AC – 04/12/2024
Item No. – 8.31 (N) (2)

As Per NEP 2020

University of Mumbai

Syllabus for Basket of VEC ELECTIVE	
Board of Studies in Value Education	
UG First Year Programme	
Semester	**I & II**
Title of Paper	**Cyber Security**
Credits	**2**
From the Academic Year	**2024-25**

Sr. No.	Heading	Particulars
1	**Description the course :**	**Cyber Security** Cyber Security is a rapidly growing field of study due to the increasing cases of Cyber Crime involving unauthorized access, data breaches, and Cyber Attacks on networks and systems. Understanding its basic concepts, classifications, and legal frameworks is essential in today's digital world. This course covers various categories of Cyber Crime and attack methodologies, emphasizing the security challenges associated with mobile and wireless devices. By analyzing real-world cases and exploring the implications of different Cyber Attacks, students shall gain practical insights into Cyber Security essential for all. Emerging trends and career opportunities in this field are also discussed. This knowledge is crucial for students across disciplines, given its relevance and connection to other courses in Information Technology and law.
2	**Vertical :**	VEC Elective
3	**Type :**	Theory
4	**Credit**:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	**Hours Allotted :**	30 Hours
6	**Marks Allotted**:	50 Marks
7	**Course Objectives**: 1. To introduce the fundamentals of Cyber Crime, including its definition, types, and legal perspectives. 2. To explore planning and execution of Cyber offenses by Cyber criminals. 3. To examine the security challenges associated with wireless devices in context of Cyber Crime. 4. To study the common methods and techniques used in Cyber Crime. 5. To analyze real-life examples and scenarios of Cyber Crime to understand their execution and impact. 6. To understand emerging trends in Cyber Security and explore various career paths and certifications.	

8	**Course Outcomes**: 1. Explain the basic concepts of Cyber Crime, including classifications and legal frameworks. 2. Explain various Cyber Crime categories and attack methodologies. 3. Explain security challenges associated with mobile and wireless devices and the measures organizations can implement to mitigate these risks. 4. Analyze various Cyber Attack methods and their implications. 5. Analyze various Cyber Crimes and their effects through real-world case studies. 6. Explain emerging trends in Cyber Security and identify as well as pursue diverse career opportunities and certifications in the field.
9	**Modules**:
	Module 1: Introduction to Cyber Crime **Hours: 03**
	Introduction to Cyber Space, Need for Cyber Security, Cyber Crime: Definition and origin of the word; Cyber Crime and Information Security; Cybercriminals; Classification of Cyber Crimes; Cyber Crime: The Legal Perspective; Cyber Crime and Indian ITA 2000. **Self-Learning Topic**: Survival Mantra for Netizens
	Module 2: Cyber Offences **Hours:05**
	Categories of Cyber Crime; How criminal plan the attack: Reconnaissance, Passive attack, Active attack, Scanning and Scrutinizing Gathered Information, Attack (Gaining and Maintaining the System Access); Social Engineering; Cyberstalking: Types of Stalkers, Case reported on Cyberstalking, How Stalking Works, Real-life Incident Stalking. **Self-Learning Topic**: Organizational measures for handling mobile-device related security issues
	Module 3 Cyber Crime using Mobile and Wireless Devices **Hours: 06**
	Credit Card Fraud in Smart Phone and Wireless Computing Era; Security challenges posed by Mobile devices; Authentication Service Security; Attacks on Mobile; Mobile Devices: Security implication for Organizations; Organizational Security polices and Measures in Mobile Computing Era, UPI Security. **Self-Learning Topic:** Organizational measures for handling mobile-device related security issues

	Module 4: **Methods used in Cyber Crime** **Hours: 06**	
	Phishing; Password Cracking; Keyloggers and Spywares; Virus and Worms; Trojan Horses and Backdoors; Steganography; DoS and DDoS attacks, SQL injection. **Self-Learning Topic**: Wi-Fi based frauds and misuses, Buffer Overflow	
	Module 5: **Mini Case Studies of Cyber Crime** **Hours: 04**	
	Real-life examples of Cyber Crime: Email spoofing case, Email bombing case, Infinity e-search BPO case, Parliament attack case; Illustrations of financial frauds in Cyber domain; Digital signature-related crime scenarios; Online scams. **Self-Learning Topic**: Digital Forensics	
	Module 6: Emerging Trends and Careers in Cyber Security **Hours:06**	
	Introduction to Emerging Trends in Cyber Security Internet of Things (IoT) security, Artificial Intelligence and Machine Learning in Cyber Security, Blockchain and Cyber Security, Cyber Security career paths: Assurance and Compliance Security Audit, Network Security, