COURSE STRUCTURE

for

B.TECH. DEGREE

in

CIVIL ENGINEERING

(Applicable from the academic session 2024-2025)

Dr. B. C. Roy Engineering College

An Autonomous Institution

Approved by: All India Council for Technical Education (AICTE)

Affiliated to: Maulana Abul Kalam Azad University of Technology, West Bengal
(Formerly Known as -WBUT)

Jemua Road, Durgapur, West Bengal, India,713206

The Civil Engineering Course Structure has been reformed on 2nd April, 2025. After that, the subject codes have been modified.

Sanjay Sengupta

H.O.D. I.C.E.
Dr. B. C. Roy Engg. College, Durgapur
Signature of the BoS Chairman

Semester Wise Break Up of Credit (New Autonomous Structure)

Sem1	Sem2	Sem3	Sem4	Sem5	Sem6	Sem7	Sem8	Total
20	23	23	22	23	22	20	12	165

S. No.	Category	Breakup of Credits (Actual) As per Proposed Autonomous Structure
1.	Humanities and Social Sciences including Management courses	06
2.	Basic Science Courses	25
3.	Engineering Science courses including workshop, drawing, basics of electrical/ mechanical/ computer etc.	26
4.	Professional core course	55
5.	Professional Elective specialization/branch courses relevant to chosen	25
6.	Indian Knowledge System	02
7.	Multidisciplinary Open Electives Courses	06
8.	Project work, seminar and internship in industry or appropriate work place/ academic and research institutions in India/abroad	20
9.	Mandatory Non Credit Courses – Audit Course	15 L
Total Credits		**165**

B. Tech., 1st Yr (1st Semester)

Theory							
Sl No	Paper Name	Paper Code	Marks	L	T	P	Credit
1	Mathematics-I	M-101	100	3	0	0	3
2	Physics	PH-101	100	3	0	0	3
3	Basic Electrical Engineering	EE-101	100	3	0	0	3
4	Engineering Mechanics	ME-101	100	3	0	0	3
5	English Language and Technical Communication	ENG-101	100	3	0	0	3
	Total Theory		500	15	0	0	15
Practical							
1	Physics Lab	PH-191	100	0	0	2	1
2	Basic Electrical Engineering Lab	EE-191	100	0	0	2	1
3	Language Lab	ENG-191	100	0	0	2	1
4	Workshop Practices	ME-192	100	0	0	4	2
	Total Practical		400	0	0	10	5
	Total in 1st Semester		900	15	0	10	20
Extra Curricular Activity							
1	NSS		100				0

B. Tech. 1st Yr (2nd Semester)

Theory							
Sl. No.	Paper Name	Paper Code	Marks	L	T	P	Credit
1	Mathematics-II	M-202	100	3	0	0	3
2	Chemistry	CH-201	100	3	0	0	3
3	Basic Electronics Engineering	EC-201	100	3	0	0	3
4	Introduction to Computer Hardware and Software	CS-201	100	3	0	0	3
5	Programming for Problem Solving	CS-202	100	3	0	0	3
	Total Theory		500	15	0	0	15
Practical							
1	Chemistry Lab	CH-291	100	0	0	2	1
2	Basic Electronics Engineering Lab	EC-291	100	0	0	2	1
3	Engineering Graphics	ME 291	100	0	0	4	2
4	Introduction to Computer Hardware and Software Lab	CS 291	100	0	0	4	2
5	Programming for Problem Solving Lab	CS 292	100	0	0	4	2
	Total Practical		500	0	0	16	8
	Total of 2nd Semester		1000	15	0	16	23
Mandatory Courses							
1	Environmental Science	ENV-281		1	0	0	0

Total Credit in 1st Year: 43

Department: Civil Engineering (CE)

Curriculum Structure (Effective from 2024 -25 admission batch)

