Shivaji University

Vidya Nagar, Kolhapur, Maharashtra 416004

Department of Technology

As per NEP 2020 guidelines

First Year B.Tech. (Civil Engineering)

2023-24 onwards

A. Definition of Credit:

1 Hr. Lecture (L) per week 1 credit	1 credit
1 Hr. Tutorial (T) per week	1 credit
1 Hr. Practical (P) per week 2 Hr. Practical(Lab)/week	0.5 credits 1 credit

B. Credits for award of Degrees –

- A total of credits **160** for a student are required to be eligible to acquire **Under Graduate degree in Engineering (Major).**
- A student will be eligible to acquire Under Graduate degree with **additional Minor Engineering**, if candidate earns **additional 16 credits.** These could be acquired by completing the respective courses from the pool launched by the respective Program. (The courses could be through MOOCs also)
- A student will be eligible to acquire Under Graduate degree with **Honours,** if candidate earns **additional 12 credits.** These could be acquired preferably through MOOCs the title of which will be well declared to the aspirants who will chose the same from the pool of courses.
- A student will be eligible to acquire **Under Graduate degree with Honours and Research**, if candidate earns **additional of 17 credits comprising of 5 credits assigned to additional research project.** (These 12 credits could be acquired preferably through MOOCs. As regards additional project work, it is mandatory to be successful in publishing at least two research papers based on the research topic.)

C. Structure of Undergraduate Engineering program:-

Sr. No.	Category Suggested	Course Code	Breakup of Credits (Total 160) As per AICTE Model	Our status
1.	Humanities and Social Sciences including Management and Environment Courses	HSMEC	12	15
2.	Basic Science courses	BSC	25	19
3.	Engineering Science Courses including workshop, drawing, basics of electrical/mechanical/computer etc.	ESC	24	45
4.	Professional Core Courses	PCC	48	49
5.	Professional Elective Courses relevant to chosen specialization/branch	PEC	18	06
6.	Open subjects – Electives from other technical and /or emerging subjects	OEC	18	09
7.	Project , Seminar and Internship	PSI	15	17
8.	Project Based Learning	PBL	Non Credit	More than adequate courses covered
9.	Mandatory Audit Courses [Social, Environmental Sciences, Induction	MAC	Non Credit	

	training, Indian Constitution, Essence of Indian Traditional Knowledge]			here
	Total		160	160

D. Course code and Definition:-

Course code	Definitions
L	Lecture
T	Tutorial
P	Practical
ISE	In Semester Examination
ESE	End Semester Examination
IE	Internal Evaluation
EE	External Evaluation
BSC	Basic Science Courses
ESC	Engineering Science Courses
HSMEC	Humanities and Social Sciences including Management , Environmental Courses
PCC	Professional Core Courses
PEC	Professional Elective Courses
OEC	Open Elective Courses
MAC	Mandatory Audit Courses
PSI	Project, Seminar, Internship
PBL	Project Based Learning
RSC	Research Skills Courses
PBL, PBI	Project Based Learning Program Based Internship
MN , HN, HNR	Minor , Honour, Honour with Reasearch
CC, DC	Certificate Course, Diploma Course

Mandatory Induction Program at FY B. Tech First Term Commencement

3 Weeks Duration

- Physical activity
- Creative Arts
- Universal Human Values
- Literary
- Proficiency Modules
- Lectures by Eminent People
- Visits to local Areas
- Familiarization to Dept./Branch and Innovations

Shivaji University, Kolhapur

Department of Technology

First Year B.Tech (All Programs), Semester- I

Physics Group : Teaching and Evaluation Scheme

S.N.	Category	Course Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
									Theory	Practical
				L	T	P			ISE:ESE	IE:EE
1.	Basic Science Course	BSC111	Engineering Physics	03	-	02	05	04	30:70	50:00
2.	Basic Science course	BSC112	Engineering Mathematics –I	03	01	-	04	04	30:70	50:00
3.	Engineering Science Courses	ESC111	Elements of Mechanical and Electronics Engineering	04	-	02	06	05	30:70	100:00
4.	Engineering Science Courses	ESC112	Engineering Mechanics	03	-	02	05	04	30:70	50:00
5.	Engineering Science Course	ESC113	Computer Programming for Engineers	02	-	02	03	03	30:70	50:00
				-	-	-	-	**20**	**500**	**300**
6.	Humanities & Social Sciences, Management, Environment Courses	HSMEC 111	Professional Communication (English)-I	02	-	-	02	ISE at Course in charge end		
7.	Research Skills Courses	RSC111	*Design Thinking and Innovation-I and Social Internship	01	-	01	02	ISE at Course in charge end		
8.	Mandatory Audit Course	MAC111	Yoga and Meditation	01	-	-	01	ISE at Course in charge end		
			Total Hours	19	01	09	**29**	-	-	-

*Design Thinking and Innovation-I and Social Internship: After the First Semester of F.Y. B. Tech, the students will undergo social rural internship of two weeks and the evaluation will be done in the Second Semester.

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First Year B.Tech (All Programs), Semester- I

Chemistry Group : Teaching and Evaluation Scheme

S.N.	Category	Course Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
									Theory	Practical
				L	T	P			ISE:ESE	IE:EE
1.	Basic Science Course	BSC111	Engineering Chemistry	03	-	02	05	04	30:70	50:00
2.	Basic Science Course	BSC112	Engineering Mathematics –I	03	01	-	04	04	30:70	50:00
3.	Engineering Science Course	ESC111	Elements of Civil and Electrical Engineering	04	-	02	06	05	30:70	100:00
4.	Engineering Science Course	ESC112	Engineering Graphics and Design	03	-	02	05	04	30:70	50:00
5.	Engineering Science Course	ESC113	Electrical and Electronic Components and Devices	02	-	02	04	03	30:70	50:00
				-	-	-	-	**20**	**500**	**300**
6.	Humanities & Social Sciences, Management, Environment Courses	HSMEC 111	Professional Communication (English)-I	02	-	-	02	ISE at Course in charge end		
7.	Research Skills Course	RSC111	*Design Thinking and Innovation-I and Social Internship	01	-	01	02	ISE at Course in charge end		
8.	Mandatory Audit Course	MAC111	Yoga and Meditation	01	-	-	01	ISE at Course in charge end		
			Total Hours	19	01	09	**29**	-	-	-

*Design Thinking and Innovation-I and Social Internship: After the First Semester of F.Y. B. Tech, the students will undergo social rural internship of two weeks and the evaluation will be done in the Second Semester.

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Department of Technology

First Year B.Tech (All Programs), Semester- II

Physics Group, Teaching and Evaluation Scheme

S. N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
									Theory	Practical
				L	T	P			ISE:ESE	IE:EE
1.	Basic Science Course	BSC121	Engineering Chemistry	03	-	02	05	04	30:70	50:00
2.	Basic Science Course	BSC122	Engineering Mathematics – II	03	01	-	04	04	30:70	50:00
3.	Engineering Science Course	ESC121	Elements of Civil and Electrical Engineering	04	-	02	06	05	30:70	100:00
4.	Engineering Science Course	ESC122	Engineering Graphics and Design	03	-	02	05	04	30:70	50:00
5.	Engineering Science Course	ESC123	Electrical and Electronic Components and Devices	02	-	02	04	03	30:70	50:00
				-	-	-	-	**20**	**500**	**300**
6.	Humanities & Social Sciences, Management, Environment Courses	HSMEC 121	Professional Communication (English)-II	02	-	-	02	ISE at Course in charge end		
7.	Research Skills Course	RSC121	Design Thinking & Innovation-II	01	-	01	02	ISE at Course in charge end		
8.	Mandatory Audit Course	MAC121	Human Rights and Constitution	01	-	-	01	ISE at Course in charge end		
			Total Hours	17	01	09	**29**	-	-	-

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First Year B.Tech (Chemical Engineering), Semester- II

Chemistry Group : Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
									Theory	Practical
				L	T	P			ISE:ESE	IE:EE
1.	Basic Science Course	BSC121	Engineering Physics	03	-	02	05	04	30:70	50:00
2.	Basic Science Course	BSC122	Engineering Mathematics – II	03	01	-	04	04	30:70	50:00
3.	Engineering Science Course	ESC121	Elements of Mechanical and Electronics Engineering	04	-	02	06	05	30:70	100:00
4.	Engineering Science Course	ESC122	Engineering Mechanics	03	-	02	05	04	30:70	50:00
5.	Engineering Science Course	ESC123	Computer Programming for Engineers	02	-	02	04	03	30:70	50:00
				-	-	-	-	**20**	**500**	**300**
6.	Humanities & Social Sciences, Management, Environment Course	HSMEC 121	Professional Communication (English)-II	02	-	-	02	ISE at Course in charge end		
7.	Research Skills Course	RSC121	Design Thinking and Innovation-II	01	-	01	02	ISE at Course in charge end		
8.	Mandatory Audit Course	MAC121	Human Rights and Constitution	01	-	-	01	ISE at Course in charge end		
			Total Hours	19	01	09	**29**	-	-	-

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Second Year B.Tech. (Civil Engineering), Semester- III, AY 2024-25
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	Basic Science Course	BSC211	Mathematics for Civil Engineers -III	03	-	-	03	3	30:70	00:00
2	Engineering Science Courses	ESC211	Strength of Materials	03	01	02	06	5	30:70	50:50
3	Engineering Science Courses	ESC212	Fluid Mechanics	03	-	02	05	4	30:70	50:00
4	Professional Core Courses	PCC 211	Surveying	03	-	02	05	4	30:70	50:50
5	Professional Core Courses	PCC 212	Building Planning and Drawing	03	-	02	05	4	30:70	00:50
							-	**20**	**500**	**300**
7	Mandatory Audit Course	MAC211	Soft Skills Development	02	-	-	02	ISE at Course in charge end		
8	Humanities, Social Sciences, Management, Environment	HSMEC 211	Environmental Studies	02	-	-	02	University Exam at Year End		
9	Project Based Learning	PBL211	Mini Project I and Industrial Visit	-	01	-	01	ISE at Course in charge end		
			Total Hours	19	02	08	**29**	**-**		

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Second Year B.Tech. (Civil Engineering), Semester- IV, AY 2024-25
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	Engineering Science Courses	ESC 221	Theory of Structures	03	01	-	04	04	30:70	50:00
2	Professional Core Courses	PCC 221	Concrete Technology	03	-	02	05	04	30:70	50:50
3	Professional Core Courses	PCC 222	Open Channel Hydraulics	03	-	02	05	04	30:70	50:50
4	Professional Core Courses	PCC 223	Transportation Engineering	03	-	02	05	04	30:70	00:00
5	Humanities and Social Sciences , Management, Environmental Courses	HSMEC 221	Water Treatment Technology	03	-	02	05	04	30:70	00:50
							-	**20**	**500**	**300**
6	Mandatory Audit Course	MAC221	Introduction to Performing Arts	01	-	-	01	ISE at Course in charge end		
7	Mandatory Audit Course	MAC 222	Aptitude Enhancement Course I	-	01	-	01	ISE at Course in charge end		
8	Humanities, Social Sciences, Management Environment	HSMEC 221	Environmental Studies	02	-	-	02	University Exam at Year End		
9	Project Based Learning	PBL221	Mini Project II and Industrial Visit	-	01	-	01	ISE at Course in charge end		
			Total Hours	18	03	08	**29**	-		

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Third Year B.Tech. (Civil Engineering), Semester- V, AY 2025-26
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	Engineering Science Courses	ESC 321	Structural Analysis	03	01	-	04	04	30:70	50:00
2	Engineering Science Courses	ESC 322	Soil Mechanics	03	-	02	05	04	30:70	00:50
3	Professional Core Courses	PCC 311	Design of Steel Structures	03	01	-	04	04	30:70	00:50
4	Humanities and Social Sciences , Management Environmental Courses	HSMEC 311	Sewage and Sewage Treatment	03	-	02	05	04	30:70	50:50
5	Humanities and Social Sciences , Management Environmental Courses	HSMEC 312	Construction Management	03	01	-	04	04	30:70	50:00
							-	**20**	**500**	**300**
6	Mandatory Audit Course	MAC311	Introduction to Foreign Language	01	-	-	01	ISE at Course in charge end		
7	Mandatory Audit Course	MAC312	Aptitude Enhancement Course II		01	-	01	ISE at Course in charge end		
8	Project Based Learning	PBL311	Mini Project III and Industrial Visit		-	02	02	ISE at Course in charge end		
			Total Hours	16	04	06	**26**	**-**		

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Third Year B.Tech. (Civil Engineering), Semester- VI, AY 2025-26
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	Professional Core Courses	PCC 321	Design of RCC Structures	03	-	02	05	04	30:70	00:50
2	Professional Core Courses	PCC 322	Foundation Engineering	03	-	02	05	04	30:70	50:00
3	Professional Core Courses	PCC 323	Design of Dams and Reservoirs	03	01	-	04	04	30:70	50:00
4	Professional Core Courses	PCC 324	Design of Steel Structures and Detail Drawing	-	-	02	02	01	00:00	50:50
5	Professional Elective Courses	PEC 321	Elective I	03	-	-	03	03	30:70	00:00
6	Humanities and Social Sciences , Management, Environmental Courses	HSMEC 321	Construction Equipment, Site Safety and Disaster Management	03	-	-	03	03	30:70	00:00
7	Project Seminar Internship	PSI 411	Major Project Work (Phase-I)	-	-	02	02	01	00:00	00:50
							-	**20**	**500**	**300**
7	Mandatory Audit Course	MAC321	Research Methodology	01	-	-	01	ISE at Course in charge end		
8	Mandatory Audit Course	MAC 322	Aptitude Enhancement Course III		01	-	01	ISE at Course in charge end		
9	Project Based Learning	PBL321	Mini Project IV and Industrial Visit			02	02	ISE at Course in charge end		
			Total Hours	16	02	10	**28**	-		

