

Departmental UG Curriculum Implementation Committee
DEPARTMENT OF CIVIL ENGINEERING, IIT DELHI

Structure for BTech Degree in Civil Engineering

(i) Credits distribution **170** (155 + 15 non graded core)

1. Departmental credits	80	(65 – 80)
a. Core	58	(55 – 70)
b. Elective	22	(at least 10)
2. Outside department credits	65	(55 – 70)
a. BS	22	
b. EAS	18	
c. Huss	15	
d. Programme linked	10	(15 maximum BS/EA/ES)
i. Mechanics of Fluids	5 credits	(3-1-2)
ii. Mechanics of Solids	5 credits	(3-1-2)
3. Open category credits	10	
4. Non-graded core requirement	15	

(ii) Proposed slotting pattern for core + Elective + Programme Linked + Open Cat courses

III	DC1S-2	DC2G-3	EnvE-2	PLC1-5	PLC2-5	HuSS1-3	20+1
IV	DC3E-3	DC4S-3	DC5G-3	DC6W-3	DC7T-3	HuSS2-3	18+3
V	DC8S-2	DC9S-3	DC10S-3	DC11G-4	DC12W-4	HuSS3-4	18+3
VI	DC13S-3	DC14S-2	DC15W-4	DC16E-4	Bio-4	HuSS4-3	20+1
VII	DE1-3	DE2-3	DE3-3	DE4-2	DE5-2	DE11-4	OC1,OC2
VIII	DE6-3	DE7-3	DE8-3	DE9-2	DE10-2	DE11-4	OC2,OC3

(iii) List of Lecture core courses

SNo	Course type	Credits	Name of Course	Section
1	PLC1	5 (3-1-2)	Mechanics of Solids	Outside Department (AM)
2	PLC2	5 (3-1-2)	Mechanics of Fluids	Outside Department (AM)
3	DC1S	2 (2-0-0)	Civil Engg Materials	Structural Engg
4	DC2G	3 (3-0-0)	Engg Geology	Geotechnical Engg
5	DC3E	3 (2-0-2)	Elements of Surveying	Environmental Engg

6	DC4S	3 (3-0-0)	Structural Analysis I	Structural Engg
7	DC5G	3 (3-0-0)	Soil Mechanics	Geotechnical Engg
8	DC6W	4 (3-0-3)	Hydraulics	Water Resources Engg
9	DC7T	4 (3-0-2)	Transportation Engg I	Transportation Engg
10	DC8S	2 (2-0-0)	Construction Management	Structural Engg
11	DC9S	3 (3-0-0)	Structural Analysis II	Structural Engg
12	DC10S	3 (3-0-0)	RC Design	Structural Engg
13	DC11G	4 (3-1-0)	Geotechnical Engg	Geotechnical Engg
14	DC12W	4 (3-0-2)	Engineering Hydrology	Water Resources Engg
15	DC13S	3 (3-0-0)	Steel Design	Structural Engg
16	DC14S	2 (2-0-0)	Construction Practices	Structural Engg
17	DC15W	4 (3-0-2)	Design of Hydraulic Structures	Water Resources Engg
18	DC16E	4 (3-0-2)	Environmental Engg	Environmental Engg

(iv) Laboratory/Practical Core courses and Slots

III	Engineering Geology Lab-1(0-0-2)		
IV	Structural Analysis Lab-1(0-0-3)	Soil Mechanics Lab-1(0-0-2)	Trans Engg Lab-1(0-0-2)
V	Structures & Material (Concrete) Lab-1(0-0-3)	Geotechnical Engg Lab-1(0-0-2)	Hydraulics Lab-1(0-0-2)
VI	Structures & Material (Steel) Lab-1(0-0-3)		
VII	Structural Design & Detailing-1(0-0-3)		

(v) Distribution of Core Credits among various Sections

SNo	Section	Core Credits
1	Structural Engineering	22
2	Geotechnical Engineering	13
3	Water Resources Engineering	12
4	Environmental Engineering	04
5	Transportation Engineering	04
6	Surveying	03
	Total Core Credits	58

(vi) Electives – 22 credits

SNo	Course type	Credits	Slots in Semester
1	DE1, DE2, DE3	3 (3-0-0/2-0-2)	3 slots in VII Semester
2	DE4, DE5	2 (2-0-0)	2 slots in VII Semester
3	DE6, DE7, DE8	3 (3-0-0/2-0-2)	3 slots in VIII Semester
4	DE9, DE10	2 (2-0-0)	2 slots in VIII Semester
5	DE11 (Project)	4 (0-0-8)	No slot is required in VII and VIII Semesters

Students opting for Specialisation only are allowed to register DE11 (Project) in VII Semester as Core and rest students may take DE11 (Project) in VIII Semester as an Elective.

