NETAJI SUBHAS UNIVERSITY

JAMSHEDPUR, JHARKHAND

Established under the **Jharkhand State Private University Act, 2018**

Approved by AICTE, PCI, BCI, NCTE, INC & JNRC

COURSE STRUCTURE & DETAILED SYLLABUS

OF

B. Tech. COMPUTER SCIENCE AND ENGINEERING (CYBER SECURITY)

FOR

B.TECH. FOUR YEAR DEGREE COURSE

(Applicable for the batches admitted from 2025-2026)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEEERING

NETAJI SUBHAS UNIVERSITY, JAMSHEDPUR

Pokhari, Near Bhilai Pahadi, Jamshedpur, Jharkhand

PREAMBLE

The field of Computer Science and Engineering (CSE), with a focus on Cybersecurity, combines scientific analysis, problem-solving, and the application of advanced tools to model, design, secure, and maintain systems and technologies that protect sensitive data and digital infrastructures. The core of the curriculum is built on ensuring students acquire the necessary skills to handle modern challenges in cybersecurity while embracing innovation and critical thinking.

The curriculum revision committee consisted of experts from prestigious academic institutions, leading government R&D labs, and prominent players in the cybersecurity industry. The committee conducted multiple sessions during 2021-2022 to revise and refine the curriculum. Their approach was based on an extensive review of existing cybersecurity courses across renowned global universities, as well as engaging discussions with domain professionals from various sectors.

The revised curriculum addresses the growing need for cybersecurity professionals and aligns with industry demands and societal needs. It integrates courses in computer science, data science, information technology, cryptography, and network security, along with practical applications in labs, real-world projects, and case studies. Additionally, it includes courses in humanities, ethics, and law, reflecting the broader implications of cybersecurity on privacy, data protection, and societal welfare.

As the influence of electronics, information technology, and communication systems continues to increase, there is a stronger emphasis on courses related to digital forensics, secure software development, cloud security, IoT security, and ethical hacking. These areas are essential in understanding and mitigating evolving cyber threats.

A key feature of the revised model curriculum is the increased flexibility provided to students. The program offers a broad selection of electives, allowing students to tailor their learning according to their career aspirations. Whether students are interested in pursuing advanced research, entrepreneurship, industry roles, or innovative cybersecurity practices, they have the option to specialize in areas such as AI-driven security, blockchain for cybersecurity, or critical infrastructure protection.

In alignment with the New Education Policy (NEP), the curriculum emphasizes experiential, hands-on learning through relevant lab exercises, industry-driven projects, and real-time simulations of cyber-attack scenarios. The interdisciplinary approach ensures that students not only excel in technical expertise but also develop critical thinking, problem-solving, and ethical decision-making skills needed for the dynamic and ever-changing field of cybersecurity.

This comprehensive and flexible approach prepares graduates to meet the challenges of securing digital ecosystems while contributing to the protection of data, networks, and systems critical to national and global security.

VISION

To strive for excellence in education, research, and entrepreneurship, with the ultimate goal of becoming a global hub for innovation. Committed to advancing scientific and technological services, we aim to contribute meaningfully to society.

MISSION

- To provide high-quality education that nurtures innovation, entrepreneurship, and ethical values, shaping future professionals equipped for a globally competitive landscape.
- To collaborate with stakeholders by sharing institutional expertise in education and knowledge, fostering mutual growth in technical learning.
- To cultivate an environment that encourages fresh ideas, groundbreaking research, and academic excellence, paving the way for future leaders, innovators, and entrepreneurs.
- To drive socio-economic progress by offering impactful scientific and technological solutions to society.

NETAJI SUBHAS UNIVERSITY ★ JAMSHEDPUR

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO-1	Develop and implement effective, secure, and ethically responsible cybersecurity solutions that protect digital systems, networks, and data while ensuring compliance with regulations and societal standards.
PEO-2	Apply advanced analytical, cryptographic, and ethical hacking techniques to address cybersecurity challenges and mitigate risks effectively.
PEO-3	Communicate effectively using conventional platforms as well as innovative / online tools and demonstrate collaboration, networking & entrepreneurial skills.
PEO-4	Exhibit professionalism, ethical attitude, team spirit and pursue lifelong learning to achieve career, organizational and societal goals.

