

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

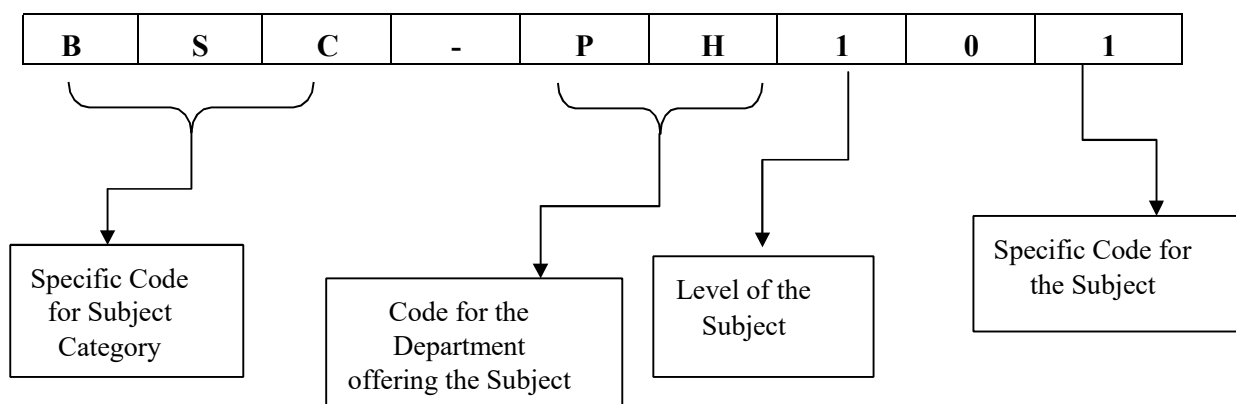
The first year course structure (Page 3 and Page 4) is unanimously accepted and approved in the first BoS meeting held in the Department of a) Physics, b) Chemistry, c) Mathematics, d) English, e) Electrical Engineering, f) Electronics and Communication Engineering, g) Computer Science and Engineering, h) Mechanical Engineering
The BoS of CE (Civil Engineering) in its first meeting (held in the Department of CE (Civil Engineering) on 24th October, 2024 has unanimously accepted and approved the four year course structure of CE (Civil Engineering).

Sanjay Sengupta

H.O.D. ICE.

Dr. B. C. Roy Enng. College, Durgapur
Signature of the BoS Chairman

Subject Numbering Scheme:



Semester Wise Break Up of Credit (New Autonomous Structure)

Sem1	Sem2	Sem3	Sem4	Sem5	Sem6	Sem7	Sem8	Total
20	22	25	24	25	25	22	12	175

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.	25
4.	Professional core course	58
5.	Professional Elective specialization/branch courses relevant to chosen	25
6.	Indian Knowledge System	02
7.	Multidisciplinary Open Electives Courses	12
8.	Project work, seminar and internship in industry or appropriate work place/ academic and research institutions in India/abroad	22
9.	Mandatory Non Credit Courses – Audit Course	15 L
Total Credits		175

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

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

B. Tech. 1stYr (2nd Semester)

<i>Theory</i>							
Sl. No.	Paper Name	Paper Code	Marks	L	T	P	Credit
1	Mathematics-II	BSC-M 201	100	3	0	0	3
2	Chemistry	BSC-CH 201	100	3	0	0	3
3	Basic Electronics Engineering	ESC-EC 201	100	3	0	0	3
4	Introduction to Computer Hardware and Software	ESC-CS 201	100	3	0	0	3
5	Programming for Problem Solving	ESC-CS 202	100	3	0	0	3
	Total Theory		500	15	0	0	15
<i>Practical</i>							
1	Chemistry Lab	BSC-CH 291	100	0	0	2	1
2	Basic Electronics Engineering Lab	ESC-EC 291	100	0	0	2	1
3	Engineering Graphics	ESC-ME 291	100	0	0	4	2
4	Introduction to Computer Hardware and Software Lab	ESC-CS 291	100	0	0	2	1
5	Programming for Problem Solving Lab	ESC-CS 292	100	0	0	4	2
	Total Practical		500	0	0	14	7
	Total of 2nd Semester		1000	15	0	14	22
<i>Mandatory Courses</i>							
1	Environmental Science	MC-ES 201		1	0	0	0

