BRAINWARE UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
B.TECH. IN ROBOTICS & AUTOMATION 2022

Mandatory Induction Program (Duration: 3 weeks)

1. Physical activity
2. Creative Arts
3. Universal Human Values
4. Literary
5. Proficiency Modules
6. Lectures by Eminent People
7. Visits to local Areas
8. Familiarization to Dept./Branch & Innovations

Different components of the Mandatory Induction Program will be implemented as per the Guidelines of Regulatory Bodies.

SEMESTER – I

Course Code	Course Name	Course Type	Hours per week			Credit(s)	Total Marks
			L	T	P		
HSMCR101	Communication Skills	HSMC	3	0	0	3	100
BSCR101	Physics I	BS	3	0	0	3	100
BSCR102	Calculus & Linear Algebra	BS	4	0	0	4	100
ESCR101	Basic Electrical and Electronics Engineering	ES	3	0	0	3	100
BSCR191	Physics I Lab	BS	0	0	3	1.5	100
ESCR191	Basic Electrical and Electronics Engineering Lab	ES	0	0	3	1.5	100
ESCR192	Engineering Graphics & Design Lab	ES	0	0	3	1.5	100
TOTAL						**17.5**	**700**
MC-1	Life Skill and Mentoring I	MC	1	0	0	0	0

Total Hours: 23

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SEMESTER – II

Course Code	Course Name	Course Type	Hours per week			Credit(s)	Total Marks
			L	T	P		
HSMCR201	Professional Communication Skills	HSMC	1	0	0	1	50
HSMCR202	Economics for Engineers	HSMC	3	0	0	3	100
BSCR201	Engineering Chemistry	BS	3	0	0	3	100
BSCR202	Differential Equation and Complex Analysis	BS	4	0	0	4	100
BSCR203	Biology for Engineers	BS	2	0	0	2	50
ESCR201	Programming for Problem Solving	ES	3	0	0	3	100
HSMCR291	Professional Communication Skills Lab	HSMC	0	0	2	1	50
BSCR291	Engineering Chemistry Lab	BS	0	0	3	1.5	100
ESCR291	Programming for Problem Solving Lab	ES	0	0	3	1.5	100
ESCR292	Workshop / Manufacturing Practices	ES	0	0	3	1.5	100
TOTAL						**21.5**	**850**
MC-2	Environmental Science	MC	1	0	0	0	0

Total Hours: 28

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SEMESTER – III

Course Code	Course Name	Course Type	Hours per week			Credit(s)	Total Marks
			L	T	P		
ESCR301	Object oriented programming using C++ and Java	ES	3	0	0	3	100
ESCR302	Control Systems	ES	3	0	0	3	100
PCC-ECR301	Electronic Devices and Circuits	PC	3	0	0	3	100
PCC-ECR302	Digital System Design	PC	3	0	0	3	100
PCC-ECR303	Signal and Systems	PC	3	0	0	3	100
ESCR391	Object oriented programming using C++ and Java Lab	ES	0	0	3	1.5	100
PCC-ECR391	Electronic Devices and Circuits Lab	PC	0	0	3	1.5	100
PCC-ECR392	Digital System Design Lab	PC	0	0	3	1.5	100
PCC-ECR393	Electronics Design using Tinkercad Lab	PC	0	0	3	1.5	100
TOTAL						**21**	**900**
MC-3	Social and Professional Ethics	MC	1	0	0	0	0

Total Hours: 28

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SEMESTER – IV

Course Code	Course Name	Course Type	Hours per week			Credit(s)	Total Marks
			L	T	P		
BSCR401	Physics II : Electromagnetism and Field Theory	BS	3	0	0	3	100
ESCR401	Python Programming	ES	3	0	0	3	100
PCC-ECR401	Artificial Intelligence in Robotics	PC	3	0	0	3	100
PCC-ECR402	Analog and Digital Communication	PC	3	0	0	3	100
PCC-ECR403	Microprocessor and Microcontroller	PC	3	0	0	3	100
PCC-ECR404	Robotic Fundamentals	PC	3	0	0	3	100
ESCR491	Python Programming Lab	ES	0	0	3	1.5	100
PCC-ECR491	Artificial Intelligence in Robotics Lab	PC	0	0	3	1.5	100
PCC-ECR492	Analog and Digital Communication Lab	PC	0	0	3	1.5	100
PCC-ECR493	Microprocessor and Microcontroller Lab	PC	0	0	3	1.5	100
TOTAL						**24**	**1000**

