COURSE STRUCTURE

For

B.TECH. DEGREE

in

COMPUTER SCIENCE & 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)

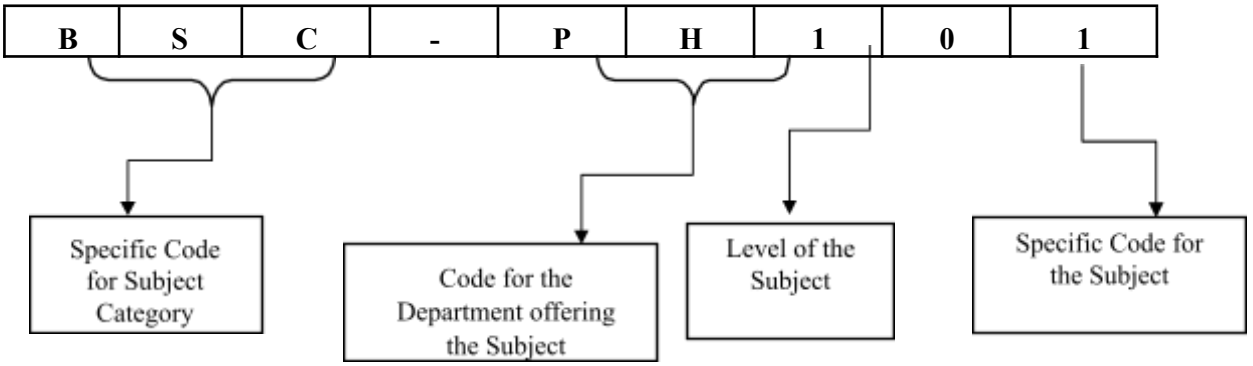
Jemua Road, Durgapur, West Bengal, India, 713206

• 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 CSE (Computer Science and Engineering) in its first meeting (held in the Department of CSE (Computer Science and Engineering) on 6th November 2024 has unanimously accepted and approved the four year course structure of CSE (Computer Science and Engineering).

Head
Dept. Computer Science & Eng
Dr. B. C. Roy Engineering College
Durgapur

Subject Numbering Scheme:



Semester Wise Break Up of Credit (New Autonomous Structure)

Sem1	Sem2	Sem3	Sem4	Sem5	Sem6	Sem7	Sem8	Tota l
20	22	24	24	22	21	19	10	162

Sl. No.	Category	Breakup of Credits (Actual) As per Proposed Autonomous Structure
1.	Humanities and Social Sciences including Management courses	13
2.	Basic Science Courses	23
3.	Engineering Science courses including workshop, drawing, basics of electrical/ mechanical/ computer etc.	29
4.	Professional core course	57
5.	Professional Elective specialization/branch courses relevant to chosen	15
6.	Multidisciplinary Open Electives Courses	9
7.	Project work, seminar and internship in industry or appropriate work place/ academic and research institutions in India/abroad	16
8.	Mandatory Non Credit Courses – Audit Course	
Total Credits		**162**

Computer Science & Engineering 4 years Courses

Semester 1

Sl No	Course Type	Paper Code	Paper Name	Marks	L	T	P	Credit
Theory								
1	BS	M101	Mathematics-I	100	3	0	0	3
2	BS	CH101	Chemistry [Group-B]	100	3	0	0	3
3	ES	EC101	Basic Electronics Engineering [Group-B]	100	3	0	0	3
4	ES	ME101	Engineering Mechanics	100	3	0	0	3
5	ES	CS101	Introduction to Computer Hardware and Software [Group-B]	100	3	0	0	3
			Total Theory	500	15	0	0	15
Practical								
6	BS	CH191	Chemistry Lab [Group-B]	100	0	0	2	1
7	ES	EC191	Basic Electronics Engineering Lab [Group-B]	100	0	0	2	1
8	ES	CS191	Introduction to Computer Hardware and Software Lab [Group-B]	100	0	0	2	1
9	ES	ME191	Engineering Graphics & Design [Group-B]	100	0	0	4	2
10	BS	ENV101	Environmental Science [Group-B]	100	1	0	0	0
			Total Practical	500	1	0	10	5
			Total of 1st Semester	1000	16	0	10	20
Total Credits								**20**

Semester 2

Sl No	Course Type	Paper Code	Paper Name	Marks	L	T	P	Credit
Theory								
1	BS	M201	Mathematics-II	100	3	0	0	3
2	BS	PH201	Physics [Group-B]	100	3	0	0	3
3	ES	EE201	Basic Electrical Engineering [Group-B]	100	3	0	0	3
4	HM	ENG201	English Language and Technical Communication [Group-B]	100	3	0	0	3
5	ES	CS202	Programming for Problem Solving	100	3	0	0	3
			Total Theory	500	15	0	0	15
Practical								
6	BS	PH291	Physics Lab [Group-B]	100	0	0	2	1

7	ES	EE291	Basic Electrical Engineering Lab [Group-B]	100	0	0	2	1
8	HM	ENG291	Language Lab [Group-B]	100	0	0	2	1
9	ES	CS292	Programming for Problem Solving Lab	100	0	0	4	2
10	ES	ME292	Workshop/Manufacturing Practices [Group-B]	100	0	0	4	2
11	HM	CI201	Constitution of India [Group-B]	100	1	0	0	0
			Total Practical	600	1	0	14	7
			Total of 2nd Semester	1100	16	0	14	22
12			NSS [Group-B]	100	0	0	0	0
Total Credits								**22**
Semester 3								
Sl No	**Course Type**	**Paper Code**	**Paper Name**	**Marks**	**L**	**T**	**P**	**Credit**
Theory								
1	PC	CS301	Data Structure & Algorithms	100	3	0	0	3
2	PC	CS302	Computer Organization & Architecture	100	3	0	0	3
3	BS	CS303	Mathematics III	100	3	0	0	3
4	ES	CS304	Analog & Digital Electronics	100	3	0	0	3
5	BS	CS305	Biology	100	3	0	0	3
			Total Theory	500	15	0	0	15
Practical								
6	PC	CS391	Data Structure & Algorithms Lab	100	0	0	4	2
7	PC	CS392	Computer Organization & Architecture Lab	100	0	0	4	2
8	PC	CS393	Python Programming Lab	100	0	1	4	3
9	ES	CS394	Analog & Digital Electronics Lab	100	0	0	4	2
			Total Practical	400	0	1	16	9
			Total of 3rd Semester	900	15	1	16	24
Total Credits								**24**
Semester 4								
Sl No	**Course Type**	**Paper Code**	**Paper Name**	**Marks**	**L**	**T**	**P**	**Credit**
Theory								
1	PC	CS401	Design & Analysis of Algorithms	100	3	0	0	3
2	PC	CS402	Object Oriented Programming	100	3	0	0	3

3	PC	CS403	Database Management System	100	3	0	0	3
4	PC	CS404	Formal Language & Automata Theory	100	3	0	0	3
5	BS	CS405	Discrete Mathematics & Graph Theory	100	3	0	0	3
6	HM	CS406	Soft Skill & Interpersonal Communication	100	3	0	0	3
			Total Theory	600	18	0	0	18
Practical								
7	PC	CS491	Design & Analysis of Algorithms Lab	100	0	0	4	2
8	PC	CS492	Object Oriented Programming Lab	100	0	0	4	2
9	PC	CS493	Database Management System Lab	100	0	0	4	2
			Total Practical	300	0	0	12	6
			Total of 4th Semester	900	18	0	12	24
Total Credits								**24**
Semester 5								
Sl No	**Course Type**	**Paper Code**	**Paper Name**	**Marks**	**L**	**T**	**P**	**Credit**
Theory								
1	PC	CS-501	Operating System	100	3	0	0	3
2	PC	CS-502	Software Engineering	100	3	0	0	3
3	PC	CS-503	Compiler Design	100	3	0	0	3
4	PC	CS-504	Artificial Intelligence	100	3	0	0	3
5	PE	CS505-514	Core Elective I: Data Mining / Computer Graphics / Advanced Computer Architecture / Distributed Database Management System	100	3	0	0	3
6	OE	CS515-524	Open Elective I: Linear Algebra & Numerical Methods / Economics for Engineers / Multimedia Sysytem / Augmented & Virtual Reality	100	3	0	0	3
			Total Theory	600	18	0	0	18
Practical								
7	PC	CS591	Operating System Lab	100	0	0	4	2
8	PC	CS592	Software Engineering Lab	100	0	0	4	2
			Total Practical	200	0	0	8	4
			Total of 5th Semester	800	18	0	8	22
Total Credits								**22**

Semester 6								
Sl No	**Course Type**	**Paper Code**	**Paper Name**	**Marks**	**L**	**T**	**P**	**Credit**
Theory								
1	PC	CS601	Data Communication & Computer Network	100	3	0	0	3
2	PC	CS602	Machine Learning	100	3	0	0	3
3	PE	CS603-612	Core Elective II: Internet of Things & Applications / Web & Internet Technology / Image Processing / Human Computer Interaction / Blockchain Technology	100	3	0	0	3
4	PE	CS613-622	Core Elective III: Data Science / Cryptography & Network Security / Soft Computing / Pattern Recognition / Parallel & Distributed Computing	100	3	0	0	3
5	OE	CS623-632	Open Elective II: Optimization Techniques & Operational Research / Entrepreneurship Development: Theory & Practice / Mobile Application Development / Ad-Hoc & Sensor Network / Robotics	100	3	0	0	3
			Total Theory	500	15	0	0	15
Practical								
6	PC	CS691	Data Communication & Computer Network Lab	100	0	0	4	2
7	PC	CS692	Machine Learning Lab	100	0	0	4	2
8	PROJ	CS681	Research Methodology (Project I)	100	0	0	4 (S*)	2
			Total Practical	300	0	0	8	6
			Total of 5th Semester	800	15	0	8	21
Total Credits								**21**
Semester 7								
Sl No	**Course Type**	**Paper Code**	**Paper Name**	**Marks**	**L**	**T**	**P**	**Credit**
Theory								
1	HM	CS-701	Human Resource Development & Organizational Behavior	100	3	0	0	3
2	PE	CS702-711	Core Elective IV: Cloud Computing / Neural Network & Deep Learning / Natural Language Processing / Mobile Computing	100	3	0	0	3

3	PE	CS712-721	Core Elective V: Data Analytics / Cyber Security / Quantum Computing / High Performance Computing	100	3	0	0	3
4	OE	CS722-731	Open Elective III: E-Commerce & ERP / Industrial Management / Game Theory & Applications / Bio-Informatics / Social Network Analysis	100	3	0	0	3
			Total Theory	400	12	0	0	12
5	PROJ	CS781	Project II	100	0	0	12 (S*)	6
6		CS782	Industrial Training & Seminar	100	0	0	2 (S*)	1
Total Credits								**19**
Semester 8								
Sl No	**Course Type**	**Paper Code**	**Paper Name**	**Marks**	**L**	**T**	**P**	**Credit**
Theory								
1	HM	CS801	Project Management & Entrepreneurship	100	3	0	0	3
2	PROJ	CS881	Project III	100	0	0	12 (S*)	6
3	VIVA	CS882	Comprehensive Grand Viva	100	0	0	2 (S*)	1
			Total Theory	300	3	0	14	10
Total Credits								**10**
4 Years Total Credits = 162								

S* = Sessional