Sl. No.	Broad Category	Category	Course Code	Course Title	L	T	P	Total	Credits
2nd Year 3rd Semester									
					Hours per Week				**Credits**
					L	**T**	**P**	**Total**	
A. THEORY									
1	BASIC SCIENCE (BS)	MINOR	CE-301	ADVANCED ENGINEERING MATHEMATICS	3	0	0	3	3
2	ENG SCIENCE (ES)	MAJOR	CE-302	SOLID MECHANICS	2	1	0	3	3
3	CORE ENGG (PC)	MAJOR	CE-303	CONCRETE TECHNOLOGY	2	1	0	3	3
4	CORE ENGG (PC)	MINOR	CE-304	SUSTAINABLE AND GREEN CONSTRUCTION	3	0	0	3	3
5	HUMANITIES AND SOCIAL SCIENCES (HSMC)	MINOR	CE-305	UNIVERSAL HUMAN VALUES	2	1	0	3	3
B. PRACTICAL/SESSIONAL									
1	ENG SCIENCE (ES)	MAJOR	CE-381	CIVIL ENGINEERING MATERIALS, TESTING & EVALUATION SESSIONAL	0	1	2	3	2
2	CORE ENGG (PC)	MAJOR	CE-382	BUILDING PLANNING AND COMPUTER-AIDED CIVIL ENGINEERING DRAWING SESSIONAL	0	1	2	3	2
3	MULTIDISCIPLINARY OPEN ELECTIVES COURSE -1 (OE)	MULTIDISCIPLINARY	CE-383	PROBLEM SOLVING USING PYTHON AND MATLAB LABORATORY	0	1	2	3	2
4	MULTIDISCIPLINARY NON-CREDIT COURSE-1 (MNC)	VALUE ADDED	CE-384	DISABILITY, ACCESSIBILITY AND UNIVERSAL DESIGN	3	0	0	3	0
5	ENG SCIENCE (ES)	MAJOR	CE-391	SOLID MECHANICS LABORATORY	0	0	2	2	1
6	CORE ENGG (PC)	MAJOR	CE-392	CONCRETE TECHNOLOGY LABORATORY	0	0	2	2	1
TOTAL THEORY AND PRACTICALS								**31**	**23**

2nd Year 4th Semester								
Sl. No.	Broad Category	Category	Course Code	Course Title	Hours per Week			Credits
					L	T	P	Total	
A. THEORY								
1	CORE ENGG (PC)	MAJOR	CE-401	TRANSPORTATION ENGINEERING	2	1	0	3	3
2	CORE ENGG (PC)	MAJOR	CE-402	SURVEYING AND GEOMATICS	2	1	0	3	3
3	CORE ENGG (PC)	MAJOR	CE-403	GEOTECHNICAL ENGINEERING	2	1	0	3	3
4	CORE ENGG (PC)	MAJOR	CE-404	FLUID MECHANICS AND HYDRAULIC ENGINEERING	2	1	0	3	3
5	CORE ENGG (PC)	MAJOR	CE-405	STRUCTURAL ANALYSIS - I	3	0	0	3	3
B. PRACTICAL/SESSIONAL								
1	MULTIDISCIPLINARY OPEN ELECTIVES COURSE -2 (OE)	MULTIDISCIPLINARY	CE-481	DATA SCIENCE IN CIVIL ENGINEERING LABORATORY	0	1	2	3	2
2	MULTIDISCIPLINARY NON-CREDIT COURSE-2 (MNC)	ABILITY ENHANCEMENT	CE-482	CIVIL ENGINEERING - SOCIETAL & GLOBAL IMPACT	3	0	0	3	0
3	SEMINAR	SKILL ENHANCEMENT	CE-483	SEMINAR	0	0	2	2	1
4	CORE ENGG (PC)	MAJOR	CE-491	TRANSPORTATION ENGINEERING LABORATORY	0	0	2	2	1
5	CORE ENGG (PC)	MAJOR	CE-492	SURVEYING AND GEOMATICS LABORATORY	0	0	2	2	1
6	CORE ENGG (PC)	MAJOR	CE-493	BASIC GEOTECHNICAL ENGINEERING LABORATORY	0	0	2	2	1
7	CORE ENGG (PC)	MAJOR	CE-494	FLUID MECHANICS LABORATORY	0	0	2	2	1
TOTAL THEORY AND PRACTICALS								31	22