PROGRAM OUTCOMES (POs)

PO-1	**Engineering knowledge**: Leverage mathematics, computer science, and engineering principles to design secure systems and solve complex cybersecurity problems using algorithms, cryptography, and network protocols.
PO-2	**Problem analysis**: Analyze and solve complex cybersecurity problems by applying foundational principles from mathematics, computer science, and engineering, informed by literature and industry needs.
PO-3	**Design/Development of solutions**: Design and develop solutions for cybersecurity challenges, including secure software, network defense mechanisms, and data protection techniques, ensuring that these solutions meet specified technical, societal, economic, and environmental needs.
PO-4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO-5	**Modern tool usage**: Select, create, and apply modern cybersecurity tools, technologies, and techniques such as intrusion detection systems, firewalls, cryptographic algorithms, and penetration testing frameworks to address complex cybersecurity problems..
PO-6	**The engineer and society**: Apply reasoning informed by knowledge of societal, health, safety, legal, and cultural issues to assess the responsibilities of cybersecurity professionals.
PO-7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO-8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO-9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO-10	**Communication**: Communicate effectively with the engineering communication Module and with society at large, including the ability to comprehend, create effective reports, make effective presentations, and give and receive clear instructions.

PO-11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO-12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO-1	**Apply advanced cybersecurity knowledge** to analyze, design, and implement secure systems that address evolving threats and societal needs.
PSO-2	**Utilize cutting-edge tools and techniques** to assess vulnerabilities, develop secure architectures, and deploy resilient solutions for networks, applications, and critical infrastructure.

TABLE OF CONTENTS

B. TECH IN IN COMPUTER SCIENCE AND ENGINEERING (CYBER SECURITY)

COURSE STRUCTURE

GENERAL COURSE STRUCTURE & THEME

A. Definition of Credit:

1 Hr. Lecture (L) per week	1 Credit
1 Hr. Tutorial (T) per week	1 Credit
1 Hr. Practical (P) per week	0.5 Credit
2 Hours Practical (P) per week	1 Credit

B. Range of Credits: In the light of the fact that a typical Model Four-year Under Graduate degree program in Engineering has about 160 credits, the total number of credits proposed for the four-year B. Tech/B.E. in Computer Science and Engineering (Cyber Security)is kept as 168.

C. Structure of UG Program in CSE –Cyber Security: The structure of UG program in CSE –Cyber Security shall have essentially the following categories of courses with the breakup of credits as given:

Sl.	Category	Suggested Breakup of Credits (Total)
1	Humanities and Social Sciences including Management courses	7
2	Basic Science courses	21
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	18
4	Professional core courses	75
5	Professional Elective courses relevant to chosen specialization/branch	9
6	Open subjects – Electives from other technical and /or emerging subjects	9
7	Employment Enhancement Courses (Project work, seminar and internship in industry or elsewhere.)	14
8	Mandatory Courses [Environmental Sciences, Induction Program, Indian Constitution, Essence of Indian Knowledge Tradition]	3
9	Laboratory Courses	12
Total		168

**Minor variation is allowed as per need of the respective disciplines.*

NETAJI SUBHAS UNIVERSITY JAMSHEDPUR

D. Course code and definition:

Course code	Definitions
L	Lecture
T	Tutorial
P	Practical
C	Credits
BSC	Basic Science Courses
ESC	Engineering Science Courses
HSMC	Humanities and Social Sciences including Management courses
PCC	Professional core courses
PEC	Professional Elective courses
OEC	Open Elective courses
LC	Laboratory course
MC	Mandatory courses
EEC	Employment Enhancement Courses (Project/Summer Internship/Seminar)

Category-wise Courses

HUMANITIES & SOCIAL SCIENCES COURSES [HS] & MANAGEMENT COURSES

(2 compulsory + 2 others)

Number of Humanities & Social Science Courses: 4

Sl.	Code No.	Subject	Semester	Credits
1	HSMC 01	Professional Development	3	1
2	HSMC02	English for Technical Writing and	2	2
3	HSMC 03	English for Technical Writing practical	2	1
3	HSMC 04	Universal Human Values	2	3
			Total Credits:	**7**

BASIC SCIENCE COURSE [BSC] (Total 8)

Sl.	Code No.	Subject	Semester	Credits
1	BSC101	Engineering Mathematics – I	1	4
2	BSC102	Engineering Physics – I	1	4
3	BSC103	Engineering Mathematics – II	2	4
4	BSC104	Engineering Chemistry	2	3
5	BSC105	Engineering Physics Lab	1	1
6	BSC106	Engineering Chemistry Lab	2	1
7	BSC107	Discrete Maths	3	4
			Total Credits:	**21**

ENGINEERING SCIENCE COURSE [ESC] (Total 8)

Sl.	Code No.	Subject	Semester	Credits
1	ESC 101	Basics of Electrical Engineering	1	3
2	ESC 102	Engineering Drawing	1	1
3	ESC 103	Programming for Problem Solving Lab	2	2
4	ESC 104	Programming for Problem Solving Lab	2	2
5	ESC 105	Basics of Electrical Engineering Lab	1	1
6	ESC 106	Engineering Drawing & Comp. Graphics Lab	1	2
7	ESC 107	Design Thinking & IDEA Lab	2	1
8	ESC 108	Manufacturing Workshop Practices	2	2
9	ESC 109	Digital Principles and Computer Organization	3	4
			Total Credits:	**18**

NETAJI SUBHAS UNIVERSITY JAMSHEDPUR

PROFESSIONAL CORE COURSES [PCC] (Total 21)

Sl.	Code No.	Subject	Semester	Credits
1	PCC CSE 101	**Foundation of Data Science**	3	3
2	PCC CSE 102	Data Structure and Algorithm using C++	3	4
3	PCC CSE 103	Object Oriented Programming using c++	3	4
4	PCC CSE 104	Cyber Defence	3	4
5	PCC CSE 105	**Theory of computation**	4	4
6	PCC CSE 106	Artificial Intelligence and Machine Learning	4	4
7	PCC CSE 107	Database Management Systems and Security	4	3
8	PCC CSE 108	Operating Systems and Security	4	4
9	PCC CSE 109	Cryptography and Cyber Security	4	4
10	PCC CSE 110	Distributed Computing	5	3
11	PCC CSE 111	Engineering Secure Software Systems	5	3
12	PCC CSE 112	Embedded Systems and IoT	5	4
13	PCC CSE 113	Computer Networks	5	4
14	PCC CSE 114	Ethical Hacking	5	3
15	PCC CSE 115	Malware Analysis	5	4
16	PCC CSE 116	Cyber Forensics	6	4
17	PCC CSE 117	Network Security	6	4
18	PCC CSE 118	Social Network Security	6	3
19	PCC CSE 119	Digital and Mobile Forensics	6	3
20	PCC CSE 120	Web Application Security	6	3
21	PCC CSE 121	**Cloud Computing**	6	3
			Total Credits:	**75**

PROFESSIONAL ELECTIVE [PEC]

(Total 3 to be taken, at least one from each group)

Sl.	Code No.	Subject	Semester	Credits
1	PEC CSE 401	AI/ML for Cyber security	7/8	3
2	PEC CSE 402	5G Security & Mobile Network Threats	7/8	3
3	PEC CSE 403	Cyber Risk Management & Compliance	7/8	3
4	PEC CSE 404	Red Team Operations & Purple Teaming	7/8	3
5	PEC CSE 405	Security and Privacy in Cloud	7/8	3
6	PEC CSE 406	Threat Intelligence & Cyber Warfare	7/8	3
7	PEC CSE 407	IoT & Critical Infrastructure Security	7/8	3
8	PEC CSE 408	Biometric Security & Privacy	7/8	3
			Total Credits:	**9**

Open Elective Courses (Total 3 to be taken)

Sl.	*Code No.*	*Subject*	*Semester*	*Credits*
1	OEC CSE 301	Wireless & RFID Hacking	7/8	3
2	OEC CSE 302	Medical Device Security	7/8	3
3	OEC CSE 303	Cyber security Audit & Assurance	7/8	3
4	OEC CSE 304	National Cyber security Policy & Strategy	7/8	3
5	OEC CSE 305	AI-Generated Content Verification	7/8	3
6	OEC CSE 306	Sustainable Cyber security Practices	7/8	3
7	OEC CSE 307	Social Engineering & Human Hacking	7/8	3
8	OEC CSE 308	Wireless & RFID Hacking	7/8	3
			Total Credits:	**9**

ENGINEERING PROJECT (3 Stages)

Sl.	*Code No.*	*Subject*	*Semester*	*Credits*
1	PROJ CSE 311	Internship/summer industrial training	5	2
2	PROJ CSE 312	Internship/summer industrial training	7	2
2	PROJ CSE 313	Engineering Project-1 (Design & Analysis)	7	2
3	PROJ CSE 314	Engineering Project-2 (Prototype & Testing)	8	8
			Total Credits:	**14**

Mandatory Courses

Sl.	*Code No.*	*Subject*	*Semester*	*Credits*
1	AU CSE 201	Indian Knowledge System	1	3
			Total Credits	**3**

Audit Courses

Sl.	*Code No.*	*Subject*	*Semester*	*Credits*
1	AU CSE 202	Sports/NSS/NCC/YOGA/Painting/Music/Classical Dance	1	0
2	AU CSE 203	ENVIRONEMNTAL SCIENCE ANS SUSTAINABLITY	4	0
			Total Credits	**0**

TOTAL =168credits | BSC =12.5%, ESC =10.71%, PCC =44.42 %, PEL+HSM+OEL = 14.88%, PROJ =8.33% || LABS =7.14%

NETAJI SUBHAS UNIVERSITY JAMSHEDPUR

Employment Enhancement Courses

Sl.	Category	Subject	Semester	Credits
1	EEC	Internship /Summer Industrial Training/ Seminar (4-6 Week)	5	**2**
2	EEC	Internship/summer industrial training	7	2
2	EEC	Eng. Project – 1 (Design & Analysis)	7	**2**
3	EEC	Engineering Project-2 (Prototype & Testing)	8	**8**
		TOTAL		**14**

NEW AND ELECTRONICS/IT-ORIENTED CORE COURSES

Sl.	Code No.	Subject	Semester	Credits
1	EL-IT-01	Discrete Mathematics	3	4
2	EL-IT-02	Digital Principles and Computer Organization	3	4
3	EL-IT-03	Foundations of Data Science	3	3
4	EL-IT-04	Data Structures and Algorithms	4	4
5	EL-IT-05	Object Oriented Programming	4	4
6	EL-IT-06	Theory of Computation	5	4
7	EL-IT-07	Artificial Intelligence and Machine Learning	5	4
8	EL-IT-08	Database Management Systems and Security	5	3
9	EL-IT-09	Operating Systems and Security	6	4
10	EL-IT-10	Cryptography and Cyber Security	6	4
11	EL-IT-11	Distributed Computing	6	3
12	EL-IT-12	Engineering Secure Software Systems	6	3
13	EL-IT-13	Embedded Systems and IoT	7	4
14	EL-IT-14	Computer Networks	7	4
15	EL-IT-15	Cyber Forensics	8	4
16	EL-IT-16	Web Application Security	8	3

Semester wise Structure

SEMESTER-I

Sl.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTBS101	BSC	Engineering Mathematics- I	3	1	0	4	40	60	100
2	BTBS102	BSC	Engineering Physics-1	3	1	-	4	40	60	100
3	BTES103	ESC	Basics of Electrical Engineering	3	0	-	3	40	60	100
4	BTES104	ESC	Engineering Drawing	1	0	-	1	40	60	100
5	BTM105	MC	Indian Knowledge System	3	0	-	3	40	60	100
			Practical							
6	BTBSC 102P	BSC	Engineering Physics Lab	-	-	2	1	30	20	50
7	BTESC 103P	ESC	Basics of Electrical Engineering Lab	-	-	2	1	30	20	50
8	BTESC 104P	ESC	Engineering Drawing & Computer Graphics Lab	-	-	4	2	30	20	50
9	BTESC 107P	ESC	Design Thinking & IDEA Lab	-	-	2	1	30	20	50
10	BTAU 106	AU	Sports/NSS/NCC/YOGA/Painting/Music/Classical dance		-	2	0	-	-	-
Total				**13**	**2**	**12**	**20**	**320**	**380**	**700**

NETAJI SUBHAS UNIVERSITY JAMSHEDPUR

SEMESTER-II

Sl.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTBSC201	BSC	Engineering Mathematics -II	3	1	-	4	40	60	100
2	BTBSC202	BSC	Engineering Chemistry	3	0	-	3	40	60	100
3	BTHSMC203	HSMC	English for technical writing	2	0	0	2	40	60	100
4	BTESC204	ESC	Programming for Problem Solving	2	0	-	2	40	60	100
5	BTHSMC 205	HSMC	Universal Human Values	2	1	0	3	40	60	100
			Practical							
6	BTBSC202P	BSC	Engineering Chemistry Lab	-	-	2	1	30	20	50
7	BTHSMC203 P	HSMC	English for technical writing	0	0	2	1	30	20	50
8	BTESC204P	ESC	Programming for Problem Solving Lab	-	-	4	2	30	20	50
9	BTESC 206P	ESC	Manufacturing Practices Workshop			4	2	30	20	50
Total				**12**	**2**	**12**	**20**	**320**	**380**	**700**

SEMESTER-III

Sl.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSCY301	BSC	Discrete Mathematics	3	1	0	4	40	60	100
2	BTCSCY302	ESC	Digital Principles and Computer Organization	3	1	0	4	40	60	100
3	BTCSCY303	PCC	Foundations of Data Science	3	0	0	3	40	60	100
4	BTCSCY304	PCC	Data Structures and Algorithms using C++	3	1	0	4	40	60	100
5	BTCSCY305	PCC	Object Oriented Programming using C++	3	1	0	4	40	60	100
6	BTCSCY306	PCC	Cyber Defence	3	1	0	4	40	60	100
Practical										
7	BTCSCY304P	LC	Data Structures and Algorithms Laboratory	-	-	2	1	30	20	50
8	BTCSCY305P	LC	Object Oriented Programming Laboratory	-	-	2	1	30	20	50
9	BTCSCY303P	LC	Data Science Laboratory	0	0	4	1	30	20	50
10	BTCSCY307P	HSMC	Professional Development	0	0	2	1	30	20	50
Total				**17**	**5**	**4**	**27**	**360**	**440**	**800**

NETAJI SUBHAS UNIVERSITY JAMSHEDPUR

SEMESTER-IV

Sl.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSCY401	PCC	Theory of Computation	3	1	0	4	40	60	100
2	BTCSCY402	PCC	Artificial Intelligence and Machine Learning	3	1	0	4	40	60	100
3	BTCSCY403	PCC	Database Management Systems and Security	3	0	0	3	40	60	100
4	BTCSCY404	PCC	Operating Systems and Security	3	1	0	4	40	60	100
5	BTCSCY405	PCC	Cryptography and Cyber Security	3	1	0	4	40	60	100
6	BTAU406	AU	Environmental Sciences and Sustainability	3	0	0	0	0	0	0
Practical										
7	BTCSCY 405p	LC	Cryptography and Cyber Security Laboratory	-	0	2	1	30	20	50
8	BTCSCY 403p	LC	Database Management Systems and Security Laboratory	0	0	2	1	30	20	50
9	BTCSCY 404p	LC	Operating System Lab	0	0	2	1	30	20	50
Total				**18**	**5**	**6**	**22**	**290**	**360**	**650**

NETAJI SUBHAS UNIVERSITY ★ JAMSHEDPUR

SEMESTER-V

Sl.	Code No	Category	Name of the subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSCY501	PCC	Distributed Computing	3	0	0	3	40	60	100
2	BTCSCY502	PCC	Engineering Secure Software Systems	3	0	0	3	40	60	100
3	BTCSCY503	PCC	Embedded Systems and IoT	3	0	1	4	40	60	100
4	BTCSCY504	PCC	Computer Networks	3	0	1	4	40	60	100
5	BTCSCY505	PCC	Ethical Hacking	3	0	0	3	40	60	100
6	BTCSCY506	PCC	Malware Analysis	3	1	0	4	40	60	100
			Practical							
7	BTCSCY504P	LC	Computer Networks Lab	0	0	2	1	30	20	50
8	BTCSCY505P	LC	Ethical Hacking Lab	0	0	2	1	30	20	50
9	BTCSCY506P	LC	Malware Analysis Lab	0	0	2	1	30	20	50
10	BTCSCY507	EEC	Internship /Summer Industrial Training/ Seminar (4-6 Week)	0	0	4	2	40	60	100
TOTAL				**15**	**2**	**6**	**26**	**370**	**480**	**850**

NETAJI SUBHAS UNIVERSITY JAMSHEDPUR

SEMESTER-VI

Sl.	Code No	Category	Name of the subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSCY601	PCC	Cyber Forensics	3	0	1	4	40	60	100
2	BTCSCY602	PCC	Network Security	3	1	0	4	40	60	100
3	BTCSCY603	PCC	Social Network Security	3	0	0	3	40	60	100
4	BTCSCY604	PCC	Digital and Mobile Forensics	3	0	0	3	40	60	100
5	BTCSCY605	PCC	Web Application Security	3	0	0	3	40	60	100
6	BTCSCY606	PCC	Cloud Computing	3	0	0	3	40	60	100
			Practical							
7	BTCSCY604P	LC	Digital and Mobile Forensics Lab	0	0	2	1	30	20	50
8	BTCSCY602P	LC	Network Security Lab	0	0	2	1	30	20	50
9	BTCSCY601P	LC	Cyber Forensics Lab	0	1	2	1	30	20	50
TOTAL				**15**	**3**	**12**	**23**	**330**	**420**	**750**

