COURSE CURRICULUM

for

B.TECH. DEGREE

in

COMPUTER SCIENCE & DESIGN

(Applicable from the academic session 2024-2025)

DR. B.C. ROY SOCIETY ENGINEERING
AN AUTONOMOUS INSTITUTE

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)

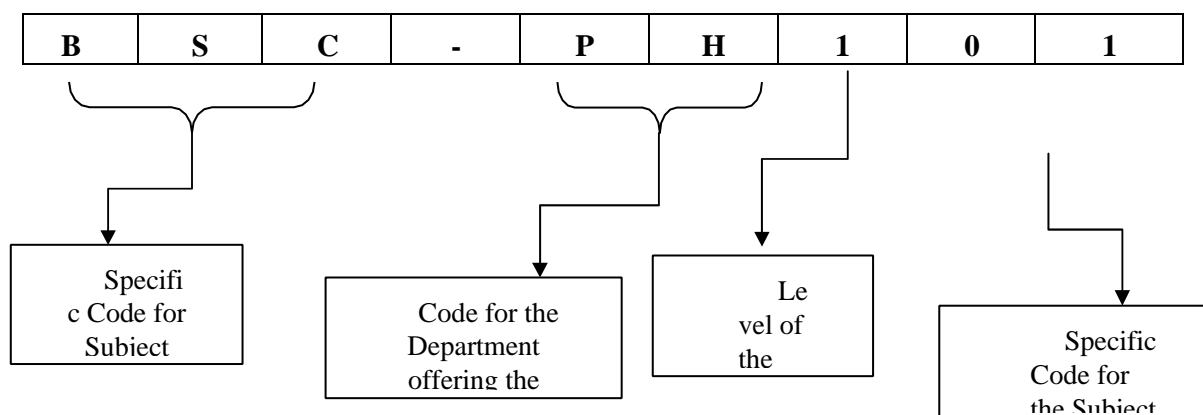**Jemua Road, Durgapur, West Bengal, India,713206**

The first year (First Semester) syllabus is unanimously accepted and approved in the first BoS meeting held in the Department of a) Physics, b) Mathematics, c) English, d) Electrical Engineering, e) Mechanical Engineering.

The BoS of CSD (Computer Science & Design) in its first meeting (held in the Department of CSD (Computer Science & Design) on 6th November, 2024 has unanimously accepted and approved the four year course structure of CSD (Computer Science & Design).

HOD
Computer Sc. & Design
Dr. B. C. Roy Engineering College
Durgapur - 713206

Subject Numbering Scheme:

B	S	C	-	P	H	1	0	1

Specific Code for Subject

Code for the Department offering the

Level of the

Specific Code for the Subject

Semester Wise Break Up of Credit (New Autonomous Structure)

Sem1	Sem2	Sem3	Sem4	Sem5	Sem6	Sem7	Sem8	Total
20	22	26	24	21	24	21	9	167

S. No.	Category	Breakup of Credits (Actual) As per Proposed Autonomous Structure
1.	Humanities and Social Sciences including Management courses	13
2.	Basic Science Courses	20
3.	Engineering Science courses including workshop, drawing, basics of electrical/ mechanical/ computer etc.	32
4.	Professional core course	65
5.	Professional Elective specialization/branch courses relevant to chosen	15
6.	Indian Knowledge System	
7.	Multidisciplinary Open Electives Courses	6
8.	Project work, seminar and internship in industry or appropriate work place/ academic and research institutions in India/abroad	15
9.	Mandatory Non Credit Courses – Audit Course	1
Total Credits		**167**