Total Credit in 1st Year: 42

Department: Civil Engineering (CE)

Curriculum Structure (Effective from 2024 -25 admission batch)

2 nd Year 3 rd Semester									
Sl. No.	Broad Category	Category	Course Code	Course Title	Hours per Week				Credits
					L	T	P	Total	
A. THEORY									
1	ENG SCIENCE (ES)	MAJOR	CE(ES)301	SOLID MECHANICS	2	1	0	3	3
2	BASIC SCIENCE (BS)	MINOR	CE(BS)301	MATHEMATICS TO CIVIL ENGINEERING-I	3	0	0	3	3
3	CORE ENGG (PC)	MAJOR	CE(PC)301	CONCRETE TECHNOLOGY	2	1	0	3	3
4	CORE ENGG (PC)	MINOR	CE(PC)302	SUSTAINABLE AND GREEN CONSTRUCTION	3	0	0	3	3
5	MULTIDISCIPLINARY OPEN ELECTIVES COURSES -1 (OE)	MINOR	CE(OE)301	PROBLEM SOLVING USING PYTHON AND MATLAB	3	0	0	3	3
6	HUMANITIES AND SOCIAL SCIENCES (HSMC)	MINOR	CE(HSMC)301	UNIVERSAL HUMAN VALUES	2	1	0	3	3
7	MULTIDISCIPLINARY NON-CREDIT COURSE- 1 (MNC)	VALUE ADDED COURSE	CE(MNC)301	DISABILITY, ACCESSIBILITY AND UNIVERSAL DESIGN	3	0	0	3	0
B. PRACTICAL/SESSIONAL									
1	ENG SCIENCE (ES)	MAJOR	CE(ES)391	SOLID MECHANICS LABORATORY	0	0	2	2	1
2	ENG SCIENCE (ES)	MAJOR	CE(ES)392	CIVIL ENGINEERING MATERIALS, TESTING & EVALUATION SESSIONAL	0	1	2	3	2
3	CORE ENGG (PC)	MAJOR	CE(PC)391	BUILDING PLANNING AND COMPUTER-AIDED CIVIL ENGINEERING DRAWING SESSIONAL	0	1	2	3	2
4	CORE ENGG (PC)	MAJOR	CE(PC)392	CONCRETE TECHNOLOGY LABORATORY	0	0	2	2	1
5	MULTIDISCIPLINARY OPEN ELECTIVES COURSE -1 (OE)	MINOR	CE(OE)391	PROBLEM SOLVING USING PYTHON AND MATLAB LABORATORY	0	0	2	2	1
TOTAL THEORY AND PRACTICALS								33	25

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(PC)401	TRANSPORTATION ENGINEERING	2	1	0	3	3
2	CORE ENGG (PC)	MAJOR	CE(PC)402	SURVEYING AND GEOMATICS	2	1	0	3	3
3	CORE ENGG (PC)	MAJOR	CE(PC)403	GEOTECHNICAL ENGINEERING	2	1	0	3	3
4	CORE ENGG (PC)	MAJOR	CE(PC)404	FLUID MECHANICS AND HYDRAULIC ENGINEERING	2	1	0	3	3
5	CORE ENGG (PC)	MAJOR	CE(PC)405	STRUCTURAL ANALYSIS - I	3	0	0	3	3
6	MULTIDISCIPLINARY OPEN ELECTIVES COURSE -2 (OE)	MINOR	CE(OE)401	DATA SCIENCE IN CIVIL ENGINEERING	3	0	0	3	3
7	MULTIDISCIPLINARY NON-CREDIT COURSE- 2 (MNC)	KNOWLEDGE ENHANCEMENT COURSE	CE(MNC)401	CIVIL ENGINEERING - SOCIETAL & GLOBAL IMPACT	3	0	0	3	0
B. PRACTICAL/SESSIONAL									
1	CORE ENGG (PC)	MAJOR	CE(PC)491	TRANSPORTATION ENGINEERING LABORATORY	0	0	2	2	1
2	CORE ENGG (PC)	MAJOR	CE(PC)492	SURVEYING AND GEOMATICS LABORATORY	0	0	2	2	1
3	CORE ENGG (PC)	MAJOR	CE(PC)493	BASIC GEOTECHNICAL ENGINEERING LABORATORY	0	0	2	2	1
4	CORE ENGG (PC)	MAJOR	CE(PC)494	FLUID MECHANICS LABORATORY	0	0	2	2	1
5	MULTIDISCIPLINARY OPEN ELECTIVES COURSE -2 (OE)	MINOR	CE(OE)491	DATA SCIENCE IN CIVIL ENGINEERING LABORATORY	0	0	2	2	1
6	SEMINAR	MINOR	CE(SEM)495	SEMINAR	0	0	2	2	1
TOTAL THEORY AND PRACTICALS								33	24

