



BRAINWARE UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
Bachelor of Technology in Computer Science & Engineering – Data Science – 2022
SEMESTER – I

Course Code	Course Name	Course Type	Hours per Week			Credits	Total Marks
			L	T	P		
HSMCD101	Communication Skills	HS	3	0	0	3	100
BSCD101	Engineering Chemistry	BS	3	0	0	3	100
BSCD102	Calculus & Linear Algebra	BS	4	0	0	4	100
ESCD101	Basic Electrical and Electronics Engineering	ES	3	0	0	3	100
BSCD191	Engineering Chemistry Lab	BS	0	0	3	1.5	100
ESCD191	Basic Electrical and Electronics Engineering Lab	ES	0	0	3	1.5	100
ESCD192	Workshop / Manufacturing Practices	ES	0	0	3	1.5	100
Total						17.5	700
AU-1	Yoga and Sports	AU	1	0	0	0	0

Total hours: 23

SEMESTER – II

Course Code	Course Name	Course Type	Hours per week			Credits	Total Marks
			L	T	P		
HSMCD201	Professional Communication Skills	HS	1	0	0	1	50
HSMCD202	Economics for Engineers	HS	3	0	0	3	100
BSCD201	Semi-Conductor Physics	BS	3	0	0	3	100
BSCD202	Probability & Statistics	BS	3	0	0	3	100
BSCD203	Biology for Engineers	BS	2	0	0	2	50
ESCD201	Programming for Problem solving	ES	3	0	0	3	100
HSMCD291	Professional Communication Skills Lab	HS	0	0	2	1	50
BSCD291	Semi-Conductor Physics Lab	BS	0	0	3	1.5	100
ESCD291	Programming for Problem solving Lab	ES	0	0	3	1.5	100
ESCD292	Engineering Graphics & Design Lab	ES	0	0	3	1.5	100
Total						20.5	850
AU-2	Environmental Science	AU	1	0	0	0	0

Total hours: 27



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SEMESTER – III

Course Code	Course Name	Course Type	Hours per Week			Credits	Total Marks
			L	T	P		
BSCD301	Differential Equation and Complex Analysis	BS	4	0	0	4	100
ESCD301	Applied Digital Logic Design	ES	3	0	0	3	100
ESCD302	Data Structure & Algorithms	ES	3	0	0	3	100
ESCD303	Introduction to Python Programming	ES	3	0	0	3	100
PCC- CSD301	Computer Organization & Architecture	PC	3	0	0	3	100
ESCD391	Applied Digital Logic Design Lab	ES	0	0	3	1.5	100
ESCD392	Data Structure & Algorithms Lab	ES	0	0	3	1.5	100
ESCD393	Introduction to Python Programming Lab	ES	0	0	3	1.5	100
PCC- CSD391	Computer Organization & Architecture Lab	PC	0	0	3	1.5	100
Total						22	900
AU-3	Constitution of India	AU	1	0	0	0	0

Total hours: 29



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SEMESTER – IV

Course Code	Course Name	Course Type	Hours per Week			Credits	Total Marks
			L	T	P		
HSMCD401	Design Thinking for Entrepreneurship and Startups	HS	3	0	0	3	100
PCC-CSD401	Operating Systems	PC	3	0	0	3	100
PCC-CSD402	Design and Analysis of Algorithms	PC	3	0	0	3	100
PCC-CSD403	Object Oriented Programming	PC	3	0	0	3	100
PCC-CSD404	Formal Language & Automata Theory	PC	3	0	0	3	100
PCC-CSD405	Discrete Mathematics	PC	4	0	0	4	100
PCC-CSD491	Operating Systems Lab	PC	0	0	3	1.5	100
PCC-CSD492	Design and Analysis of Algorithms Lab	PC	0	0	3	1.5	100
PCC-CSD493	Object Oriented Programming Lab	PC	0	0	3	1.5	100
Total						23.5	900

