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

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

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

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 A. Digital Image Processing B. Artificial Intelligence C. Cloud Computing	PE	3	0	0	3	100
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 A. Digital Image Processing Lab B. Artificial Intelligence Lab C. Cloud Computing Lab	PE	0	0	3	1.5	100
Total						**21**	**900**

Total hours:27

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 A. Big Data and Analytics B. Data Handling and Visualization C. Business Intelligence and Analytics	PE	3	0	0	3	100
PEC-CSD602	Elective-III A. Intelligent Database System B. Data Modeling and Simulation C. Information Extraction and Retrieval	PE	3	0	0	3	100
OEC-CSD601	Open Elective-I A. Software Project Management B. Information Security Analysis and Audit C. Operational Research	OE	3	0	0	3	100
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 A. Big Data and Analytics Lab B. Data Handling and Visualization Lab C. Business Intelligence and Analytics Lab	PE	0	0	3	1.5	100
PROJ-CSD681	Technical Seminar with Modern Tool Application	PROJ	-			2	100
Total						**21.5**	**900**

Total hours:24

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 A. Electronic Design 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:3

Total Credit: 161
Total Marks:6200