						3rd Year 5th Semester					
Sl. No.	Broad Category	Category	Course Code	Course Title	\multicolumn{4}{c}{Hours per Week}				Credits
					L	T	P	Total		
A. THEORY										
1	CORE ENGG (PC)	MAJOR	CE-501	DESIGN OF RC STRUCTURES	3	0	0	3		3
2	CORE ENGG (PC)	MAJOR	CE-502	ENVIRONMENTAL ENGINEERING	2	1	0	3		3
3	CORE ENGG (PC)	MAJOR	CE-503	STRUCTURAL ANALYIS –II	3	0	0	3		3
4	PROGRAM ELECTIVE COURSE- 1 (PE)	MAJOR	CE-504	FOUNDATION ENGINEERING	2	1	0	3		3
			CE-505	STRUCTURAL GEOLOGY						
			CE-506	ROCK MECHANICS						
5	PROGRAM ELECTIVE COURSE- 2 (PE)	MAJOR	CE-514	DESIGN OF HYDRAULIC STRUCTURES AND IRRIGATION ENGINEERING	3	0	0	3		3
			CE-515	RAILWAY AND AIRPORT ENGINEERING						
			CE-516	ENVIRONMENTAL LAWS, POLICIES AND IMPACT ASSESSMENT						
B. PRACTICAL/SESSIONAL										
1	CORE ENGG (PC)	MAJOR	CE-581	RC DESIGN SESSIONAL	0	0	2	2		1
2	CORE ENGG (PC)	MAJOR	CE-582	ENGINEERING ECONOMICS, ESTIMATION & COSTING SESSIONAL	0	1	2	2		2
3	MULTIDISCIPLINARY OPEN ELECTIVES COURSE -3 (OE)	MULTIDISCIPLINARY	CE-583	APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN CIVIL ENGINEERING	0	1	2	3		2
4	MULTIDISCIPLINARY NON-CREDIT COURSE- 3 (MNC)	VALUE ADDED	CE-584	3D PRINTING TECHNOLOGY IN CIVIL ENGINEERING	3	0	0	3		0
5	PROJECT	SKILL ENHANCEMENT	CE-585	MINI PROJECT	0	0	2	2		1
6	CORE ENGG (PC)	MAJOR	CE-591	ENVIRONMENTAL ENGINEERING LABORATORY	0	0	2	2		1
7	PROGRAM ELECTIVE COURSE- 1 (PE)	MAJOR	CE-592	ADVANCED GEOTECHNICAL AND GEOLOGY LABORATORY	0	0	2	2		1
\multicolumn{5}{c}{**TOTAL THEORY AND PRACTICALS**}						31	23