(vii) List of Elective courses

SNo	Name of Course	Credits	Section
1	Industrial Waste Management	3-0-0	Environmental Engg
2	Environmental Assessment Methodologies	3-0-0	Environmental Engg
3	Air and Noise Pollution	3-0-0	Environmental Engg

4	Solid & Hazardous Waste Management	3-0-0	Environmental Engg
5	Environmental Risk Assessment	3-0-0	Environmental Engg
6	Environmental Impact Assessment	3-0-0	Environmental Engg
7	Life Cycle Analysis & Design for Environment	3-0-0	Environmental Engg
8	Emerging Technologies for Environmental Management	3-0-0	Environmental Engg
9	Thermal Technologies for Waste Management	3-0-0	Environmental Engg
10	Design of Water & Waste Water Facilities	3-0-0	Environmental Engg
11	Ecology & Eco-system Dynamics	3-0-0	Environmental Engg
1	Site Investigation & Ground Improvement	3-0-0	Geotechnical Engg
2	Rock Engineering	3-0-0	Geotechnical Engg
3	Design of Foundations & Retaining Structures	3-0-0	Geotechnical Engg
4	Slopes and Earth Dams	2-0-0	Geotechnical Engg
5	Geoenvironmental Engineering	3-0-0	Geotechnical Engg
6	Underground Structures	2-0-0	Geotechnical Engg
7	Geotechnical Design Studio	2-0-0	Geotechnical Engg
8	Soil Dynamics	3-0-0	Geotechnical Engg
9	FEM in Geotechnical Engineering	3-0-0	Geotechnical Engg
1	Structural Dynamics & Earthquake Engineering	3-0-0	Structural Engg
2	Structural Mechanics & FEM	2-0-2	Structural Engg
3	Structural Stability & Plastic Analysis	3-0-0	Structural Engg
4	Advanced Structural Analysis	3-0-0	Structural Engg
5	Offshore Structures	3-0-0	Structural Engg
6	Prestressed Concrete: Theory & Applications	3-0-0	Structural Engg
7	Industrial Structures	2-0-0	Structural Engg
8	Advanced Concrete Design	3-0-0	Structural Engg
9	Advanced Concrete Technology	2-0-0	Structural Engg
10	Advanced Concrete Mechanics	2-0-0	Structural Engg
11	Advanced Steel Design	3-0-0	Structural Engg
12	Masonry & Composite Structures	3-0-0	Structural Engg
13	Construction Equipment	3-0-0	Structural Engg
14	Construction Project Management	3-0-0	Structural Engg
15	Infrastructure Planning & Management	3-0-0	Structural Engg
16	Temporary & Enabling Structures	2-0-0	Structural Engg
17	Advanced Concrete Lab	0-0-2	Structural Engg
1	Sustainable Transportation Systems: (i) Non-motorised transport, (ii) Public and Intermediate public transport	2-0-0	Transportation Engg
2	Introduction to Intelligent Transportation Systems	2-0-0	Transportation Engg
3	Traffic Flow Modeling Basics	2-0-0	Transportation Engg
4	Engineering Behavior of Pavement Materials	2-0-0	Transportation Engg
5	Airport Engineering	2-0-0	Transportation Engg
6	Railway Engineering	2-0-0	Transportation Engg
7	Transportation Infrastructure Management	2-0-0	Transportation Engg
8	Logistics and Freight Transport	2-0-0	Transportation Engg
1	Water Resources Management	3-0-0	Water Resources Engg
2	Groundwater	2-0-0	Water Resources Engg