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Final Year B.Tech. (Civil Engineering), Semester- VII, AY 2026-27
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	Program Core Courses	PCC411	Structural Dynamics and Earthquake Engineering	03	-	02	05	04	30:70	00:50
2	Program Core Courses	PCC412	Reinforced Concrete and Pre-stressed Concrete Design	03	-	02	05	04	30:70	00:50
3	Program Core Courses	PCC413	Estimating and Costing	03	-	02	05	04	30:70	50:00
4	Program Elective Courses	PEC411	Elective II	03	-	-	03	03	30:70	50:00
5	Open Elective Courses	OEC411	Open Elective	03	-	-	03	03	30:70	00:00
6	Project Seminar Internship	PSI 411	Major Project Work	-	-	02	02	02	00:00	00:100
							-	**20**	**500**	**300**
7	Mandatory Audit Course	MAC411	Green Tech and Sustainability	01	-	-	01	ISE at Course in charge end		
8	Project Based Learning	PBL411	Major Project Lab		01	02	03	ISE at Course in charge end		
			Total Hours	16	01	10	27			

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Final Year B.Tech. (Civil Engineering), Semester- VIII, AY 2026-27
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	Project Seminar Internship	PSI 421	Industrial Internship	Entire Semester to be spent in industry				10	00:00	100:100
2	SWAYAM (NPTEL) or any other MOOCs Open Elective Course	OEC 421	Open Elective –III (Through MOOC*)	03	-	-	03	03	30:70	00:00
3		OEC 422	Open Elective –IV (Through MOOC *)	03	-	-	03	03	30:70	00:00
4	Project Seminar Internship	PSI 423	Online Seminars	-	02	-	02	02	00:00	100:100
5		PSI 424	Analysis and Design of Civil Engineering Project (Online)	01	-	02	03	02	0:00	100:100
							-	**20**	**200**	**600**
6	Mandatory Audit Course	MAC421	Professional Ethics (Through MOOC)	01	-	-	01	As per MOOC/ ISE at Course in charge end		
			Total Hours (Other than Internship)	**08**	**02**	**02**	**12**	**-**		

*There is an option for End Semester Examination either on respective MOOC platform or at the course teacher's end through the University System.

** Though the course is to be completed online either through course coordinator or via suitable MOOC if any, the ISE will be coordinated by the course in charge and the ESE will be through University system.

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B.Tech. (Civil Engineering), Minor Degree
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	Preferably on SWAYAM (NPTEL) or any other MOOCs (Minor Program Core) Or In a Face-to-Face mode	MN-1	MN-Minor I	03	-	-	03	03	30:70	00:00
2		MN-2	MN-Minor II	03	-	-	03	03	30:70	00:00
3		MN-3	MN-Minor III	03	-	-	03	03	30:70	00:00
4		MN-4	MN-Minor IV	03	-	-	03	03	30:70	00:00
5	Minor Program Based Internship	MN-PBI	Industrial Internship (Minor Program Specific Industry)	One Month				04	00:00	50:50
							-	**16**	**400**	**100**
			Total Hours	12	00	10	**12**	-		

Credits for B. Tech (Minor) will be over and above the credits 160 required for the B. Tech (Major)
A minimum of 10 students need to opt for the particular specialization.
Specializations available are:

1. B. Tech (Structures)
2. B. Tech (Hydraulics)
3. B. Tech (Environment)
4. B. Tech (Soil Mechanics)

Note: The Program will have pool of the courses (Either Conventional or the MOOCs) from which the aspirants will choose these four courses and they may complete the same starting from Second Year till their departure from Final Year Civil Engineering UG)

Shivaji University, Kolhapur
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B.Tech. (Civil Engineering) Honours
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	SWAYAM (NPTEL) or any other MOOCs (Program Core Courses) Or Self-study mode with University's Semester End Examination	HN- 1	HN-Course I	03	-	-	03	03	30:70	00:00
2		HN- 2	HN- Course II	03	-	-	03	03	30:70	00:00
3		HN- 3	HN- Course III	03	-	-	03	03	30:70	00:00
4		HN- 4	HN- Course IV	03	-	-	03	03	30:70	00:00
							-	**12**	**400**	**00**
			Total Hours	12	00	00	**12**	**-**		

Note: The workload against the B. Tech Honours will be finalized at the Program Level considering the strength of students opting for the Honours.

Note1: The Program will have declaration of pool for these courses either through MOOCs' or from a conventional list for self-studies. From this pool, the aspirants will choose the courses.

Note 2: These courses / MOOCs will be different than those to be opted in the VIII semester of B.Tech. Major.

Note 3: B. Tech (Honours) will be eligible to join the Second Year of PG program in the same specialisation.