NETAJI SUBHAS UNIVERSITY JAMSHEDPUR

SEMESTER-VII

Sl.	Code No	Category	Name of the subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSCY701	PEC	Professional Elective – 1	3	0	0	3	40	60	100
2	BTCSCY702	PEC	Professional Elective – 2	3	0	0	3	40	60	100
3	BTCSCY703	OEC	Open Elective – 1	3	0	0	3	40	60	100
4	BTCSCY704	OEC	Open Elective - 2	3	0	0	3	40	60	100
			Practical							
5	BTCSCY705	EEC	Internship /Summer Industrial Training/ Seminar (4-6 Week)	0	0	4	2	40	60	100
6	BTCSCY706	EEC	Eng. Project – 1 (Design & Analysis)	0	0	4	2	30	20	50
TOTAL				**12**	**0**	**8**	**16**	**230**	**320**	**550**

PROFESSIONAL ELECTIVE COURSES SEM (7/8)

Sl.	TECHNOLOGY GROUP	INDUSTRY SECTOR GROUP	CEDITS
1	AI/ML for Cyber security	**Artificial Intelligence &** Cyber security	3
2	5G Security & Mobile Network Threats	Telecom & Network Security	3
3	Cyber Risk Management & Compliance	Governance, Risk, and Compliance (GRC)	3
4	Red Team Operations & Purple Teaming	Offensive & Defensive Security	3
5	Security and Privacy in Cloud	Cloud Security	3
6	Threat Intelligence & Cyber Warfare	**National Security & Threat** Intelligence	3
7	IoT & Critical Infrastructure Security	**Industrial IoT & Critical Infrastructure**	3
8	Biometric Security & Privacy	**Identity & Access Management (IAM)**	3

NETAJI SUBHAS UNIVERSITY JAMSHEDPUR

OPEN ELECTIVE COURSES

Sl.	Name of the Subject	Semester	Credits
1	Wireless & RFID Hacking	7/8	3
2	Medical Device Security	7/8	3
3	Cyber security Audit & Assurance	7/8	3
4	National Cyber security Policy & Strategy	7/8	3
6	AI-Generated Content Verification	7/8	3
7	Sustainable Cyber security Practices	7/8	3
8	Social Engineering & Human Hacking	7/8	3

SEMESTER -VIII

Sl.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSCY801	PEC	Professional Elective-3	3	0	0	3	40	60	100
2	BTCSCY803	OEC	Open Elective-3	3	0	0	3	40	60	100
Practical										
3	BTCSCY804	EEC	Engineering Project-2 (Prototype & Testing)	-	-	16	8	80	120	200
Total				**6**	**0**	**16**	**14**	**160**	**240**	**400**

PROFESSIONAL ELECTIVE COURSES (SEM 7/8)

Sl.	TECHNOLOGY GROUP	INDUSTRY SECTOR GROUP	CEDITS
1	AI/ML for Cyber security	**Artificial Intelligence &** Cyber security	3
2	5G Security & Mobile Network Threats	Telecom & Network Security	3
3	Cyber Risk Management & Compliance	Governance, Risk, and Compliance (GRC)	3
4	Red Team Operations & Purple Teaming	Offensive & Defensive Security	3
5	Security and Privacy in Cloud	Cloud Security	3
6	Threat Intelligence & Cyber Warfare	**National Security & Threat** Intelligence	3
7	IoT & Critical Infrastructure Security	**Industrial IoT & Critical** Infrastructure	3
8	Biometric Security & Privacy	**Identity & Access** Management (IAM)	3

OPEN ELECTIVE COURSES

Sl.	Name of the Subject	Semester	Credits
1	Wireless & RFID Hacking	7/8	3
2	Medical Device Security	7/8	3
3	Cybersecurity Audit & Assurance	7/8	3
4	National Cybersecurity Policy & Strategy	7/8	3
6	AI-Generated Content Verification	7/8	3
7	Sustainable Cyber security Practices	7/8	3
8	Social Engineering & Human Hacking	7/8	3

NETAJI SUBHAS UNIVERSITY ★ JAMSHEDPUR