	ESE	Total
0	0	2	2	1	2	25	25	--	50

Course outcomes:

Ater completing the course, the students will be able to

CO1 Performs, tension, shear, torsion and compression tests on solid materials

CO2 ***Determine*** the toughness of the material using Charpy and lzod test.

CO3 ***Determine*** the Brinell and Rockwell hardness number of given metal specimen.

CO4 ***Estimate*** the elastic constants through compression test on spring and deflection test on beams.

Sr. No	List of Practical
1.	Mechanical properties of materials.
2.	Tension test on metals.
3.	Hardness test on metals.
4.	Torsion test on metals.
5.	Impact test on metals.
6.	Shear test on metals.
7.	Transverse test on beams including deflections.
8.	Compression test on bricks & stones.
9.	Bricks: Absorption test, Dimension test, Crushing strength, Efflorescence.
10.	Timber: Moisture content, strength parallel and Perpendicular grain transverse strength
11.	Tiles: Flooring transverse strength, water absorption, and Flexural rigidity test.

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STPCCCEC307

Title of Course: **Fluid Mechanics Laboratory**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	CA	UA	ESE	Total
--	--	2	2	1	--	25	25	--	50

Course outcomes:

After completing the course, the students will be able to

CO1 ***Understand*** the Bernoulli's theorem for governing fluid flows.
CO2 ***Calculate*** the buoyancy force.
CO3 ***Calculate*** the different fluid properties using various types of equipment's like measurement of flow, pressure velocity head loss.
CO4 ***Understand*** the basic properties and Characteristics of incompressible fluid in laboratory.

Minimum Eight (8) experiments to be performed from the list/topics given below:

Sr. No	List of Practical
1.	Determination of Metacentric height.
2.	Verification of Bernoulli's theorem.
3.	Study of Impact of Jet.
4.	Study of major and minor losses in pipes.
5.	Study of velocity measurement by pitot tube.
6.	Determination of coefficient of discharge by venturimeter.
7.	Determination of coefficient of discharge by orificemeter.
8.	Determination of coefficient of hydraulic coefficient of sharp edged circular orifice.
9.	Determination of coefficient of discharge of external cylindrical mouth piece.
10.	Determination of coefficient of discharge of flow over rectangular notch.
11.	Determination of coefficient of discharge of flow over triangular notch.
12.	Study of status of flow using Reynold's Apparatus.

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STPCCCE308

Title of Course: AutoCAD Drawing.

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	CA	UA	ESE	Total
0	0	2	0	1	-	25	25	-	50

Course outcomes:

After completing the course, the students will be able to

CO1 ***Apply*** basic CAD command to develop 2D and 3D drawings of residential & commercial building using AutoCAD.

CO2 ***Prepare*** detailed engineering and construction drawings and designs required for civil engineering activities.

CO3 ***Develop and Modify Technical Drawings***

CO4 ***Interpret and Reproduce Engineering Drawings***

1	Practicing various setting commands in AutoCAD
2	Practicing various 2D drawing commands in AutoCAD
3	Practicing various 2D editing/ modifying command in AutoCAD - selecting objects, various methods of selection, Erase, Move, Copy, Break, Mirror, Rotate, Scale, Trim, Extend, Offset, Blocks- making and inserting blocks
4	Practicing various dimensioning and text command in AutoCAD - Linear, aligned, continue dimensioning
5	Practicing various formatting command in AutoCAD - point style, line weight, line types, colour, text style, dimension style, table style
6	Practicing various viewing and printing commands in AutoCAD, selection of scale.
7	Preparing drawings (plans, elevations / sections / perspective) in AutoCAD from given data/ drawings and printing it on A4 size paper by using suitable scales
8	Practicing various 3D drawing commands in AutoCAD
9	Practicing various 3D editing/ modifying command in AutoCAD
10	Practicing, creating various 3D views and perspective views of 3D objects

Recommended Books

1. AutoCAD Manual by AUTODESK
2. Technical Drawing 101 with AutoCAD 2025: A Multidisciplinary Guide to Drafting Theory and Practice, Douglas Smith et. al., SDC Publication,
3. Introduction to Drafting and AutoCAD 2D, Wally Baumback, BC campus OPEN ED Publications

