BRAINWARE UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
B. Tech. Computer Science & Engineering (Specialized in Artificial Intelligence and Machine Learning) - 2022

Mandatory Induction Program (Duration: 3 weeks)
- Physical activity
- Creative Arts
- Universal Human Values
- Literary
- Proficiency Modules
- Lectures by Eminent People
- Visits to local Areas
- Familiarization to Dept./Branch & Innovations

SEMESTER – I

Course Code	Course Name	Course Type	Hours per week			Credits	Total Marks
			L	T	P		
HSMCM101	Communication Skills	HS	3	0	0	3	100
BSCM101	Semi-Conductor Physics	BS	3	0	0	3	100
BSCM102	Calculus & Linear Algebra	BS	4	0	0	4	100
ESCM101	Basic Electrical and Electronics Engineering	ES	3	0	0	3	100
BSCM191	Semi-Conductor Physics Lab	BS	0	0	3	1.5	100
ESCM191	Basic Electrical and Electronics Engineering Lab	ES	0	0	3	1.5	100
ESCM192	Engineering Graphics & Design Lab	ES	0	0	3	1.5	100
Total						**17.5**	**700**
AU-1	Environmental Science	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		
HSMCM201	Professional Communication Skills	HS	1	0	0	1	50
HSMCM202	Economics for Engineers	HS	3	0	0	3	100
BSCM201	Engineering Chemistry	BS	3	0	0	3	100
BSCM202	Probability & Statistics	BS	3	0	0	3	100
BSCM203	Biology for Engineers	BS	2	0	0	2	50
ESCM201	Programming for Problem solving	ES	3	0	0	3	100
HSMCM291	Professional Communication Skills Lab	HS	0	0	2	1	50
BSCM291	Engineering Chemistry Lab	BS	0	0	3	1.5	100
ESCM291	Programming for Problem solving Lab	ES	0	0	3	1.5	100
ESCM292	Workshop / Manufacturing Practices	ES	0	0	3	1.5	100
Total						**20.5**	**850**
AU-2	Yoga and Sports	AU	0	0	1	0	0

Total hours:27

SEMESTER – III

Course Code	Course Name	Course Type	Hours per week			Credits	Total Marks
			L	T	P		
BSCM301	Differential Equation and Complex Analysis	BS	4	0	0	4	100
ESCM301	Applied Digital Logic Design	ES	3	0	0	3	100
ESCM302	Data Structure & Algorithms	ES	3	0	0	3	100
ESCM303	Introduction to Python Programming	ES	3	0	0	3	100
PCC-CSM301	Computer Organization & Architecture	PC	3	0	0	3	100
ESCM391	Applied Digital Logic Design Lab	ES	0	0	3	1.5	100
ESCM392	Data Structure & Algorithms Lab	ES	0	0	3	1.5	100
ESCM393	Introduction to Python Programming Lab	ES	0	0	3	1.5	100
PCC-CSM391	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		
HSMCM401	Design Thinking for Entrepreneurship and Startups	HS	3	0	0	3	100
PCC-CSM401	Operating Systems	PC	3	0	0	3	100
PCC-CSM402	Design and Analysis of Algorithms	PC	3	0	0	3	100
PCC-CSM403	Object Oriented Programming	PC	3	0	0	3	100
PCC-CSM404	Formal Language & Automata Theory	PC	3	0	0	3	100
PCC-CSM405	Discrete Mathematics	PC	4	0	0	4	100
PCC-CSM491	Operating Systems Lab	PC	0	0	3	1.5	100
PCC-CSM492	Design and Analysis of Algorithms Lab	PC	0	0	3	1.5	100
PCC-CSM493	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-CSM501	Database Management Systems	PC	3	0	0	3	100
PCC-CSM502	Computer Networks	PC	3	0	0	3	100
PCC-CSM503	Artificial Intelligence for Real World Application	PC	3	0	0	3	100
PCC-CSM504	Compiler Design	PC	3	0	0	3	100
PEC-CSM501	Elective-I A. Image Processing B. Bioinformatics C. Cloud Computing	PE	3	0	0	3	100
PCC-CSM591	Database Management Systems Lab	PC	0	0	3	1.5	100
PCC-CSM592	Computer Networks Lab	PC	0	0	3	1.5	100
PCC-CSM593	Artificial Intelligence for Real World Application Lab	PC	0	0	3	1.5	100
PEC-CSM591	Elective-I A. Image Processing Lab B. Bioinformatics 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-CSM601	Machine Learning for Real World Application	PC	3	0	0	3	100
PCC-CSM602	Data Mining and Data Warehousing	PC	3	0	0	3	100

PEC-CSM601	Elective-II
	   A. Soft Computing
	   B. Optimization Techniques
	   C. Pattern Recognition
		PE	3	0	0	3	100

PEC-CSM602	Elective-III
	   A. Computer Vision
	   B. Human Computer Interaction
	   C. Speech and Natural Language Processing
		PE	3	0	0	3	100

OEC-CSM601	Open Elective-I
	   A. Software Project Management
	   B. Digital Communication
	   C. Game Theory with Engineering Applications
		OE	3	0	0	3	100

PCC-CSM691	Machine Learning for Real World Application Lab	PC	0	0	3	1.5	100
PCC-CSM692	Data Mining and Data Warehousing Lab	PC	0	0	3	1.5	100

PEC-CSM691	Elective-II
	   A. Soft Computing Lab
	   B. Optimization Techniques Lab
	   C. Pattern Recognition Lab
		PE	0	0	3	1.5	100

PROJ-CSM681	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-CSM701	Software Engineering	PC	3	0	0	3	100
PEC-CSM701	Elective-IV A. Deep Learning B. Intelligent Multi Agent and Expert Systems C. Cyber Threat Intelligence	PE	3	0	0	3	100
PEC-CSM702	Elective-V A. Quantum Computing B. Introduction to Data Analytics and Visualization C. Data and Internet Security	PE	3	0	0	3	100
OEC-CSM701	Open Elective-II A. AI with Robotics B. Digital Signal Processing C. Intelligent Embedded Systems	OE	3	0	0	3	100
OEC-CSM702	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-CSM791	Software Tools and Techniques Lab	PC	0	0	2	1	50
PROJ-CSM782	Industrial Training	PROJ	-			2	100
PROJ-CSM783	Project-I	PROJ	-			4	100
Total						**22**	**750**

Total hours:17

SEMESTER – VIII

Course Code	Course Name	Course Type	Hours per week			Credits	Total Marks
			L	T	P		
OEC-CSM801	Open Elective-IV A. Electronic Design Automation B. VLSI Design	OEC	3	0	0	3	100
PROJ-CSM881	Grand Viva	PROJ		-		4	100
PROJ-CSM882	Project-II	PROJ		-		6	100
Total			**3**	**0**	**0**	**13**	**300**

Total hours:3

Total Credit: 161

Total Marks:6200

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Program Summary Report

Semester	Course Category								Total Credit	Total Hours per Week
	HS	BS	ES	PC	PE	OE	AU	PROJ		
I	3	8.5	6				Y		**17.5**	23
II	5	9.5	6				Y		**20.5**	27
III		4	13.5	4.5			Y		**22**	29
IV	3			20.5					**23.5**	28
V				16.5	4.5				**21**	27
VI				9	7.5	3		2	**21.5**	24
VII				4	6	6		6	**22**	17
VIII						3		10	**123**	3
Total	11	22	25.5	54.5	18	12		18	161	178
Percentage	6.8%	13.7%	15.8%	33.8%	11%	7.5%		11%		

B-Tech in CSE (Specialized in AI-ML)