Note 4: Students may complete these courses/MOOCs when they enter in FY B.Tech. and they may complete the same before their departure.

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B.Tech. (Civil Engineering) Honours with Research
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	SWAYAM (NPTEL) or any other MOOCs (Program Core Courses) Or Self-study mode with University's Semester End Examination	HNR- 1	HNR -Course I	03	-	-	03	03	30:70	00:00
2		HNR - 2	HNR - Course II	03	-	-	03	03	30:70	00:00
3		HNR - 3	HNR - Course III	03	-	-	03	03	30:70	00:00
4		HNR - 4	HNR - Course IV	03	-	-	03	03	30:70	00:00
6	Project Based Learning	HNR -PBL	*Additional Research Project	-	-	10	10	05	00:00	50:50
							-	**20**	**400**	**100**
			Total Hours	**12**	**-**	**10**	**22**	**-**		

Note: The workload against the B. Tech Honours with Research will be finalized at the Program Level considering the strength of students opting for the Honours with Research.

***Research Project to be treated successful upon publishing of minimum two research papers in reputed Research Journals.**

Note 1: The Program will have declaration pool of these courses/MOOCs from which the aspirants will choose the courses/MOOCs.

Note 2: These courses or MOOCs will be different than those to be opted in the VIII semester of B. Tech Major.

Note 3: A successful B. Tech (Honours with Research) will be eligible to get enrolled to Ph.D. in same or allied field.

Note 4: Students may complete these courses/MOOCs when they enter in FY B.Tech. and they may complete the same before their departure.

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Department of Technology

B.Tech. (Civil Engineering), Exit After First Year (Certificate Course in Civil Engineering)
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	SWAYAM (NPTEL) or any other MOOCs Or In face to face mode (Program Core Courses)	CC-1	CC-Course I	02	-	-	02	02	30:70	00:00
2		CC- 2	CC-Course II	02	-	-	02	02	30:70	00:00
3	Program Based Internship	CC-PBI	Industrial Internship	One Month				06	00:00	50:50
							-	**10***	**200****	**100**
			Total Hours	**04**	**-**	**-**	**04**	**-**		

Note: The Workload against the Certificate Course will be finalised at the Program Level considering the strength of the students seeking for the Certificate.

***Obtaining these credits will be in addition to 40 regular credits at FY B. Tech**

******There is an option for End Semester Examination either on respective MOOC platform if any or at the course teacher's end through the University System.

Note 1: The students aspiring to exit after first year will finalise the title of the course/MOOC from the list provided by the Program.

Note 2: Program Specific Industry Internship to be completed by such students before commencement of SY B. Tech.

Shivaji University, Kolhapur
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B.Tech. (Civil Engineering) Exit After Second Year (Diploma in Civil Engineering)
Teaching and Evaluation Scheme

S.N.	Category	Code	Course Title	Hours per week			Contact Hours	Credits	Evaluation scheme	
				L	T	P			ISE:ESE	IE:EE
1	SWAYAM (NPTEL) or any other MOOCs Or In face to face mode (Program Core Courses)	DC- 1	DC- Course I	03	-	-	03	03	30:70	00:00
2		DC- 2	DC- Course II	03	-	-	03	03	30:70	00:00
3		DC- 3	DC- Course III	03	-	-	03	03	30:70	00:00
4	Program Based Internship	DC-PBI	One Month Industrial Internship	-	-		-	06	00:00	50:50
							-	**15***	**300****	**100**
			Total Hours	**09**	**-**	**-**	**09**	-		

Note: The Workload against the Diploma Course will be finalised at the Program Level considering the strength of the students seeking for the Diploma.

***Obtaining these credits will be in addition to 80 regular credits up to SY B. Tech**

****** There is an option for End Semester Examination either on respective MOOC platform if any or at the course teacher's end through the University System.

Note 1: The students aspiring to exit after the second year will finalise the title of the course/MOOC from the list provided by the Program.

Note 2: Program Specific Industry Internship to be completed by such students before commencement of T.Y. B.Tech.

Salient Feature of the revision which has been made in line with NEP 2020 Guidelines:

I. **B. Tech Major:** With completion of the routine no of credits e.g.160 along with those mandatory audit courses in each semester. (Total 8 Semester @ 20 Credits=160 credits. **As usual if the graduates want to pursue PG, it will be of 2 years duration for them.**

II. **B. Tech Minors:** There will be at least one option from each Program floated for the minor degree): Additional 16 Credits are mandatory to be acquired for award of an Additional Degree of the respective Minor Specialization:

A minimum of 10 students need to opt for the Minor Degree. The interested students have to pay separate fees for the same.

(Total 16 Credits= 03 Credits x 4 course=12 + 04 Credits against an internship of 30 days from the respective sector e. g If its B. Tech Food Technology, the mandatory training would be from Food Sector.)