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STEMCCEC309

Title of Course: **Creativity, Innovation and Entrepreneurship in Civil Engineering**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	CA	UA	ESE	Total
--	--	4	4	2	-	-	-	-	50

Course outcomes:

After completing the course, the students will be able to

CO1: Demonstrate creative thinking and apply innovative design principles in civil engineering projects

CO2: Apply knowledge of innovative building concepts, advanced construction materials, and modern equipment to enhance the efficiency, sustainability, and quality of construction practices.

CO3: Evaluate and integrate advanced materials and technologies to enhance construction practices.

CO4: Develop entrepreneurial skills for initiating and managing startups in civil engineering sectors.

CO5: Apply digital tools and modern surveying techniques to improve efficiency and decision-making in civil engineering projects

LIST OF PRACTICALS

- Creative meaning and use in professional life.
- Creative Building Drawings, landscape drawings, beautification of land, interior design.
- Innovative building concepts, Innovative construction materials,
- Innovative construction equipment and machinery.
- Entrepreneurship in Civil Engineering
- Green Materials: Manufacture of fly ash bricks, recycled concrete
- Smart Construction: IoT-based site monitoring, drones, automated machinery
- Structural Engineering Services: Freelance design consultancy, retrofitting, structural auditing

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- Infrastructure Projects: Road construction startups, rural housing development
- Waste Management: Solid waste recycling, construction waste reuse
- Water Resources: Rainwater harvesting systems, greywater reuse
- Surveying & GIS: Drone surveys, LiDAR mapping, topographic data as a service
- Digital Tools: Apps for project management, estimation, material tracking

Recommended Books:

1. Design Like You Give a Damn: Architectural Responses to Humanitarian Crises – Architecture for Humanity
2. Architectural Drafting and Design – Alan Jefferis, David A. Madsen
3. Landscape Architectural Graphic Standards – Leonard J. Hopper
4. Innovative Building Materials – R. C. Jha
5. Green Building: Guide to the New Home Construction – K. G. Dastidar
6. Sustainable Construction Materials and Technologies – J. K. Khatri
7. Advanced Construction Materials: Science and Technology – S. C. Keerthi
8. Construction Equipment Management for Engineers – S. C. Sharma
9. Modern Construction Equipment and Methods – R. C. Hibbler
10. The Entrepreneurial Engineer – Robert A. McDonald
11. Engineering Entrepreneurship: How to Create and Grow a Tech Business – Michael A. Housman
12. Green Building with Concrete: Sustainable Design and Construction – G. K. L. Rao
13. Sustainable Construction Materials: Recycled Concrete – S. C. Houghton
14. Building Smart Cities with IoT – Sudhir Kumar Sharma
15. Construction Robotics: Automation and Future of Building – Dr. M. M. R. S. Suresh
16. Introduction to Remote Sensing and GIS – Michael N. DeMers

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III Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STEMCCEC310

Title of Course: **Ethical Human Values**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	CA	UA	ESE	Total
--	--	4	4	2	-	-	-	-	50

Course outcomes:

After completing the course, the students will be able to

CO1: Demonstrate understanding of ethical human values and apply them in personal and professional life with integrity and empathy.

CO2: Promote equality, respect for diversity, and inclusive behavior in social and cultural settings.

CO3: Exhibit responsibility towards environmental conservation by respecting and caring for Mother Earth.

CO4: Uphold respect for Indian culture, traditions, and contribute positively to society by supporting the needy and elderly.

