

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	77
a. Core	63
b. Elective	14
2. Outside department credits	68
a. BS	22
b. EAS	18
c. HuSS	15
d. Programme linked	13
i. Civil Engg Materials	3 credits (3-0-0)
ii. Mechanics of Fluids	5 credits (3-1-2)
iii. 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 (25)	PLC1 (3-0-0)	DC1G (3-0-0)	DC5E (3-0-2)	PLC2 (3-1-2)	PLC3 (3-1-2)	HuSS1 (3-1-0)	Intro Dept, DCP1G
IV (23)	DC2S (3-0-0)	DC3G (3-0-0)	DC4W (3-1-0)	DC9T (3-0-0)	EnvSt (2-0-0)	HuSS2 (3-1-0)	DCP2S, DCP3G, DCP4W, DCP7T
V (22.5)	DC6S (2-0-0)	DC7G (3-1-0)	DC8W (3-0-2)	DC10S (3-0-0)	DC11S (3-0-0)	Biology (3-0-2)	DCP5S, DCP6G,
VI (21)	DC12S (3-0-0)	DC13S (2-0-0)	DC14W (3-0-2)	DC15E (3-0-2)	OC (3-0-0)	HuSS3 (3-1-0)	DCP8S (0-0-2)
VII (15.5)	DE1 (3-0-0/2-0-2)	DE2 (3-0-0/2-0-2)	DE3/OC (3-0-0/2-0-2)	DE4 (2-0-0)	DE5/OC (2-0-0)	HuSS4 (3-0-0)	DCP9S, DCP10 (0-0-8)
VIII (14)	DE6 (3-0-0/2-0-2)	DE7 (3-0-0/2-0-2)	DE8/OC (3-0-0/2-0-2)	DE9 (2-0-0)	DE10/OC (2-0-0)	OC (3-0-0/2)	DCP10, DCP11 (0-0-12)

(iii) List of core courses

SNo	Course type	Credits	Name of Course	Section
Lecture (with/without Lab) Courses				
1	PLC1	3 (3-0-0)	Civil Engg Materials	CED - Structural Engg
2	PLC2	5 (3-1-2)	Mechanics of Fluids	Outside Department (AM)
3	PLC3	5 (3-1-2)	Mechanics of Solids	Outside Department (AM)
4	DC1G	3 (3-0-0)	Engg Geology	Geotechnical Engg
5	DC2S	3 (3-0-0)	Structural Analysis I	Structural Engg
6	DC3G	3 (3-0-0)	Soil Mechanics	Geotechnical Engg
7	DC4W	4 (3-1-0)	Hydraulics	Water Resources Engg
8	DC5E	4 (3-0-2)	Elements of Surveying	Environmental Engg
9	DC6S	2 (2-0-0)	Construction Management	Structural Engg
10	DC7G	4 (3-1-0)	Geotechnical Engg	Geotechnical Engg
11	DC8W	4 (3-0-2)	Engineering Hydrology	Water Resources Engg
12	DC9T	3 (3-0-0)	Transportation Engg I	Transportation Engg
13	DC10S	3 (3-0-0)	Structural Analysis II	Structural Engg
14	DC11S	3 (3-0-0)	RC Design	Structural Engg
15	DC12S	3 (3-0-0)	Steel Design	Structural Engg
16	DC13S	2 (2-0-0)	Construction Practices	Structural Engg
17	DC14W	4 (3-0-2)	Design of Hydraulic Structures	Water Resources Engg
18	DC15E	4 (3-0-2)	Environmental Engg	Environmental Engg
Separate Lab/Project Courses				
1	DCP1G	1 (0-0-2)	Engineering Geology Lab	Geotechnical Engg
2	DCP2S	1 (0-0-2)	Structural Analysis Lab	Structural Engg
3	DCP3G	1 (0-0-2)	Soil Mechanics Lab	Geotechnical Engg
4	DCP4W	1 (0-0-2)	Hydraulics Lab	Water Resources Engg
5	DCP5S	1.5 (0-0-3)	Structures & Material (Concrete) Lab	Structural Engg
6	DCP6G	1 (0-0-2)	Geotechnical Engg Lab	Geotechnical Engg
7	DCP7T	1 (0-0-2)	Trans Engg Lab	Transportation Engg
8	DCP8S	1 (0-0-2)	Structures & Material (Steel) Lab	Structural Engg
9	DCP9S	1.5 (0-0-3)	Structural Design & Detailing	Structural Engg
10	DCP10	4 (0-0-8)	BTech Project Part 1	CED
11	DCP11	6 (0-0-12)	BTech Project Part 2	CED