Sl. No.	Broad Category	Category	Course Code	Course Title	L	T	P	Total	Credits
3rd Year 6th Semester								
A. THEORY								
1	CORE ENGG (PC)	MAJOR	CE-601	DESIGN OF STEEL STRUCTURES	2	1	0	3	3
2	CORE ENGG (PC)	MAJOR	CE-602	HYDROLOGY & WATER RESOURCES ENGINEERING	3	0	0	3	3
3	CORE ENGG (PC)	MAJOR	CE-603	CONSTRUCTION ENGINEERING & MANAGEMENT	3	0	0	3	3
4	PROGRAM ELECTIVE COURSE- 3 (PE)	MINOR	CE-604	INTRO TO FINITE ELEMENT ANALYSIS	3	0	0	3	3
			CE-605	EARTHQUAKE ENGINEERING					
			CE-606	SOIL DYNAMICS AND MACHINE FOUNDATION					
5	PROGRAM ELECTIVE COURSE- 4 (PE)	MAJOR	CE-614	INDUSTRIAL WASTE WATER MANAGEMENT	3	0	0	3	3
			CE-615	CONSTRUCTION EQUIPMENTS AND AUTOMATION					
			CE-616	STRUCTURAL HEALTH MONITORING AND REHABILITATION					
B. PRACTICAL/SESSIONAL								
1	BASIC SCIENCE (BS)	MINOR	CE-681	BIOLOGY FOR ENGINEERS LABORATORY	0	1	2	3	2
2	MULTIDISCIPLINARY NON-CREDIT COURSE- 4 (MNC)	SKILL ENHANCEMENT	CE-682	CAREER PLANNING AND SKILL DEVELOPMENT	3	0	0	3	0
3	PROJECT	SKILL ENHANCEMENT	CE-683	MINI PROJECT	0	0	2	2	1
4	CORE ENGG (PC)	MAJOR	CE-691	BUILDING INFORMATION MODELING	0	0	2	2	1
5	CORE ENGG (PC)	MAJOR	CE-692	HYDROLOGY & WATER RESOURCES ENGINEERING LABORATORY	0	0	2	2	1
6	PROGRAM ELECTIVE COURSE- 3 (PE)	MAJOR	CE-693	COMPUTATIONAL TOOLS AND SOFTWARE LABORATORY IN CIVIL ENGINEERING	0	0	2	2	1
7	PROGRAM ELECTIVE COURSE- 4 (PE)	MAJOR	CE-694	ADVANCED TECHNOLOGIES AND MONITORING SYSTEMS LABORATORY	0	0	2	2	1
	TOTAL THEORY AND PRACTICALS							**31**	**22**

Sl. No.	Broad Category	Category	Course Code	Course Title	L	T	P	Total	Credits
4th Year 7th Semester									
Hours per Week									
A. THEORY									
1	CORE ENGG (PC)	MINOR	CE-701	INTELLIGENT TRANSPORTATION SYSTEMS	3	0	0	3	3
2	PROGRAM ELECTIVE COURSE- 5 (PE)	MAJOR	CE-702	PAVEMENT MATERIAL	3	0	0	3	3
			CE-703	TOTAL STATION AND GPS SURVEY					
			CE-704	AIR AND NOISE POLLUTION CONTROL					
3	PROGRAM ELECTIVE COURSE- 6 (PE)	MAJOR	CE-712	PRESTRESSED CONCRETE	3	0	0	3	3
			CE-713	TRAFFIC ENGINEERING AND MANAGEMENT					
			CE-714	RAINWATER HARVESTING					
4	PROGRAM ELECTIVE COURSE- 7 (PE)	MAJOR	CE-722	BRIDGE ENGINEERING	3	0	0	3	3
			CE-723	GROUND IMPROVEMENT TECHNIQUE					
			CE-724	CONTRACT MANAGEMENT					
5	INDIAN KNOWLEDGE SYSTEM	ABILITY ENHANCEMENT	CE-732	INDIAN TOWN PLANNING AND ARCHITECTURE	2	0	0	2	2
B. PRACTICAL/SESSIONAL									
1	MULTIDISCIPLINARY NON-CREDIT COURSE- 5 (MNC)	ABILITY ENHANCEMENT	CE-781	DISASTER PREPAREDNESS & PLANNING	3	0	0	3	0
2	INTERNSHIP	SKILL ENHANCEMENT	CE-782	INTERNSHIP	0	0	4	4	2
3	PROJECT	SKILL ENHANCEMENT	CE-783	MINI PROJECT & SEMINAR	0	0	6	6	3
4	PROGRAM ELECTIVE COURSE- 5 (PE)	MAJOR	CE-791	PAVEMENT MATERIAL LABORATORY	0	0	2	2	1
			CE-792	TOTAL STATION AND GPS SURVEY LABORATORY					
			CE-793	AIR AND NOISE POLLUTION CONTROL LABORATORY					
TOTAL THEORY AND PRACTICALS								**29**	**20**

4th Year 8th Semester									
Sl. No.	Broad Category	Category	Course Code	Course Title	Hours per Week				Credits
					L	T	P	Total	
A. PRACTICAL/SESSIONAL									
1	PROJECT	SKILL ENHANCEMENT	CE-881	PROJECT	0	0	24	24	12
TOTAL THEORY AND PRACTICALS								24	12