Unit	Content	Hours
I	**Ethical Human Values, Respecting and adopting equality**	09
II	**Respecting and caring mother earth**	09
III	**Respecting our India and Indian Culture**	09
IV	**Caring the needy and senior citizens**	09
V	**Adopting the ethical values in Social behavior**	09

Recommended Books:

Respecting and Adopting Equality

1. The Ethics of Equality – Tom Campbell
2. Equality: The Quest for the Common Good – William A. Galston

Respecting and Caring for Mother Earth

1. The Sacred Balance: Rediscovering Our Place in Nature – David Suzuki
2. The Ecology of Wisdom: Writings by Arne Naess – Arne Naess

Respecting Our India and Indian Culture

Caring for the Needy and Senior Citizen 1.The Creative Professional's Guide to Building a Business – Gregory E. Young

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IV Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STMDMCEC401

Title of Course: **Multi-Disciplinary Minor - II (MDM)**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
2	--	--	2	2	2	5	5	40	50

The Detail Syllabus for the Multi-disciplinary Minor (MDM) course is provided separately under Multi-disciplinary Minors (MDM) Basket.

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IV Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STOECEC402

Title of Course: Open Elective - II

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
2	--	--	2	2	2	5	5	40	50

The Detail Syllabus for the Open Elective - I course (OE) is provided separately under "Open Electives" Basket.

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IV Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STPCCCEC403

Title of Course: **Concrete Technology**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
3		--	3	3	3	10	10	80	100

After completing the course, the students will be able to;

CO1 **Identify** and enlist the properties of ingredients and admixtures required to make good concrete.

CO2 **Apply measures** to get quality concrete in fresh as well as hardened state and use non-destructive testing procedure for evaluation of concrete properties.

CO3 **Design** a Concrete Mix as per IS requirements.

CO4 **Illustrate** the salient features of special purpose concrete and concreting techniques for extreme environmental conditions.

Unit	Content	Hours
I	**General ingredients of Concrete:** **Cement:** Main constituents of cements, Hydration of cement. Specifications of cement and respective IS codal provisions. **Aggregates:** Sources of aggregates, classification and nomenclature. Aggregate characteristics and their significance in strength, workability, Placement and compaction of concrete. Sampling, particle shape and texture, bond of aggregate, size & grading of aggregate strength of aggregate. Mechanical properties– Specific gravity, bulk density, porosity, absorption of aggregate, moisture content of aggregate, bulking of sand abrasion test, impact value. Deleterious substances in aggregate, organic impurities, clay and other fine material etc. Soundness of aggregate crushed sand. Alkali aggregate reaction and respective IS codal provisions. **Water:** quality of water suitable for concrete mixing and respective IS codal provisions.	9
II	**Properties of Concrete:** Shrinkage- early volume changes, drying shrinkage, mechanism of shrinkage, factors affecting shrinkage, influence of curing and strong conditions, differential shrinkage, carbonation, Creep- factors influencing, relation between creep and time, nature of creep, effect of creep. **Introduction of IS Codes:** IS:383 and IS codes of tests of aggregates, IS:456, SP:23, various IS codes of cement specifications and tests, **Fresh Concrete:** Batching, mechanical mixers, automatic batching and mixing plants. Efficiency of mixing, workability measurement - Slump cone test, compacting factor test, flow table, Vee-Bee	9

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	consistometer. Factor affecting workability, setting time, Significance of w/c ratio, Segregation, bleeding, voids, and permeability. Hot weather concreting, conveyance of concrete, placing of concrete, compaction, vibrators, curing of concrete, significance, methods of curing, temperature effects on curing and strength gain.	
III	**Strength of concrete-** Gain of strength, w/c ratio. Factors affecting compressive strength, w/c ratio, type of cement, air entrainment, aggregate, mixing water, admixtures, curing conditions. Tensile and flexural strengths, relation between compressive and tensile strength. Failure modes in concrete, cracking in compression. Impact strength, fatigue strength, shear, elasticity, poison's ratio. Testing of hardened concrete. Compression test cubes, strength and cylinder strength and their relation, effect of aspect ratio on strength. Determination of tensile strength, indirect tension test, abrasion Resistance, accelerated curing test IS codes of tests on hardened concrete. **Non Destructive test-** significance, rebound hammer, ultra sonic pulse Velocity test. IS a code of NDT.	9
IV	**Durability of concrete-** Significance, water as an agent of deterioration, permeability of concrete, air sulphate attack and control, sea water attack, acid attack, efflorescence, resistance of corrosion, abrasion and cavitation's, process of rusting of steel. Codes of tests of durability of concrete. Additives of concrete:- Types of admixtures, natural products, diatomaceous earth, calcined clays of shales, volcanic glasses, byproducts – pozzolona, fly ash, silica fume, rice husk ash, G.G. blast furnace slag, **Admixtures of concrete-** air entraining, water reducing, accelerators, retarders, plasticizers and super plasticizers, permeability reducing, grouting agents, surface hardeners.	9
V	**Concrete Mix Designs**- Study of IS 10262:2019. Comparison of IS 10262:1982, 2009 and 2019. Mix designs of mass concrete, ordinary and standard grade concrete, high Strength concrete, self-compacting concrete, pump able concrete by Indian Standard methods. Overview on Mix designs by the methods other than Indian Standard Methods.	9