Students opting for Specialisation only are allowed to register DCP10 (Project Part 1) in VII Semester as Core and rest students have to take DCP10 (Project Part1) in VIII Semester as core, also students doing Specialisation will register DCP11 (Project Part 2) in VIII Semester as Core.

(iv) Distribution of Core Credits among various Sections

SNo	Section	Core Credits
1	Structural Engineering	24 (21+3 PLC)
2	Geotechnical Engineering	13
3	Water Resources Engineering	13
4	Environmental Engineering	04
5	Transportation Engineering	04
6	Surveying	04
7	BTP (Project)	04
	Total Core Credits	66 (63+3 PLC)

Environmental Engg section has got 2 credits load as Institute Core (Environmental Studies) course.

(v) Proposed Slots for Electives – 14 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

(vi) List of Elective courses

SNo	Name of Course	Credits	Section
DEE1	Industrial Waste Management	3-0-0	Environmental Engg
DEE2	Environmental Assessment Methodologies	3-0-0	Environmental Engg
DEE3	Air and Noise Pollution	3-0-0	Environmental Engg
DEE4	Solid & Hazardous Waste Management (PG)	3-0-0	Environmental Engg
DEE5	Environmental Risk Assessment (PG)	3-0-0	Environmental Engg
DEE6	Environmental Impact Assessment (PG)	3-0-0	Environmental Engg
DEE7	Life Cycle Analysis & Design for Environment (PG)	3-0-0	Environmental Engg
DEE8	Emerging Technologies for Environmental Management (PG)	3-0-0	Environmental Engg
DEE9	Thermal Technologies for Waste Management (PG)	3-0-0	Environmental Engg
DEE10	Design of Water & Waste Water Facilities (PG)	3-0-0	Environmental Engg
DEE11	Ecology & Eco-system Dynamics (PG)	3-0-0	Environmental Engg
DEE12	Environmental Systems Analysis (PG)	3-0-2	Environmental Engg
DEG1	Site Investigation & Ground Improvement	3-0-0	Geotechnical Engg
DEG2	Rock Engineering	3-0-0	Geotechnical Engg
DEG3	Design of Foundations & Retaining Structures	3-0-0	Geotechnical Engg
DEG4	Slopes and Earth Dams	2-0-0	Geotechnical Engg
DEG5	Geoenvironmental Engineering	3-0-0	Geotechnical Engg
DEG6	Underground Structures	2-0-0	Geotechnical Engg
DEG7	Geotechnical Design Studio	2-0-0	Geotechnical Engg
DEG8	Soil Dynamics	3-0-0	Geotechnical Engg
DEG9	FEM in Geotechnical Engineering	3-0-0	Geotechnical Engg
DES1	Structural Analysis III	3-0-0	Structural Engg
DES2	Prestressed Concrete & Industrial Structures	3-0-0	Structural Engg
DES3	Structural Design	3-0-0	Structural Engg
DES4	Construction Project Management	3-0-0	Structural Engg
DES5	Advanced Structural Analysis (PG)	3-0-0	Structural Engg
DES6	Design of Steel Structures (PG)	2-1-0	Structural Engg
DES7	Structural Dynamics (PG)	3-0-0	Structural Engg
DES8	Design of Concrete Structures (PG)	2-1-0	Structural Engg
DES9	Solid Mechanics in Structural Engineering (PG)	3-0-0	Structural Engg
DES10	Earthquake Analysis and Design (PG)	3-0-0	Structural Engg
DES11	Finite Element Method in Structural Engineering (PG)	2-1-0	Structural Engg
DES12	Design of Industrial Structures (PG)	2-1-0	Structural Engg
DES13	Advanced Design of Bridges (PG)	2-1-0	Structural Engg
DES14	Prestressed/Composite Structures (PG)	3-0-0	Structural Engg
DES15	Mathematical and Numerical Methods (PG)	2-1-0	Structural Engg
DES16	Civil Engineering Materials (PG)	3-0-0	Structural Engg
DES17	Structural Safety and Reliability (PG)	3-0-0	Structural Engg
DES18	Design of Plates and Shells (PG)	2-1-0	Structural Engg
DES19	Concrete Mechanics (PG)	3-0-0	Structural Engg