III. **B. Tech (Honours):** There will be additional 12 Credits obtained through successful completion of 04 courses preferably through MOOCs 3 Credits each. (In case the MOOCs are chosen, these need to be other than Compulsory MOOCs of Semester VIII). The courses need to be completed throughout four years starting from second year.

The interested students have to pay separate fees for the same. Such a candidate will be eligible to enter at the Second Year of PG in the respective specialisation as per NEP 2020 guidelines.

IV. **B. Tech (Honours with Research):** There will be additional 17 Credits obtained through successful completion out of which 12 credits will be from 04 courses preferably through MOOCs, 3 Credits each. (In case the MOOCs are chosen, these need to be other than Compulsory MOOCs of Semester VIII). The balance 5 credits will be against an additional Project Work with success in publishing at least two research papers based on the research topic.

The interested students have to pay separate fees for the same. Such a candidate will be eligible as per NEP 2020 guidelines for pursuing PhD studies.

V. **Multiple entry and multiple exit feature:**

1. **After First year,** anyone desiring exit from first year with a claim to be an awardee of certificate course in respective specialisation, the enrolee has to complete (in addition to the First Year Credits 40 in number), two, '2 credits theory courses' and a skill based 6 credits course (1 Month Rigorous industrial training). These additional 10 credits need to be acquired by such aspirants. The details of these courses to be defined by the respective specialisation and designed and well narrated to the aspirants.

   The interested students have to pay separate fees for the same.

2. **After Second Year,** anyone desiring to exit from second year with a claim to be an awardee of Diploma in respective specialisation, the enrollee has to complete (in addition to the First Year and Second Year Credits 80 in number), three, '3 credits

theory courses' and a skill based 6 credits course (1 Month Rigorous industrial training). These additional 15 credits need to be acquired by such aspirants. The details of these courses to be defined by the respective specialisation and designed and well narrated to the aspirants.

The interested students have to pay separate fees for the same.

N.B.: As regards, multiple entries, any student from same specialisation who desires to join at second, third or Final Year has to have accumulation of those minimum numbers credits up to the last(previous) year of the candidate's entry year in his/her account.

Pool of Courses under various features

As per this revision of B. Tech curriculum in line with NEP2020, here is an exhaustive pool of courses for opting by different aspirants under different features namely: 1-year certificate, diploma in respective Major Program, B. Tech. Minor, Elective I and Elective II under B. Tech Major and B. Tech Honours.

I. Pool of Courses against Multiple entry-multiple exit (Certificate and Diploma)

i. Fundamentals of Civil Engineering (Compulsory for 1 year Certificate)
ii. Building Planning and Design (For 1 Year Certificate)
iii. Strength of Materials (For Diploma)
iv. Introduction to SOFTWARE TOOLS in Civil Engineering (For Diploma)
v. Estimating, Costing and Valuation (For Diploma)
vi. Soil and fluid Mechanics
vii. Environmental Engineering

However, for aspirants' interested to leave after Second Year B.Tech with a claim for Diploma in Civil Engineering, the candidate has to have completion of the courses against 1 year certification also.

II. Pool of Courses against Minors

1. Structural

(Any four from the following list)

i. Theory of Structures
ii. Advance analysis of Structure
iii. Design of Steel Structures
iv. Design of RCC Structures
v. Design of Foundation
vi. Pre-stressed Concrete Design

2. Hydraulics

(Any four from the following list)

i. Fluid Mechanics
ii. Flow through Open Channels
iii. Design of Hydraulic structures
iv. Water Shed Management

3. Environment

(Any four from the following list)

i. Water Supply
ii. Green Building
iii. Environmental Chemistry
iv. Environmental Microbiology and Ecology
v. Air Pollution Science and Engineering
vi. Municipal Water and Wastewater Systems

i. Physico-Chemical Treatment Technologies
ii. Municipal Solid and Biomedical Waste Management

4. Soil

(Any four from the following list)

i. Geotechnical Engineering-I
ii. Geotechnical Engineering-II
iii. Foundation Design
iv. Geotechnical Exploration & Measurement Technique
v. Rock Mechanics

III. Pool of Courses for Program Core Elective I (Semester VI)

i. Advanced analysis of structure
ii. Green Building
iii. Human Resource Management in construction
iv. Transportation in Infrastructure planning and Demand Estimation
v. Hydrology and Watershed Management
vi. Town and country Planning

IV. Pool of Courses for Program Core Elective II (Semester VII)

i. Advanced Design of Structures
ii. Advanced Geotechnical Engineering
iii. Development Engineering
iv. Design of Concrete Bridges
v. Structural Dynamics
vi. Advanced Surveying