Reference Books

1) Concrete technology by M.S.Shetty, S.Chand&Co.Ltd.
2) Properties of Concrete by A.M. Neville, Pearson Publication.
3) Concrete Technology by M.L.Gambhir,TataMcgraw hill
4) Chemistry of Cement and Concrete by F.M. Lee, Chemical Publishing Co., Inc.

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IV Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STPCCCEC404

Title of Course: Surveying

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	MSE	IE	ESE	Total
3		--	3	3	3	10	10	80	100

After completing the course, the students will be able to;

CO1 **Perform** chain and compass traversing to measure distances and bearings for land surveying applications.

CO2 **Apply** the principles of tacheometry and use a theodolite for accurate measurement of horizontal and vertical angles, distance and elevation.

CO3 **Apply** geodetic surveying methods.

CO4 **Interpret** and analyze aerial photographs for mapping.

CO5 **Utilize** advanced surveying techniques.

Unit	CONTENTS	Hours
Unit 1	**Chain and compass Traversing**: Introduction, Principles of surveying, chain survey, errors in chaining, ranging, chaining, offsetting, plotting chain survey data, instruments for measuring right angles, use of prismatic compass, bearing of lines, Local attraction, traversing with chain and compass, plotting and adjusting a traverse, Magnetic Declination etc. **Plane Table Survey:** Equipment required for plane table Survey, uses, advantages, disadvantages and errors in plane table surveying; Methods of plane table Survey Radiation, intersection, traversing and resection; Two point and Three point problems and their solutions by different methods, Strength of fix, Lehman's Rules. **Study of Dumpy Level and Theodolite:** Principle axes of Dumpy Level: study of Dumpy Level, testing and adjustment of axis of bubble tube and line of collimation,	9 Hrs

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	reciprocal leveling, curvature and refraction corrections, distance to the visible horizon. Study of Vernier and Micro Optic Theodolite: introduction to 20" Vernier Theodolite. Principle axes of Theodolite: Testing and Permanent adjustments of Transit Theodolite.	
Unit 2	**Tacheometry:** Principle of stadia, fixed hair method with vertical staff to determine horizontal distances and elevations of the points. Use of Tacheometry in Surveying, Tacheometric Contour Survey. Ontouringuse of contour maps, direct and indirect methods of contouring. Profile Levelling Longitudinal Section and Crosssections Study and use of Toposheets. **Theodolite Traversing Uses of Theodolite**: Measurement of Horizontal angles, horizontal angles by repetition and by reiteration (errors eliminated) ,vertical angles, magnetic bearings, prolonging a line, lining in, setting out angles. Theodolite **Traversing:** Computation of Consecutive and independent Coordinates, adjustment of closed traverse, by transit rule and Bowditch's rule, Gales Traverse table, omitted measurements, area calculation by independent coordinates. Open Traverse – Its uses, measurement of deflection angles using transit Theodolite, open traverse survey, checks in open traverse.	9 Hrs
Unit 3	**Geodetic Surveying:** Objects, Methods in Geodetic surveying, Trilateration, Classification of triangulation systems, Triangulation figures, Strength of figure & derivation for well conditioned triangle, Selection of stations, intervisibility & height of stations, Towers signals & their classifications, Phase of signals & their corrections. Satellite stations, Reduction to center, Reduction to mean sea level and extension of base	9 Hrs