DES20	Stability Theory in Structural Engineering (PG)	3-0-0	Structural Engg
DES21	Design of Offshore Structures (PG)	2-1-0	Structural Engg
DES22	Advanced Finite Element Method and Programming (PG)	2-0-2	Structural Engg
DES23	Wind Resistant Design of Structures (PG)	3-0-0	Structural Engg
DES24	Design of Tall Buildings (PG)	2-1-0	Structural Engg
DES25	Structural Health Monitoring (PG)	2-0-2	Structural Engg
DES26	Construction and Contract Management (PG)	3-0-0	Structural Engg
DES27	Project Planning and Control (PG)	2-1-0	Structural Engg
DES28	Quantitative Methods in Construction Management (PG)	2-1-0	Structural Engg
DES29	Construction Engineering Practices (PG)	3-0-0	Structural Engg
DES30	Construction Methods and Equipment (PG)	3-0-0	Structural Engg
DES31	Construction Economics and Finance (PG)	3-0-0	Structural Engg
DES32	Systems Design and Value Analysis (PG)	3-0-0	Structural Engg
DES33	Recent Advances in Construction Materials (PG)	3-0-0	Structural Engg
DES34	Management of Quality and Safety in Construction (PG)	2-1-0	Structural Engg
DES35	Functional Planning, Building Services and Main. Man (PG)	3-0-0	Structural Engg
DES36	Building Science (PG)	3-0-0	Structural Engg
DES37	Infrastructure Development and Management (PG)	3-0-0	Structural Engg
DES38	Formwork for Concrete Structures (PG)	3-0-0	Structural Engg
DET1	Introduction to Intelligent Transportation Systems	3-0-0	Transportation Engg
DET2	Logistics and Freight Transport	3-0-0	Transportation Engg
DET3	Introduction to Railway Engineering	3-0-0	Transportation Engg
DET4	Urban and Regional Transportation Planning (PG)	2-0-2	Transportation Engg
DET5	Pavement Materials and Construction (PG)	2-0-2	Transportation Engg
DET6	Traffic Engineering (PG)	3-0-2	Transportation Engg
DET7	Design and Maintenance of Pavements (PG)	3-0-2	Transportation Engg
DET8	Advanced Transportation Modelling (PG)	2-0-2	Transportation Engg
DET9	Geometric Design of Streets and Highways (PG)	2-0-2	Transportation Engg
DET10	Public Transportation Systems (PG)	3-0-0	Transportation Engg
DET11	Transportation Economics and Finance (PG)	3-0-0	Transportation Engg
DET12	Transportation and Traffic Infrastructure Design (PG)	3-0-0	Transportation Engg
DET13	Airport Planning and Design (PG)	3-0-0	Transportation Engg
DET14	Transportation Infrastructure Management (PG)	3-0-0	Transportation Engg
DEW1	Water Resources Management	3-0-0	Water Resources Engg
DEW2	Groundwater	2-0-0	Water Resources Engg
DEW3	Water Power Engineering	2-0-2	Water Resources Engg
DEW4	Groundwater & Surface-water Pollution	2-0-0	Water Resources Engg
DEW5	Water Resources Systems	2-0-0	Water Resources Engg
DEW6	Computational Aspects in Water Resources	1-0-4	Water Resources Engg
DEW7	Urban Hydrology	2-0-0	Water Resources Engg
DEW8	River Mechanics	2-0-2	Water Resources Engg
DEW10	Geo-informatics	2-0-2	Water Resources Engg
DEW11	Fundamental to Geographic Information Systems	2-0-2	Water Resources Engg
DEW12	Fundamental to Remote Sensing	2-0-2	Water Resources Engg
DEW13	Frequency Analysis in Hydrology	2-0-0	Water Resources Engg
DEW9	Mechanics of Sediment Transport (PG)	3-0-0	Water Resources Engg