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

Theory							
Sl No	Paper Name	Paper Code	Marks	L	T	P	Credit
1	Mathematics-I	BSC-M 101	100	3	0	0	3
2	Chemistry	BSC- CH 101	100	3	0	0	3
3	Basic Electronics Engineering	ESC- EC 101	100	3	0	0	3
4	Engineering Mechanics	ESC-ME 101	100	3	0	0	3
5	Introduction to Computer Hardware and Software	ESC-CS 101	100	3	0	0	3
	Total Theory		500	15	0	0	15
Practical							
1	Chemistry Lab	BSC-CH 191	100	0	0	2	1
2	Basic Electronics Engineering Lab	ESC-EC 191	100	0	0	2	1
3	Introduction to Computer Hardware and Software Lab	ESC-CS 191	100	0	0	2	1
4	Engineering Graphics	ESC-ME 191	100	0	0	4	2
	Total Practical		400	0	0	10	5
	Total in 1st Semester		900	15	0	10	20
Mandatory Courses							
1	Environmental Science	MC-ES 101		1	0	0	0

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

Theory							
Sl. No.	Paper Name	Paper Code	Marks	L	T	P	Credit
1	Mathematics-II	BSC-M 201	100	3	0	0	3
2	Physics	BSC-PH 201	100	3	0	0	3
3	Basic Electrical Engineering	ESC-EE 201	100	3	0	0	3
4	English Language and Technical Communication	HS-MC 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
Practical							
1	Physics Lab	BSC-PH 291	100	0	0	2	1
2	Basic Electrical Engineering Lab	ESC-EE 291	100	0	0	2	1
3	Workshop Practices	ESC-ME 292	100	0	0	4	2
4	Language Lab	HS-MC 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
Extra Curricular Activity							
1	NSS	EC-NSS 201	100				0

Total Credit in 1st Year: 42

**B. Tech., CSD Semester III (Second year)**						
Sl. No.	Type of course	Code	Course Title	Hours per week			Credits
				L	T	P	
Theory							
1	Engineering Science Course	ESC 301	Digital System Design	3	1	0	3
2	Professional Core Courses	PCC-CS301	Data Structure & Algorithms	3	1	0	3
3	Professional Core Courses	PCC-CSD302	Computer Organisation & Architecture	3	1	0	3
4	Professional Core Courses	PCC-CSD303	Microprocessor & Microcontroller	3	0	0	3
5	Basic Science courses	BSC 302	Creative Thinking Process and Design	2	1	0	3
6	Basic Science course	BSC 301	Mathematics-III (Differential Calculus)	3	0	0	3
Practical							
7	Professional Core Courses	PCC-CS393	IT Workshop with Python	0	0	4	2
8	Engineering Science Course	ESC 391	Digital System Design Lab	0	0	4	2
9	Professional Core Courses	PCC-CS391	Data Structure & Algorithms	0	0	4	2
10	Professional Core Courses	PCC-CSD392	Computer Organisation & Architecture Lab	0	0	4	2
**Total credits**							**26**

B. Tech., CSD Semester IV (Second year)							
Sl. No.	Type of course	Code	Course Title	Hours per week			Credits
				L	T	P	
Theory							
1	Professional Core Courses	PCC-CSD 401	Computer Graphics and Animation	3	1	0	3
2	Professional Core Courses	PCC-CSD 402	Design & Analysis of Algorithms	3	1	0	3
3	Professional Core Courses	PCC-CSD 403	Object Oriented Programming and Design	3	0	0	3
4	Professional Core Courses	PCC-CSD 404	Computer Networks	3	0	0	3
5	Humanities & Social Sciences including Management courses	HSMC 401	Economics for Engineers (Humanities-II)	3	0	0	3
6	Basic Science course	BSC 401	Biology	3	0	0	3
Practical							
7	Engineering Science Course	PCC-CSD 491	Computer Graphics and Animation Lab	0	0	4	2
8	Professional Core Courses	PCC-CSD 492	Design & Analysis of Algorithms Lab	0	0	4	2
9	Professional Core Courses	PCC-CSD 493	Object Oriented Programming and Design Lab	0	0	4	2
						Total credits	**24**