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Unit 4	**Photogrammetry:** Objects, applications to various fields, aerial camera, comparison of map & vertical photograph, vertical tilted and oblique photographs, scale of vertical photograph, Mirror Stereoscope, photo interpretation, etc. Geographic Information System (GIS): definition and meaning, data modes for GIS, components of GIS, and application to Civil Engineering, etc.	9 Hrs
Unit 5	**Advance Surveying Techniques**: Global Positioning System(GPS): Applications to Civil Engineering, concept of Global Positioning Systems [GPS] and differential GPS, Electromagnetic waves and their properties, Electromagnetic Distance Meters (E.D.M.), measurement principle of EDM instruments, Total Station and its uses, fundamental parameters of Total Station, etc., Optical Theodolite, etc. Remote Sensing: basic principles, electromagnetic spectrum, classification of remote sensing systems, etc.	9 Hrs

Text Books:

- Kanetkar T.P. and Kulkarni S.V. "Surveying and Levelling – Part1", Pune Vidyarthi Griha Prakashan, Pune.
- Kanetkar T.P. and Kulkarni S.V. "Surveying and Levelling – Part2", Pune Vidyarthi Griha Prakashan, Pune.

Reference Books:

- Duggal S. K. "Surveying Volume I", Tata McGraw-Hill Publishing Company Limited.
- Duggal S. K. "Surveying Volume II", Tata McGraw-Hill Publishing Company Limited.
- Bannister A, Raymond S & Baker R. "Surveying", Pearson Education Ltd.
- Subramanium R., "Surveying & Levelling", Oxford University Press.
- Clark David, "Plane and Geodetic Surveying for Engineers Volume–I", CBS, 6/E.
- Punmia B. C. "Surveying-I", Laxmi Publications (P) Ltd. New Delhi
- Punmia B. C., Jain A, Jain A., "Surveying-II", Laxmi Publications (P) Ltd. New Delhi

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Semester IV B.Tech. (Civil Engineering)NEP 2020

Course Code: STPCCCEC405

Title of the Course: Concrete Technology LAB

Course Scheme				**Evaluation Scheme**		
Lecture	Tutorial	Practical	Credits	TW	POE	Total
0	0	2	1	25	25	50

Course Outcomes:

CO1. ***Asses***s the different physical properties of cement, fine and coarse aggregates at field and in lab to decide their suitability for making concrete.

CO2. ***Determine*** the properties of fresh and hardened concrete to assess quality of concrete.

CO3. ***Design*** concrete mix as per IS specifications.

LIST OF EXPERIMENTS: PERFORM ANY 10

1. Determination of Fineness, Normal Consistency, setting time, soundness of cement

2. Determination of Compressive Strength of cement

3. Determination of Specific gravity of cement, fly ash, fine aggregates, coarse Aggregates and rubble and

4. Determination of bulk density of cement, fly ash, fine aggregate and coarse Aggregates

5. Determination of Silt and Clay content, Bulking, Sieve analysis of Fine aggregates

6. Determination of Crushing Value, Impact Value, Abrasion Value of Coarse Aggregates

7. Determination of flakiness Index, elongation Index and soundness and Sieve Analysis of Coarse aggregates.

8. Workability tests of Concrete: Slump test, Compaction factor test, Vee Bee test, Flow test.

9. Strength tests of concrete: Compressive strength test, Flexural strength test, Split Tensile strength test, accelerated curing test.

10. Concrete mix design by IS 10262:2019 (any two)

11. Nondestructive testing of Concrete: Rebound hammer test, ultrasonic pulse velocity test and Test for PH of concrete or for carbonation.

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Semester IV B.Tech. (Civil Engineering) NEP 2020

COURSE CODE : STPCCCEC406
Title of the Course: Surveying Lab

Course Scheme				Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Credits	TW	POE	Total
0	0	3	1	25	25	50

Course Outcomes:

CO1: Understand and apply the basic principles of surveying to measure distances, angles, and elevations using traditional and modern instruments.

CO2: Conduct fieldwork and prepare detailed surveying maps using instruments like theodolite, total station, and GPS.