(vii) Specialisation – 20 Credits (10 in Lieu of OC + 6 Additional as Project + 4)

Total Credits **180** **(165 + 15 non graded core)**

1. Departmental credits **97**

- a. Departmental Core 63
 - b. Departmental Elective 10
 - c. Specialisation Core 10 in Lieu of OC
 - d. Specialisation Elective 8
 - e. Specialisation Project 6
2. Outside department credits (BS/EAS/HuSS/PLC) 68
 3. Open category credits 0

SNo	Course type	Credits	Remarks
1	DCP10 (Project Part 1)	4 (0-0-8)	VII Semester
2	DCP11 (Project Part 2)	6 (0-0-12)	VIII Semester
3	Specialisation Core courses in Lieu of OC	10	From Basket of Core Courses of Specialisation
4	Specialisation Elective Courses	8	From Basket of Elective Courses of Specialisation
5	Departmental Core Courses	59	All Core Courses of the Department
6	Departmental Elective Courses	10	From list of Elective Courses of Department

18 credits (excluding Project Part 2 of 6 credits) of Specialisation Core + Elective courses should be from the basket of courses of that Specialisation, out of which minimum 10 credits should be core courses.

List of Specialisations

1. Environmental Engineering
2. Geotechnical Engineering
3. Structural Engineering
4. Transportation Engineering
5. Water Resources Engineering

(viii) Basket of Courses for Specialisation – 18 Credits (Core + Elective)

SNo	Specialisation	Course Name	Credits	Course type
1	Environmental Engg	Core Courses		
		Solid & Hazardous Waste Management (PG)	3-0-0	SC-E
		Environmental Systems Analysis (PG)	3-0-2	SC-E
		Air and Noise Pollution	3-0-0	SC-E
		Elective Courses		
		Industrial Waste Management	3-0-0	SE-E
		Environmental Assessment Methodologies	3-0-0	SE-E
		Environmental Risk Assessment (PG)	3-0-0	SE-E
		Environmental Impact Assessment (PG)	3-0-0	SE-E
		Life Cycle Analysis & Design for Environment (PG)	3-0-0	SE-E
		Emerging Technologies for Environmental Management PG	3-0-0	SE-E
		Thermal Technologies for Waste Management (PG)	3-0-0	SE-E
		Design of Water & Waste Water Facilities (PG)	3-0-0	SE-E
		Ecology & Eco-system Dynamics (PG)	3-0-0	SE-E
		Core Courses		

