BRAINWARE UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING-CYBER SECURITY & DATA SCIENCE
Bachelor of Technology in Computer Science & Engineering – Cyber Security – 2025
(As per UGC NEP-2020)

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 Department/Branch & Innovations

SEMESTER – I

Sl. No.	Course Code	Course Name	L	T	P	Evaluation Scheme		Total Marks	Credits	Course Type
						CIA	TEE			
1	BHS00001	English for Technical Communication	3	0	0	40	60	100	3	HSMC
2	BHS00004	Understanding Harmony and Ethical Human Conduct	2	0	0	40	60	100	2	HSMC
3	BBS00015	Semiconductor Physics	3	1	0	40	60	100	4	BSC
4	BBS00005	Calculus	3	0	0	40	60	100	3	BSC
5	BES00002	Basic Electrical and Electronics Engineering	3	1	0	40	60	100	4	ESC
6	BBS09022	Semiconductor Physics Lab	0	0	2	40	60	100	1	BSC
7	BES09008	Basic Electrical and Electronics Engineering Lab	0	0	2	40	60	100	1	ESC
8	BES09014	Engineering Graphics and Design Lab	0	0	3	40	60	100	1.5	ESC
9	BES00022	Foundations of Artificial Intelligence	1	0	0	20	30	50	1	ESC
10	BAU00004	Yoga and Sports*	2	0	0	0	0	0	0	AUC
TOTAL			**15+2***	**2**	**7**	**340**	**510**	**850**	**20.5**	

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SEMESTER – II

Sl. No.	Course Code	Course Name	L	T	P	Evaluation Scheme		Total Marks	Credits	Course Type
						CIA	TEE			
1	BHS07008	Effective Communication and Soft Skills	2	0	2	40	60	100	3	HSMC
2	BBS00010	Engineering Chemistry	3	1	0	40	60	100	4	BSC
3	BBS00002	Algebra and Vector Calculus	3	0	0	40	60	100	3	BSC
4	BES00006	Programming for Problem Solving	3	1	0	40	60	100	4	ESC
5	BES00018	Applied Digital Logic Design	3	1	0	40	60	100	4	ESC
6	BBS09020	Engineering Chemistry Lab	0	0	2	40	60	100	1	BSC
7	BES09012	Programming for Problem Solving Lab	0	0	2	40	60	100	1	ESC
8	BES09015	Workshop and Manufacturing Practices	0	0	3	40	60	100	1.5	ESC
9	BES09019	Practical Computing and AI Tools for Engineers	0	0	2	40	60	100	1	ESC
10	BAU00002	Environmental Sciences*	2	0	0	50	0	50	0	AUC
TOTAL			**14+2***	**3**	**11**	**360+50***	**540**	**900+50***	**22.5**	

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SEMESTER – III

Sl. No.	Course Code	Course Name	L	T	P	Evaluation Scheme		Total Marks	Credits	Course Type
						CIA	TEE			
1.	BBS00008	Discrete Mathematics	3	0	0	40	60	100	3	BSC
2.	BTY30101	Computer Organization and Architecture	3	0	0	40	60	100	3	PCC
3.	BTY30102	Database Management System	3	1	0	40	60	100	4	PCC
4.	BES00023	Applied Data Structure and Algorithm	3	1	0	40	60	100	4	ESC
5	BTY39104	Computer Organization and Architecture Lab	0	0	2	40	60	100	1	PCC
6.	BTY39105	Database Management System Lab	0	0	3	40	60	100	1.5	PCC
7.	BES09024	Applied Data Structure and Algorithm Lab	0	0	3	40	60	100	1.5	ESC
8.	BES09021	Python for Engineering Essentials Lab	0	0	2	40	60	100	1	ESC
9.	BTY38101	Mini Project-I	0	0	0	40	60	100	2	PROJ
10.	BAU00001	Constitution of India*	2	0	0	50	0	50	0	AUC
TOTAL			**12+2***	**2**	**10**	**360+50***	**540**	**900+50***	**21**	
#MOOCs to earn additional credits for optional Honors/Minor Degree										

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SEMESTER – IV

Sl. No.	Course Code	Course Name	L	T	P	Evaluation Scheme		Total Marks	Credits	Course Type
						CIA	TEE			
1	BHS00009	General Proficiency and Workplace Communication	2	0	0	40	60	100	2	HSMC
2	BBS00014	Probability and Statistics	3	0	0	40	60	100	3	BSC
3	BTY40105	Operating System	3	0	0	40	60	100	3	PCC
4	BTY40106	Design and Analysis of Algorithm	3	0	0	40	60	100	3	PCC
5	BTY40107	Object Oriented Programming	3	0	0	40	60	100	3	PCC
6	BTY40108	Web Technology	3	0	0	40	60	100	3	PCC
7	BTY49109	Operating System Lab	0	0	2	40	60	100	1	PCC
8	BTY49110	Web Technology Lab	0	0	3	40	60	100	1.5	PCC
9	BTY49111	Object Oriented Programming Lab	0	0	2	40	60	100	1	PCC
10	BTY48102	Mini Project-II	0	0	0	40	60	100	2	PROJ
TOTAL			**17**	**0**	**7**	**400**	**600**	**1000**	**22.5**	
#MOOCs to earn additional credits for optional Honors/Minor Degree										