CO3: Analyze and interpret survey data to calculate area, volume, and other relevant parameters for engineering projects.

CO4: Demonstrate teamwork, communication skills, and adherence to professional ethics while working on real-world surveying problems.

LIST OF EXPERIMENTS: PERFORM ANY 2 PROJECTS AND 8 PRACTICALS

1 Project-I -Theodolite traverse Survey project of a closed traverse with at least four stations, computation of area of the traverse.
2 Project-II-Tacheometric contouring project with two instrument stations about 60 m apart.
3 Project-III -Plane table survey project of a closed traverse with at least four stations, with details such as buildings, roads, etc.
4 Project-IV- Road project for a minimum length of 300 m including fixing alignment, profile leveling, cross-sectioning, plotting of L section and cross section

PRACTICALS

1 Study of chain and compass.and Chain and compass Traverse Survey
2 Study and use of dumpy level, auto level to determine elevation of various points.
3 Measurement of horizontal and vertical angles by transit Theodolite.

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4	Measurement of horizontal angles by repetition method.
5	Computation of horizontal distances and elevations by Tacheometry
6	Radiation & intersection methods in plane table survey.
7	Setting out a given building from a given foundation plan
8	Study and use of one second Theodolite and measurement of horizontal angle
9	Setting out a given horizontal angles and measurement of Vertical angles using one second Theodolite.
10	Finding out elevation of high object by Trigonometrical Leveling using one second Theodolite.
11	Study and use of Mirror Stereoscope and finding out Air base distance
12	Study and use of Total Station
13	Study and use of GPS.

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Semester IV B.Tech. (Civil Engineering) NEP 2020

Course code: STHSSMCEC407

Title of the course: HUMAN RESOURCE MANAGEMENT

Course Scheme					Evaluation Scheme			
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper hours	CA	UA	Total
00	00	04	04	2	---	50	0	50

Course Outcomes:

After completion of the course, the student will be able to:

CO1: ***Understand and represent*** the organizational structure of construction projects.

CO2: ***Prepare*** manpower planning schedules and job descriptions relevant to various civil site roles

CO3: *Demonstrate* recruitment skills through resume.

CO4: ***Stimulate*** team management and techniques used in project.

CO5: ***Design*** performance evaluation tools and welfare policies for construction workforce management.

LIST OF PRACTICALS

(PERFORM ANY 8 PRACTICALS)

1. Preparation of Organization Chart for a Civil Construction Site
2. Manpower Planning Chart vs Project Schedule
3. Preparation of Job Descriptions for Construction Site Personnel
4. Resume Screening & Shortlisting Exercise
5. Mock Interview Simulation
6. Drafting Offer Letters and Site Code of Conduct
7. Conflict Management Role Play
8. Designing Performance Appraisal Forms
9. Case Study on Labor Welfare Measures at a Construction Site
10. Report on Use of HR Tools in Construction Management

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Semester IV B.Tech. (Civil Engineering) NEP 2020

Course code: STVSECCEC408

Title of the course: SITE VISIT AND SITE REPORT WRITING

Course Scheme					Evaluation Scheme			
Lecture	**Tutorial**	**Practical**	**Periods/week**	**Credits**	**Duration of paper hours**	**CA**	**UA**	**Total**
00	**01**	**02**	**-**	**2**	**---**	**50**	**0**	**50**

NOTE: At least 5 sites must be visited.

Course Outcomes:

After completion of the course, the student will be able to:

CO1: *Observe and understand real-world civil engineering practices, construction techniques, and site management protocols.*

CO2: *Identify and evaluate the practical applications of civil engineering materials, equipment, and safety measures on site.*

CO3: *Correlate theoretical knowledge with field observations to enhance problem-solving and decision-making skills.*

CO4: *Develop professional communication, teamwork, and ethical awareness through interaction with engineers, contractors, and workers at the site.*

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IV Semester B. Tech. Civil Engineering (NEP 2020)

Course Code: STAECCECS409

Title of Course: **Modern Indian / Foreign Language**

Teaching Scheme					Examination Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration in Hours	CA	UA	ESE	Total
--	--	4	4	2	--	25	25	--	50