2	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 Courses		
		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
3	Structural Engineering	Core Courses		
		Structural Analysis III	3-0-0	SC-S
		Prestressed Concrete & Industrial Structures	3-0-0	SC-S
		Structural Design	3-0-0	SC-S
		Solid Mechanics in Structural Engineering (PG)	3-0-0	SC-S
		Elective Courses		
		Construction Project Management	3-0-0	SE-S
		Advanced Structural Analysis (PG)	3-0-0	SE-S
		Design of Steel Structures (PG)	2-1-0	SE-S
		Structural Dynamics (PG)	3-0-0	SE-S
		Design of Concrete Structures (PG)	2-1-0	SE-S
		Solid Mechanics in Structural Engineering (PG)	3-0-0	SE-S
		Earthquake Analysis and Design (PG)	3-0-0	SE-S
		Finite Element Method in Structural Engineering (PG)	2-1-0	SE-S
		Design of Industrial Structures (PG)	2-1-0	SE-S
		Advanced Design of Bridges (PG)	2-1-0	SE-S
		Prestressed/Composite Structures (PG)	3-0-0	SE-S
		Mathematical and Numerical Methods (PG)	2-1-0	SE-S
		Civil Engineering Materials (PG)	3-0-0	SE-S
		Structural Safety and Reliability (PG)	3-0-0	SE-S
		Design of Plates and Shells (PG)	2-1-0	SE-S
		Concrete Mechanics (PG)	3-0-0	SE-S
		Stability Theory in Structural Engineering (PG)	3-0-0	SE-S
		Design of Offshore Structures (PG)	2-1-0	SE-S
		Advanced Finite Element Method and Programming (PG)	2-0-2	SE-S
		Wind Resistant Design of Structures (PG)	3-0-0	SE-S
		Design of Tall Buildings (PG)	2-1-0	SE-S
		Structural Health Monitoring (PG)	2-0-2	SE-S
		Construction and Contract Management (PG)	3-0-0	SE-S
		Project Planning and Control (PG)	2-1-0	SE-S
		Quantitative Methods in Construction Management (PG)	2-1-0	SE-S
		Construction Engineering Practices (PG)	3-0-0	SE-S
		Construction Methods and Equipment (PG)	3-0-0	SE-S
		Construction Economics and Finance (PG)	3-0-0	SE-S
		Systems Design and Value Analysis (PG)	3-0-0	SE-S
		Recent Advances in Construction Materials (PG)	3-0-0	SE-S
		Management of Quality and Safety in Construction (PG)	2-1-0	SE-S
		Functional Planning, Building Services and Main. (PG)	3-0-0	SE-S
		Building Science (PG)	3-0-0	SE-S
		Infrastructure Development and Management (PG)	3-0-0	SE-S
		Formwork for Concrete Structures (PG)	3-0-0	SE-S

4	Transportation Engineering	Core Courses		
		Urban and Regional Transportation Planning (PG)	2-0-2	SC-T
		Pavement Materials and Construction (PG)	2-0-2	SC-T
		Traffic Engineering (PG)	3-0-2	SC-T
		Elective Courses		
		Introduction to Intelligent Transportation Systems	3-0-0	SE-T
		Logistics and Freight Transport	3-0-0	SE-T
		Introduction to Railway Engineering	3-0-0	SE-T
		Traffic Engineering (PG)	3-0-2	SE-T
		Design and Maintenance of Pavements (PG)	3-0-2	SE-T
		Advanced Transportation Modelling (PG)	2-0-2	SE-T
		Geometric Design of Streets and Highways (PG)	2-0-2	SE-T
		Public Transportation Systems (PG)	3-0-0	SE-T
		Transportation Economics and Finance (PG)	3-0-0	SE-T
		Transportation and Traffic Infrastructure Design (PG)	3-0-0	SE-T
		Airport Planning and Design (PG)	3-0-0	SE-T
5	Water Resources Engineering	Core Courses		
		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 Courses		
		Water Resources Systems	2-0-0	SE-W
		Computational Aspects in Water Resources	1-0-4	SE-W
		Urban Hydrology	2-0-0	SE-W
		River Mechanics	2-0-2	SE-W
		Mechanics of Sediment Transport (PG)	3-0-0	SE-W
		Geo-informatics	2-0-2	SE-W
		Fundamental to Geographic Information Systems	2-0-2	SE-W
		Fundamental to Remote Sensing	2-0-2	SE-W
		Frequency Analysis in Hydrology	2-0-0	SE-W
		Design of Water & Waste Water Facilities (PG)	3-0-0	SE-W
		Environmental Impact Assessment (PG)	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 K N Jha)
(Member & SI, StE)

Dr A K Swamy
(Member & SI, TE)

Chairman DFB (Head), Civil Engineering