V. Pool of Courses against Honours, Open Elective I to IV (From Semester VI onwards of the Major Degree).

In case of Open Electives I and II students will have option to choose any course from the list of open elective pools from across the institute (Department of Technology) while Open Electives III and IV would be said as self-study courses via MOOCs. However, in this case, the end semester examination may either be by the respective institute offering the MOOCs or it could be through the course in charge as per the University System.

i. Engineering Optimization
ii. Engineering Economics and Valuation
iii. Finite Element Method
iv. Numerical Methods
v. Remote Sensing and GIS application
vi. Introduction to Piping and Plumbing Engineering

Equivalence for the curriculum revision at B.Tech. Civil Engineering

We at the B.Tech Civil Engineering, Department of Technology due for revision in curriculum w.e.f. 2023-2024 have revised the structure and the content as well at the F.Y. B.Tech Civil Engineering. The entire structure for Second Year Final Year B. Tech Civil Engineering is also designed under this revision. The detailed of course content will be designed and submitted as the First Year batch proceed year to year.

A special mention rather feature of this revision is, ***it is in line with New National Education Policy 2020 guidelines.*** It is our every effort to incorporate most of the key features of NEP2020.

Following is a semester wise table that depicts equivalences for the previous version of curriculum with the new one.

SEM – I

Sr. No.	First Year B. Tech. Semester I **Pre-revised syllabus**	**First Year B. Tech Semester I Revised syllabus**	**Remark**
1	Engineering Mathematics–I	Engineering Mathematics–I	Content is revised
2	Engineering Physics (Theory and Lab)	Engineering Physics (Theory and Lab)	Content is revised
3	Basics of Mechanical Engineering (Theory and Lab)	Elements of Mechanical and Electronics Engineering (Theory and Lab)	Contents are revised and two courses are clubbed.
4	Engineering Mechanics (Theory and Lab)	Engineering Mechanics (Theory and Lab)	Content is revised
5	Basic Electronics Engineering (Theory and Lab)	-------	Clubbed with other course.
6	Computer Programming (Lab)	Computer Programming for Engineers (Theory and Lab)	Content is revised
7	Workshop Practice (Lab)	-------	A new course called design thinking is introduced in lieu.
8	-------	Professional Communication (English)-I (Theory)	Content is revised, split in I and II , It is as an audit course.
9	-------	Design Thinking and Innovation-I and Social Internship (Theory and Lab)	Newly introduced audit course.
10	-------	Yoga and Meditation	Newly introduced audit course.

SEM – II

Sr. No.	First Year B. Tech Semester II Pre-revised syllabus	First Year B. Tech Semester II Revised syllabus	Remark
1	Engineering Mathematics–II	Engineering Mathematics–II	Content is revised.
2	Engineering Chemistry (Theory and Lab)	Engineering Chemistry (Theory and Lab)	Content is revised.
3	Engineering Graphics (Theory and Lab)	Engineering Graphics AND Design (Theory and Lab)	Title change with content revision.
4	Basic Civil Engineering (Theory and Lab)	Elements of Civil and Electrical Engineering (Theory and Lab)	Two courses are clubbed with content revision
5	Basic Electrical Engineering (Theory and Lab)	Electrical and Electronic Components and Devices (Theory and Lab)	Two courses are clubbed with content revision
6	Programming with Scilab and Matlab (Lab)	-------	Title is changed
7	Professional Communication (Lab)	Professional Communication (English)-II (Theory)	Content is revised, split in I and II , It is as an audit course.
8	------	Design Thinking and Innovation-II (Theory and Lab)	Newly introduced audit course.
9	------	Human Rights and Constitution	Newly introduced audit course.

SEM – III

Sr. No.	Second Year B. Tech Semester III Pre-revised syllabus	Second Year B. Tech Semester III Revised syllabus	Remark
1	Engineering Mathematics-III	Mathematics for Civil Engineers -III	Content is revised, Title is changed.
2	Surveying (Theory and Lab)	Surveying	Content is revised.
3	Strength of Materials (Theory and Lab)	Strength of Materials	Content is revised.
4	Building Construction (Theory and Lab)	Building Planning and Drawing	Building Construction and Building Planning and Drawing clubbed in a single course.
5	Fluid Mechanics-I (Theory and Lab)	Fluid Mechanics	Content revision
7	Environmental Studies	Environmental Studies	No change as it is centrally offered by the University.

9	Introduction to Performing Arts	---	Shifted to Semester IV.
10	------	Mini Project I and Industrial Visit	Newly introduced audit course.