Course outcomes:

After completing the course, the students will be able to

CO1 ***Develop*** essential reading, writing, speaking, and listening skills in a selected foreign language

CO2 ***Introduce*** basic grammar, sentence construction, and frequently used vocabulary

CO3 ***Enable*** students to engage in simple conversations and write basic texts

CO4 ***Enhance*** intercultural communication by providing an understanding of cultural contexts

Course Description: This course aims to introduce undergraduate students to basic proficiency in a foreign language, French, Japanese, German, or any other language based on the availability of certified trainers. The course focuses on foundational communication, vocabulary, and cultural awareness relevant for professional, academic, and travel contexts.
One foreign language (such as French, Japanese, German, or Spanish) will be offered each semester or batch, based on the availability of certified language trainers.
The course mentor will work in close coordination with the assigned trainer to ensure uniformity in course delivery and assessment. Students may also be encouraged to complete this course through online platforms like SWAYAM, NPTEL, or other recognized certification portals, in consultation with the course mentor.

Content
Introduction to Language and Culture Introduction to the selected language (alphabets, phonetics, scripts, tones), Basic greetings and courtesy phrases, Self-introduction, numbers, days of the week, months, seasons, telling time, Cultural aspects: etiquette, gestures, formal/informal use, social norms, Brief history and global

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relevance of the chosen language.
Vocabulary and Grammar Fundamentals Sentence structure and word order in the selected language, Introduction to parts of speech: nouns, pronouns, articles, verbs, adjectives, Present tense for daily conversations, Thematic vocabulary: family, food, transport, weather, colors, hobbies, Grammar exercises and vocabulary-building activities.
Everyday Communication and Situational Practice Forming simple questions and answers, Common expressions used in day-to-day scenarios, Role plays: asking directions, shopping, ordering food, travel-related interactions, Speaking and pronunciation drills, Listening to basic native audio/video dialogues.
Functional Skills and Language Proficiency Tools Reading comprehension of basic texts (signboards, menus, forms, short paragraphs), Writing practice: simple paragraphs, messages, filling forms, composing emails. Listening and speaking activities in workplace and academic contexts. Overview of international certifications: DELF A1 (French), JLPT N5 (Japanese), Goethe A1 (German), DELE A1 (Spanish), Tips for online/offline exam preparation and further learning resources.

Resources:

1. "Basic French Language Skills for Everyday Life," Alison, [Online]. Available: https://alison.com/course/basic-french-language-skills-for-everyday-life
2. "DELF/DALF - French Language Proficiency Tests," France Éducation International, [Online]. Available: https://www.france-education-international.fr/en/delf-dalf
3. "Japanese Language - N5 Course," Japan Foundation and Minato, [Online]. Available: https://minato-jf.jp/
4. "Japanese-Language Proficiency Test (JLPT) Official Website," Japan Foundation and Japan Educational Exchanges and Services, [Online]. Available: https://www.jlpt.jp/e/
5. "Goethe-Zertifikat A1: Start Deutsch 1," Goethe-Institut, [Online]. Available: https://www.goethe.de/en/spr/kup/prf/prf/sd1.html
6. "Learn German – Introduction to German A1," Deutsche Welle (DW), [Online]. Available: https://learngerman.dw.com/en/overview
7. "Learn Spanish: Basic Spanish Vocabulary," edX (University of California, Davis), [Online]. Available: https://www.edx.org/course/spanish-vocabulary
8. "German - I," National Programme on Technology Enhanced Learning (NPTEL), IIT Madras [Online]. Available: https://onlinecourses.nptel.ac.in/noc21_hs30/preview
9. "Introduction to Japanese Language and Culture," SWAYAM – IIT Kanpur, [Online]. https://onlinecourses.nptel.ac.in/noc19_hs52/preview
10. "Foreign Languages Courses," FutureLearn, [Online]. Available: https://www.futurelearn.com/subjects/language-courses

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Semester IV B.Tech. (Civil Engineering) NEP 2020