3 rd Year 5 th 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(PC)501	DESIGN OF RC STRUCTURES	3	0	0	3	3
2	CORE ENGG (PC)	MAJOR	CE(PC)502	ENVIRONMENTAL ENGINEERING	2	1	0	3	3
3	CORE ENGG (PC)	MAJOR	CE(PC)503	STRUCTURAL ANALYSIS –II	3	0	0	3	3
4	PROGRAM ELECTIVE COURSE- 1 (PE)	MAJOR	CE(PE)501A/ CE(PE)501B/ CE(PE)501C	FOUNDATION ENGINEERING/STRUCTURAL GEOLOGY/ROCK MECHANICS	2	1	0	3	3
5	PROGRAM ELECTIVE COURSE- 2 (PE)	MAJOR	CE(PE)502A/ CE(PE)502B/ CE(PE)502C	DESIGN OF HYDRAULIC STRUCTURES AND IRRIGATION ENGINEERING/ RAILWAY AND AIRPORT ENGINEERING/ ENVIRONMENTAL LAWS, POLICIES AND IMPACT ASSESSMENT	3	0	0	3	3
6	MULTIDISCIPLINARY OPEN ELECTIVES COURSE -3 (OE)	MINOR	CE(OE)501	APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN CIVIL ENGINEERING	3	0	0	3	3
7	MULTIDISCIPLINARY NON-CREDIT COURSE- 3 (MNC)	VALUE ADDED COURSES	CE(MNC)501	3D PRINTING TECHNOLOGY IN CIVIL ENGINEERING	3	0	0	3	0
B. PRACTICAL/SESSIONAL									
1	CORE ENGG (PC)	MAJOR	CE(PC)591	RC DESIGN SESSIONAL	0	0	2	2	1
2	CORE ENGG (PC)	MAJOR	CE(PC)592	ENVIRONMENTAL ENGINEERING LABORATORY	0	0	2	2	1
3	CORE ENGG (PC)	MAJOR	CE(PC)593	ENGINEERING ECONOMICS, ESTIMATION & COSTING SESSIONAL	0	1	2	2	2
4	PROGRAM ELECTIVE COURSE- 1 (PE)	MAJOR	CE(PE)591	ADVANCED GEOTECHNICAL AND GEOLOGY LABORATORY	0	0	2	2	1
5	MULTIDISCIPLINARY OPEN ELECTIVES COURSE -3 (OE)	MINOR	CE(OE)591	APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN CIVIL ENGINEERING	0	0	2	2	1
6	PROJECT	MAJOR	CE(PROJ)595	MINI PROJECT	0	0	2	2	1
TOTAL THEORY AND PRACTICALS								33	25