Total hours: 28



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SEMESTER – V

Course Code	Course Name	Course Type	Hours per Week			Credits	Total Marks
			L	T	P		
PCC-CSD501	Database Management Systems	PC	3	0	0	3	100
PCC-CSD502	Computer Networks	PC	3	0	0	3	100
PCC-CSD503	Data Analytics and Reporting	PC	3	0	0	3	100
PCC-CSD504	Compiler Design	PC	3	0	0	3	100
PEC-CSD501	Elective-I	PE					
	A. Digital Image Processing		3	0	0	3	100
	B. Artificial Intelligence						
	C. Cloud Computing						
PCC-CSD591	Database Management Systems Lab	PC	0	0	3	1.5	100
PCC-CSD592	Computer Networks Lab	PC	0	0	3	1.5	100
PCC-CSD593	Data Analytics and Reporting Lab	PC	0	0	3	1.5	100
PEC-CSD591	Elective-I	PE					
	A. Digital Image Processing Lab		0	0	3	1.5	100
	B. Artificial Intelligence Lab						
	C. Cloud Computing Lab						
Total						21	900

Total hours: 27



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SEMESTER – VI

Course Code	Course Name	Course Type	Hours per Week			Credits	Total Marks
			L	T	P		
PCC-CSD601	Machine Learning for Real World Application	PC	3	0	0	3	100
PCC-CSD602	Data Mining and Data Warehousing	PC	3	0	0	3	100
PEC-CSD601	Elective-II	PE	3	0	0	3	100
	A. Big Data and Analytics						
	B. Data Handling and Visualization						
	C. Web Technology						
PEC-CSD602	Elective-III	PE	3	0	0	3	100
	A. Intelligent Database System						
	B. Data Modeling and Simulation						
	C. Information Extraction and Retrieval						
OEC-CSD601	Open Elective-I	OE	3	0	0	3	100
	A. Software Project Management						
	B. Information Security Analysis and Audit						
	C. Operational Research						
PCC-CSD691	Machine Learning for Real World Application Lab	PC	0	0	3	1.5	100
PCC-CSD692	Data Mining and Data Warehousing Lab	PC	0	0	3	1.5	100
PEC-CSD691	Elective-II	PE	0	0	3	1.5	100
	A. Big Data and Analytics Lab						
	B. Data Handling and Visualization Lab						
	C. Web Technology Lab						
PROJ-CSD681	Technical Seminar with Modern Tool Application	PROJ	-			2	100
Total						21.5	900

Total hours: 24



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SEMESTER – VII

Course Code	Course Name	Course Type	Hours per Week			Credits	Total Marks
			L	T	P		
PCC-CSD701	Software Engineering	PC	3	0	0	3	100
PEC-CSD701	Elective-IV A. Deep Learning B. Semantic Analysis C. Optimization for Data Science	PE	3	0	0	3	100
PEC-CSD702	Elective- V A. Quantum Computing B. Introduction to Data Analytics and Visualization C. Data and Internet Security	PE	3	0	0	3	100
OEC-CSD701	Open Elective-II A. Robotics and its Applications B. Digital Signal Processing C. Information Security and Privacy	OE	3	0	0	3	100
OEC-CSD702	Open Elective-III A. Soft Skills and Interpersonal Communication B. Human Resource Development and Organizational Behavior C. Cyber Law and Ethics	OE	3	0	0	3	100
PCC-CSD791	Software Tools and Techniques Lab	PC	0	0	2	1	50
PROJ-CSD782	Industrial Training	PROJ	-			2	100
PROJ-CSD783	Project-I	PROJ	-			4	100
Total						22	750

Total hours: 17



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SEMESTER – VIII

Course Code	Course Name	Course Type	Hours per Week			Credits	Total Marks
			L	T	P		
OEC-CSD801	Open Elective-IV Design A. Electronic Automation B. VLSI Design	OE	3	0	0	3	100
PROJ-CSD881	Grand Viva	PROJ	-			4	100
PROJ-CSD882	Project-II	PROJ	-			6	100
Total						13	300

Total hours: 03

Total Credit: 161

Total Marks: 6200