SEM – IV

Sr. No.	Second Year B. Tech Semester IV Pre-revised syllabus	Second Year B. Tech Semester IV Revised syllabus	Remark
1	Theory of structures	Theory of structures	Content revised.
2	Concrete Technology (Theory and Lab)	------	Content revised.
3	Fluid Mechanics-II (Theory and Lab)	Open Channel Hydraulics	Title and contents are revised.
4	Building Planning and Drawing (Theory and Lab)	---	Building Construction and Building Planning and Drawing clubbed in a single course.
5	Engineering Geology (Theory and Lab)	---	Course contents are shifted to Geotechnical Engineering-I of Sem V
8	---	Mini Project II and Industrial Visit	Newly added audit course.
9	------	Aptitude Enhancement Course I	Newly introduced.
10	Soft Skills Development	--	Shifted to Sem III
11	Environmental Studies	Environmental Studies	No change.

SEM – V

Sr. No.	Second Year B. Tech Semester V Pre-revised syllabus	Second Year B. Tech Semester V Revised syllabus	Remark
1	Design of Steel Structures	Design of Steel Structures	Content revision.
2	Transportation Engineering-I (Theory and Lab)	-------	Shifted to VI semester and clubbed in single course.
3	---	Structural Analysis	Title revised.
4	Geotechnical Engineering-I (Theory and Lab)	Soil Mechanics (Theory and Lab)	Title and contents are

			revised.
5	Environmental Engineering-I (Theory and Lab)	Water Treatment Technology	Title and contents are revised.
6	Construction Management	Construction Management	Content revision.
7	Internship I	---	Shifted to last semester.
8	Introduction to Foreign Language	Introduction to Foreign Language	Content revision.
9	---	Aptitude Enhancement Course II	Newly introduced.
10	---	Mini Project III and Industrial Visit	Newly introduced.

SEM – VI

Sr. No.	Second Year B. Tech Semester VI Pre-revised syllabus	Second Year B. Tech Semester VI Revised syllabus	Remark
1	Theory of Structures-II	Structural Analysis	Shifted to previous semester
2	Water Resource Engineering-I	------	Shifted to previous semester
3	Transportation Engineering-II (Theory and Lab)	------	Shifted to previous semester and clubbed in one subject
4	Environmental Engineering –II (Theory and Lab)	Sewage and Sewage Treatment	Title and and Content revision.
5	Geotechnical Engineering-II (Theory and Lab)	Soil Mechanics	Title change with content revision and shifted to Sem V.
6	---	Construction Equipment, Site Safety and Disaster Management	Shifted with title change from Sem VIII.
7	---	Design of Dams and Reservoirs	Shift of sem with title change
8	---	Elective I	Shift of sem
9	Structural Design and Drawing-I	Design of Steel Structures and Detail Drawing	Title and Content revision.
10	Mini Project	Mini Project IV and Industrial	Title and

		Visit	Content revision.
11	Research Methodology	Research Methodology	Content revision.
12	---	Aptitude Enhancement Course III	Newly introduced

SEM – VII

Sr. No.	Second Year B. Tech Semester VII Pre-revised syllabus	Second Year B. TechSemester VII Revised syllabus	Remark
1	Design of RCC Structures-I	Design of RCC Structures	Title and content revised.
2	Structural Dynamics and Earthquake Engineering	Structural Dynamics and Earthquake Engineering	Shift of semester.
3	Estimating and Costing	Estimating, Costing and Valuation	Shift of semester.
4	Water Resources Engineering-II	Design of Dams and Reservoirs	Shift of semester with title change
5	Elective-I		Shift of semester
6	Major Project Phase-I **$**	Major Project Work (Lab)	Content Revision.
7	Internship III	------	Shifted to last semester.
9	Audit Course Introduction to Constitution of India	Green Technology and Sustainability	Newly added audit course.
10	------	Piping and Instrumentation: Design and Drawing (Theory and Lab)	Content revision with shift of semester.
11	------	Transport Phenomena	Content revision with shift of semester.
12	------	Open Elective- II	Newly introduced.
13	------	Major Project Lab	Content revision.

SEM – VIII

Sr. No.	Second Year B. Tech Semester VIII Pre-revised syllabus	Second Year B. TechSemester VIII Revised syllabus	Remark
1	Design of RCC Structures-II	------	Reinforced Concrete and Pre-stressed Concrete Design Shift of Sem
2	Construction Practices		Shift of Sem
3	Town and Country Planning		Shifted in Elective
4	Elective-II		Shifted to previous semester with content revision.

5	Elective-III		Shifted to previous semester with content revision.
6		Open Elective –III Preferably on MOOC *	Newly introduced.
7		Open Elective –III Preferably on MOOC *	Newly introduced.
8	Major Project-Phase II	------	Shifted to previous semester
9	Audit Course VI Professional Ethics	MOOC III (Professional Ethics)	Mode is changed.
10	------	Industrial Internship (Follow up by the Department)	Newly introduced.