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SEMESTER – V

Sl. No.	Course Code	Course Name	L	T	P	Evaluation Scheme		Total Marks	Credits	Course Type
						CIA	TEE			
1	BHS00010	Design Thinking	1	0	0	20	30	50	1	HSMC
2	BTY50112	Network Fundamentals and Practical Applications	3	1	0	40	60	100	4	PCC
3	BTY50113	Vulnerability Analysis and Penetration Testing	3	0	0	40	60	100	3	PCC
4	BTY50114	Linux System Administration	3	0	0	40	60	100	3	PCC
5	BTY50201	Professional Elective Course – I	3	0	0	40	60	100	3	PEC
6	BTY59116	Network Fundamentals and Practical Applications Lab	0	0	3	40	60	100	1.5	PCC
7	BTY59117	Vulnerability Analysis and Penetration Testing Lab	0	0	3	40	60	100	1.5	PCC
8	BTY59118	Linux System Administration Lab	0	0	4	40	60	100	2	PCC
9	BTY58103	Mini Project-III	0	0	0	40	60	100	2	PROJ
TOTAL			**13**	**1**	**10**	**340**	**510**	**850**	**21.0**	
#MOOCs to earn additional credits for optional Honors/Minor Degree										

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SEMESTER – VI

Sl. No.	Course Code	Course Name	L	T	P	Evaluation Scheme		Total Marks	Credits	Course Type
						CIA	TEE			
1	BTY60119	Web Application Penetration Testing	3	0	0	40	60	100	3	PCC
2	BTY60120	Security Operations Centre Management	3	0	0	40	60	100	3	PCC
3	BTY60121	Artificial Intelligence and Machine Learning	3	0	0	40	60	100	3	PCC
4	BTY69122	Scripting Languages Lab	0	0	2	40	60	100	1	PCC
5	BTY67202	Professional Elective Course – II	2	0	2	40	60	100	3	PEC
6	BTY60301	Open Elective Course – I	3	0	0	40	60	100	3	OEC
7	BTY69123	Web Application Penetration Testing Lab	0	0	3	40	60	100	1.5	PCC
8	BTY69124	Security Operations Centre Management Lab	0	0	3	40	60	100	1.5	PCC
9	BTY68104	Mini project-IV	0	0	0	40	60	100	2	PROJ
		TOTAL	**14**	**0**	**10**	**360**	**540**	**900**	**21.0**	
#MOOCs to earn additional credits for optional Honors/Minor Degree										

SEMESTER – VII

Sl. No.	Course Code	Course Name	L	T	P	Evaluation Scheme		Total Marks	Credits	Course Type
						CIA	TEE			
1	BTY70125	Network Penetration Testing	3	1	0	40	60	100	4	PCC
2	BTY70126	Active Directory Penetration Testing	3	1	0	40	60	100	4	PCC
3	BTY77203	Professional Elective Course - III	2	0	2	40	60	100	3	PEC
4	BTY70302	Open Elective Course – II	3	0	0	40	60	100	3	OEC
5	BTY70303	Open Elective Course – III	3	0	0	40	60	100	3	OEC
6	BTY79127	Network Penetration Testing Lab	0	0	2	40	60	100	1	PCC
7	BTY78105	Internship	0	0	0	40	60	100	2	PROJ
8	BTY78106	Minor Project	0	0	0	40	60	100	4	PROJ
TOTAL			**14**	**2**	**4**	**320**	**480**	**800**	**24. 0**	
#MOOCs to earn additional credits for optional Honors/Minor Degree										

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SEMESTER – VIII

Sl. No.	Course Code	Course Name	L	T	P	Evaluation Scheme		Total Marks	Credits	Course Type
						CIA	TEE			
1	BTY88107	Capstone Project	0	0	0	40	60	100	16	PROJ
2	BTY88108	Grand Viva – Voce	0	0	0	0	100	100	4	PROJ
TOTAL			**0**	**0**	**0**	**40**	**160**	**200**	**20**	
#MOOCs to earn additional credits for optional Honors/Minor Degree										

Total Credit: 172.5
Total Marks: 6400

PROFESSIONAL ELECTIVE COURSES [PEC]							
Sl. No	**Course Code**	**Course Name**	**Hours per week**			**Credits**	**Credit Hours**
			L	**T**	**P**		
Cryptography							
1	BTY50201	A. Steganography and Digital Watermarking	3	0	0	3	3
2		B. Blockchain Technology	3	0	0	3	3
3		C. Cryptography and Network Security	3	0	0	3	3
4		D. MOOC*	3	0	0	3	3
Computer Forensics							
1	BTY67202	A. Reverse Engineering	2	0	2	3	4
2		B. Digital Forensic	2	0	2	3	4
3		C. Malware Analysis	2	0	2	3	4
Threat Intelligence							
1	BTY77203	A. Network Security Essentials	2	0	2	3	4
2		B. Cloud Security	2	0	2	3	4
3		C. Security Incident Handling	2	0	2	3	4
OPEN ELECTIVE COURSES [OEC]							
Sl. No	**Course Code**	**Course Name**	**Hours per week**			**Credits**	**Credit Hours**
			L	**T**	**P**		
Software Engineering Management							
1	BTY60301	A. Software Project Management	3	0	0	3	3
2		B. Organisational Behaviour	3	0	0	3	3
3		C. MOOC*	3	0	0	3	3
Technology Entrepreneurship and Legal Compliance							
1	BTY70302	A. Entrepreneurship Basics	3	0	0	3	3
2		B. Cyber Law and Ethics	3	0	0	3	3
3		C. MOOC*	3	0	0	3	3
Engineering Economics and Financial Analysis							

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1	BTY70303	A. Financial Management	3	0	0	3	3
2		B. Engineering Economics	3	0	0	3	3
3		C. MOOC*	3	0	0	3	3

**MOOC/Equivalent MOOC as approved by BoS (Evaluation as per Blended Learning and MOOC Policy)*

#Additional 18-20 credits from MOOCs of SWAYAM platform are to be earned for the optional Honors/minor degree. Students are required to register for this after completion of their 1st year. Evaluation of MOOCs will be as per the guideline of the Blended Learning and MOOCs Policy.