**B. Tech., CSD Semester V (Third year)**
Sl. No.	Type of course	Code	Course Title	Hours per week			Credits
				L	T	P	
1	Professional Core Courses	PCC-CSD 501	Augmented Reality, Virtual Reality & Mixed Reality	3	0	0	3
2	Professional Core Courses	PCC-CSD 502	Database Management Systems	3	1	0	3
3	Professional Core Courses	PCC-CSD 503	Operating System	3	1	0	3
4	Humanities & Social Sciences including Management	HSMC-501	Introduction to Industrial Management (Humanities III)	3	0	0	3
5	Professional Elective courses	PEC-CSD 501A/B/C	(Elective-I) Digital Image Processing/Automata Theory / GPU Computing	3	1	0	3
Practical							
6	Professional Core Courses	PCC-CSD 591	Augmented Reality, Virtual Reality & Mixed Reality Lab		0	4	2
7	Professional Core Courses	PCC-CSD 592	Data Base Management System Lab		0	4	2
8	Professional Core Courses	PCC-CSD 593	Operating System Lab		0	4	2
			Total credits				**21**

SI. No.	Type of course	Code	Course Title	Hours per week			Credits
				L	T	P	
1	Professional Core Courses	ESC-601	Software Engineering	3	1	0	3
2	Professional Core Courses	PCC-CSD602	Artificial Intelligence and Machine Learning and NLP	3	0	0	3
3	Professional Core Courses	PCC-CSD603	Internet of Things	3	0	0	3
4	Professional Core Courses	PCC-CSD604	Aesthetics & Arts	3	0	0	3
5	Professional Elective courses	PEC-CSD602 A/B/C	Wearable Devices ,Interactions and Applications/Human Computer Interaction/Microelectronics and VLSI design (Elective-II)	3	0	0	3
6	Open Elective courses	OEC-CSD 601A/B/C/D	(Elective-I) Compiler Design/Robotics /Computer Vision/Wireless Sensor Networks	3	1	0	3
Practical							
6	Professional Core Courses	PCC-CSD692	AI and ML Lab		0	4	2
7	Professional Core Courses	PCC-CSD693	IOT Lab		0	4	2
8	Professional Core Courses	PCC-CSD694	Data Visualization Workshop		0	4	2
			Total credits				**24**

B. Tech., CSD Semester VI (Third year)

Sl. No.	Type of course	Code	Course Title	Hours per week			Credits
				L	T	P	
1	Professional Elective courses	PEC-CSD701A/B/C	(Elective-III) Deep Learning/ Prototyping Interactive System/ Multi-agent Intelligent Systems	3	1	0	3
2	Professional Elective courses	PEC-CSD702A/B/C	(Elective-IV) Block chain Technology/ Design Processes and Perspectives /Cloud Computing	3	0	0	3
3	Open Elective courses	OEC-CSD701A/B/C	(Open Elective-II) Big Data Analysis/3D Printing & Design /Introduction to Philosophical Thoughts	3	0	0	3
4	Humanities & Social Sciences including Management courses	HSMC 701	Project Management Entrepreneurship	2	1	0	3
5	Project	PROJ-CSD 701	Research Methodology	2	0	0	2
6	Project	PROJ-CSD781	Project-I (Minor)	0	0	12	6
7	Grand Viva	GV CSD 782	GV-I	0	0	0	1
			Total credits				**21**

B. Tech., CSD Semester VII (Fourth year]

SI. No.	Type of course	Code	Course Title	Hours per week			Credits
				L	**T**	**P**	
1	Professional Elective courses	PEC-CSD801A/ B/C/D	(Elective-V) Inclusive Design, Universal Design & Accessibility/ Visual Design & Communication / Cyber Security, Law and Ethics/Ethics in AI	3	1	0	3
4	Project	PROJ-CSD881	Project-II (Major)	0	0	12	6
7	Grand Viva	GV CSD 882	GV-II	0	0	0	2
			Total credits				**11**