Course code: STVECCEC410

Title of the course: - Lifestyle for Holistic Development

Course Scheme					Evaluation Scheme			
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper hours	CA	UA	Total
0	0	4	0	2	0	0	0	50

COURSE OUTCOME

1. Analyze and reflect upon their own lifestyle patterns, emotional states, and stress triggers through daily tracking and journaling.
2. Plan and adopt holistic nutrition practices based on individual body constitutions (Prakriti) using Ayurvedic principles.
3. Demonstrate foundational yoga asanas, pranayama, and meditation techniques to promote physical and mental well-being.
4. Apply simple natural healing therapies such as aromatherapy, mud packs, and self-massage for personal wellness.
5. Design and implement lifestyle changes for improved sleep quality and reduced screen dependency through sleep hygiene and digital detox.
6. Engage actively in community, nature, and eco-wellness activities, fostering emotional resilience and environmental consciousness.
7. Utilize creative expressions like art, mandala drawing, sound therapy, and chanting to support emotional healing.
8. Integrate learned practices into a personalized holistic wellness plan with specific goals, demonstrating a commitment to lifelong health.

Unit	Contents
I	Self-Assessment and Awareness Daily Routine Tracker – Record your lifestyle patterns (wake-up time, sleep, screen time, meals, exercise, etc.) for 7 days. Mind-Body Constitution Test – Identify your Prakriti (body-mind type) using Ayurveda-based questionnaires. Stress and Emotion Journal – Maintain a daily log of emotional states and triggers.
II	Holistic Nutrition:-Meal Planning Based on Doshas – Plan a 1-day vegetarian meal suitable for your body type (Vata, Pitta, or Kapha).Detox Drink Preparation – Prepare simple herbal drinks (e.g., lemon-honey water, tulsi tea). Mindful Eating Practice – Eat a meal in silence, chewing slowly, and document your experience..
III	Yoga and Meditation:-Basic Yoga Asanas – Practice and demonstrate 5 basic postures: Tadasana, Bhujangasana, Balasana, Trikonasana, and Shavasana. Pranayama Techniques – Practice Anulom-Vilom, Bhramari, and Kapalbhati under guidance. Guided Meditation – Attend or conduct a 10-minute mindfulness meditation session and reflect on the experience.

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IV	Natural Healing Therapie:-Aromatherapy – Use and describe effects of essential oils (lavender, peppermint, eucalyptus). Mud Therapy/Diy Body Pack – Prepare a natural face/body mask using multani mitti, turmeric, aloe vera, etc. Sun Bathing or Oil Massage – Perform a short sun exposure session or self-massage using warm oil.
V	Sleep and Digital Detox:- Sleep Hygiene Chart – Record sleep quality for a week before and after improving sleep habits. Digital Detox Challenge – Spend 6–12 hours without screens and reflect on the effect on mind and emotions. Create a Night Routine – Design a calming bedtime ritual (e.g., chamomile tea, journaling, no phone 1 hr before sleep).
VI	Community and Nature Connection Nature Walk – Take a walk in a natural environment, document the sensory experience (sight, sound, smell).Gratitude Sharing Circle – Organize or participate in a small group activity to share positive experiences. Volunteer Activity – Engage in any well-being or cleanliness activity (e.g., tree planting, health awareness).
VII	Sound Therapy and Chanting:-Chant mantras (Om, Gayatri, So Hum) daily for 5–10 minutes. Listen to sound healing music or nature sounds and reflect on changes in emotions.Write how the use of sound influenced your mental state.
VIII	Art and Expression for Emotional Healing:-Draw a mandala or express emotions through colors and patterns Do a color-emotion connection exercise. Reflect on: “What did I feel or discover through this activity?”
IX	Community and Nature Connection:-Do a silent walk in nature or hug a tree mindfully.Participate in an eco-wellness activity (tree plantation, community garden, cleanup drive). Reflect on emotional/spiritual changes after nature time.
X	Designing a Personal Wellness Plan:-Combine yoga, food, Ayurveda, natural therapies, and detox practices into a personal 1-week plan.Set 3 personal wellness goals. Submit a written or oral presentation on your holistic wellness journey.

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