Total Hours: 30

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SEMESTER – V

Course Code	Course Name	Course Type	Hours per week			Credit(s)	Total Marks
			L	T	P		
BSCR501	Probability Theory and Stochastic Process	BS	3	0	0	3	100
PCC-ECR501	VLSI Circuit Design	PC	3	0	0	3	100
PCC-ECR502	Embedded System for Robotics	PC	3	0	0	3	100
PCC-ECR503	IoT and its Applications using Raspberry Pi	PC	3	0	0	3	100
PEC-ECR501	**Elective I:** A. Signal Processing and Implementation to Automation B. Renewable Energy and Applications to Robotics	PE	3	0	0	3	100
PCC-ECR591	VLSI Circuit Design Lab	PC	0	0	3	1.5	100
PCC-ECR592	Embedded System for Robotics Lab	PC	0	0	3	1.5	100
PCC-ECR593	IoT and its Applications using Raspberry Pi Lab	PC	0	0	3	1.5	100
PROJ-ECR581	Technical Seminar	PR	----------			2	100
TOTAL						**21.5**	**900**
MC-4	Constitution of India	MC	1	0	0	0	0

Total Hours: 25

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SEMESTER – VI

Course Code	Course Name	Course Type	Hours per week			Credit(s)	Total Marks
			L	T	P		
HSMCR601	Entrepreneurship	HS	3	0	0	3	100
PCC-ECR601	IoT Application Development on Cloud	PC	3	0	0	3	100
PCC-ECR602	Industrial Robotics and Automation	PC	3	0	0	3	100
PEC-ECR601	**Elective II:** A. Introduction to Industry 4.0 B. Nano Electronics C. Medical Robotics	PE	3	0	0	3	100
PEC-ECR602	**Elective III:** A. Sensor and Actuator Devices for Robotics B. Industrial Electronics for Robotics	PE	3	0	0	3	100
OEC-ECR601	**Open Elective I:** A. Machine Learning B. Cyber Threat Intelligence	OE	3	0	0	3	100
PCC-ECR691	IoT Application Development on Cloud Lab	PC	0	0	3	1.5	100
PROJ-ECR681	Industrial Training	PR	----------			2	100
TOTAL						**21.5**	**800**

Total Hours: 21

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SEMESTER – VII

Course Code	Course Name	Course Type	Hours per week			Credit(s)	Total Marks
			L	T	P		
HSMCR701	Introduction to Management and Leadership	HSMC	2	0	0	2	50
PEC-ECR701	**Elective IV:** A. Electronics Measurement and Instrumentation B. Wireless Communication and 5G Technology C. Fiber Optic and Photonics D. Radar and Navigational Aids to Robotics	PE	3	0	0	3	100
PEC-ECR702	**Elective V:** A. Information Theory and Coding B. Image Processing C. Mobile Robotics D. Automation System Design	PE	3	0	0	3	100
OEC-ECR701	**Open Elective II:** A. Quantum Computing B. Deep Learning C. BlockChain D. Industrial IOT and Automation	OE	3	0	0	3	100
OEC-ECR702	**Open Elective III** A. Mechatronics B. Computer Networks	OE	3	0	0	3	100
PROJ-ECR781	Industrial Training/Internship	PR	----------			2	100
PROJ-ECR782	Project Stage I	PR	----------			4	100
TOTAL						**20**	**650**

Total Hours: 14

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SEMESTER – VIII

Course Code	Course Name	Course Type	Hours per week			Credits	Total Marks
			L	T	P		
OEC-ECR801	**Open Elective IV:** A. Privacy and Security in IoT B. Design of Smart System C. Totally Integrated Automation	OE	3	0	0	3	100
OEC-ECR802	**Open Elective V:** A. Mobile Application Development for IOT B. Programming for IoT	OE	3	0	0	3	100
PROJ-ECR881	Grand Viva	PR	----------			2	100
PROJ-ECR882	Project Stage II	PR	----------			6	100
TOTAL						**14**	**400**

Total Hours: 06

Total Credits: 161
Total Marks: 6200

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Semester	Course Category							Total Credit	Total Marks	Total Hours per week
	HSMC	BS	ES	PC	PE	OE	PR			
I	3	8.5	6					**17.5**	**700**	23
II	5	10.5	6	0				**21.5**	**850**	28
III	0	0	7.5	13.5			0	**21**	**900**	28
IV		3	4.5	16.5			0	**24**	**1000**	30
V		3		13.5	3		2	**21.5**	**900**	25
VI	3	0	0	7.5	6	3	2	**21.5**	**800**	21
VII	2			0	6	6	6	**20**	**650**	14
VIII						6	8	**14**	**400**	6
Total	**13**	**25**	**24**	**51**	**15**	**15**	**18**	**161**	**6200**	
Percentage	**8.07%**	**15.53%**	**14.91%**	**31.68%**	**9.32%**	**9.32%**	**11.18%**			