3	Water Power Engineering	2-0-2	Water Resources Engg
4	Groundwater & Surface-water Pollution	2-0-0	Water Resources Engg
5	Water Resources Systems	2-0-0	Water Resources Engg
6	Computational Aspects in Water Resources	1-0-3	Water Resources Engg
7	Urban Hydrology	2-0-0	Water Resources Engg
8	River Mechanics	2-0-2	Water Resources Engg
9	Mechanics of Sediment Transport	2-0-0	Water Resources Engg
10	Geo-informatics	2-0-2	Water Resources Engg
11	Introduction to Geographic Information Systems	2-0-2	Water Resources Engg
12	Introduction to Remote Sensing	2-0-2	Water Resources Engg
13	Frequency Analysis in Hydrology	2-0-0	Water Resources Engg

(viii) Specialisation – 20 Credits (10 in Lieu of OC + 10 Additional as Project)

SNo	Course type	Credits	Slots in Semester
1	SC1 (Project) DE11	4 (0-0-8)	No slot is required in VII Semester
2	SC2 (Project)	6 (0-0-12)	No slot is required in VIII Semester
3	SC3, SC4	4/5/6	2 slots in VII Semester
4	SC5, SC6	4/5/6	2 slots in VIII Semester

In addition to these 20 Specialisation Core (SC) Credits, a student needs to earn 10 Credits from the basket of elective courses of the Specialisation.

(ix) Basket of Courses for Specialisation

SNo	Specialisation	Course Name	Credits	Course type
		Core		
1	Geotechnical Engineering	Geoenvironmental Engineering	3-0-0	SC-G
		Geotechnical Design Studio	2-0-0	SC-G
		Soil Dynamics	3-0-0	SC-G
		Underground Structures	2-0-0	SC-G
		Elective		
		Site Investigation & Ground Improvement	3-0-0	SE-G
		Rock Engineering	3-0-0	SE-G
		Slopes and Earth Dams	2-0-0	SE-G
		Design of Foundations & Retaining Structures	3-0-0	SE-G
		FEM in Geotechnical Engineering	3-0-0	SE-G
		Core		
2	Structural Engineering	Structural Mechanics and FEM	2-0-2	SC-S
		Structural dynamics and earthquake engineering	3-0-0	SC-S
		Advanced concrete design	3-0-0	SC-S
		Advanced steel design	3-0-0	SC-S
		Elective		
		Structural stability and plastic analysis	3-0-0	SE-S
		Advanced structural analysis	3-0-0	SE-S
		Offshore structures	3-0-0	SE-S
		Prestressed concrete: theory and applications	3-0-0	SE-S
		Industrial structures	2-0-0	SE-S
		Advanced concrete technology	2-0-0	SE-S
		Advanced concrete mechanics	2-0-0	SE-S
		Advanced concrete laboratory	0-0-2	SE-S

		Masonry and composite structures	3-0-0	SE-S
		Core		
3	Water Resources Engineering	Water Resources Management	3-0-0	SC-W
		Groundwater	2-0-0	SC-W
		Water Power Engineering	2-0-2	SC-W
		Groundwater & Surface-water Pollution	2-0-0	SC-W
		Elective		
		Water Resources Systems	2-0-0	SE-W
		Computational Aspects in Water Resources	1-0-3	SE-W
		Urban Hydrology	2-0-0	SE-W
		River Mechanics	2-0-2	SE-W
		Mechanics of Sediment Transport	2-0-0	SE-W
		Geo-informatics	2-0-2	SE-W
		Introduction to Geographic Information Systems	2-0-2	SE-W
		Introduction to Remote Sensing	2-0-2	SE-W
		Frequency Analysis in Hydrology	2-0-0	SE-W
		Design of Water & Waste Water Facilities	3-0-0	SE-W
		Environmental Impact Assessment	3-0-0	SE-W

(Prof B Bhattacharjee)

(Chairman)

(Prof B R Chahar)

(Convener & SI, WRE)

(Prof KS Rao)

(Member & SI, GE)

(Prof BJ Alappat)

(Member & SI, EE & Sur)

(Dr S Bishnoi)

(Member & SI, StE)

Dr A K Swamy

(Member & SI, TE)

Chairman DFB (Head), Civil Engineering