3rd Year 6th 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(PC)601	DESIGN OF STEEL STRUCTURES	2	1	0	3	3
2	CORE ENGG (PC)	MINOR	CE(PC)602	INTELLIGENT TRANSPORTATION SYSTEMS	3	0	0	3	3
3	CORE ENGG (PC)	MAJOR	CE(PC)603	CONSTRUCTION ENGINEERING & MANAGEMENT	3	0	0	3	3
4	CORE ENGG (PC)	MAJOR	CE(PC)604	HYDROLOGY & WATER RESOURCES ENGINEERING	3	0	0	3	3
5	PROGRAM ELECTIVE COURSE- 3 (PE)	MINOR	CE(PE)601A/ CE(PE)601B/ CE(PE)601C	INTRO TO FINITE ELEMENT ANALYSIS/ EARTHQUAKE ENGINEERING/ SOIL DYNAMICS AND MACHINE FOUNDATION	3	0	0	3	3
6	PROGRAM ELECTIVE COURSE- 4 (PE)	MAJOR	CE(PE)602A/ CE(PE)602B/ CE(PE)602C	INDUSTRIAL WASTE WATER MANAGEMENT/ CONSTRUCTION EQUIPMENTS AND AUTOMATION/ STRUCTURAL HEALTH MONITORING AND REHABILITATION	3	0	0	3	3
7	MULTIDISCIPLINARY NON-CREDIT COURSE- 4 (MNC)	KNOWLEDGE ENHANCEMENT SKILL	CE(MNC)601	CAREER PLANNING AND SKILL DEVELOPMENT	3	0	0	3	0
B. PRACTICAL/SESSIONAL									
1	BASIC SCIENCE (BS)	MINOR	CE(BS)691	BIOLOGY FOR ENGINEERS LABORATORY	0	1	2	3	2
2	CORE ENGG (PC)	MAJOR	CE(PC)691	BUILDING INFORMATION MODELING	0	0	2	2	1
3	CORE ENGG (PC)	MAJOR	CE(PC)692	HYDROLOGY & WATER RESOURCES ENGINEERING LABORATORY	0	0	2	2	1
4	PROGRAM ELECTIVE COURSE- 3 (PE)	MAJOR	CE(PE)691	COMPUTATIONAL TOOLS AND SOFTWARE LABORATORY IN CIVIL ENGINEERING	0	0	2	2	1
5	PROGRAM ELECTIVE COURSE- 4 (PE)	MAJOR	CE(PE)692	ADVANCED TECHNOLOGIES AND MONITORING SYSTEMS LABORATORY	0	0	2	2	1
6	PROJECT	MAJOR	CE(PROJ)695	MINI PROJECT	0	0	2	2	1
TOTAL THEORY AND PRACTICALS								34	25

4th Year 7th Semester

Sl. No.	Broad Category	Category	Course Code	Course Title	Hours per Week				Credits
					L	T	P	Total	
A. THEORY									
1	CORE ENGG (PC)	MINOR	CE(PC)701	ROBOTICS AND AUTOMATION	3	0	0	3	3
2	PROGRAM ELECTIVE COURSE- 5 (PE)	MAJOR	CE(PE)701A/ CE(PE)701B/ CE(PE)701C	PAVEMENT MATERIAL/ TOTAL STATION AND GPS SURVEY/ AIR AND NOISE POLLUTION CONTROL	3	0	0	3	3
3	PROGRAM ELECTIVE COURSE- 6 (PE)	MAJOR	CE(PE)702A/ CE(PE)702B/ CE(PE)702C	PRESTRESSED CONCRETE/ TRAFFIC ENGINEERING AND MANAGEMENT/ RAINWATER HARVESTING	3	0	0	3	3
4	PROGRAM ELECTIVE COURSE- 7 (PE)	MAJOR	CE(PE)703A/ CE(PE)703B/ CE(PE)703C	BRIDGE ENGINEERING/ GROUND IMPROVEMENT TECHNIQUE/ CONTRACT MANAGEMENT	3	0	0	3	3
6	INDIAN KNOWLEDGE SYSTEM	MINOR	CE(ICS)701	INDIAN TOWN PLANNING AND ARCHITECTURE	2	0	0	2	2
7	MULTIDISCIPLINARY NON-CREDIT COURSE- 5 (MNC)	SKILL ENHANCEMENT COURSE	CE(MNC)701	DISASTER PREPAREDNESS & PLANNING	3	0	0	3	0
B. PRACTICAL/SESSIONAL									
1	PROGRAM ELECTIVE COURSE- 5 (PE)	MAJOR	CE(PE)791A/ CE(PE)791B/ CE(PE)791C	PAVEMENT MATERIAL LABORATORY/ TOTAL STATION AND GPS SURVEY LABORATORY / AIR AND NOISE POLLUTION CONTROL LABORATORY	0	0	2	2	1
2	INTERNSHIP	MAJOR	CE(INT)794	INTERNSHIP	0	0	10	10	5
3	PROJECT	MAJOR	CE(PROJ)795	MINI PROJECT & SEMINAR	0	0	4	4	2
TOTAL THEORY AND PRACTICALS								33	22

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	MAJOR	CE(PROJ)895	PROJECT	0	0	24	24	12
TOTAL THEORY AND PRACTICALS								24	12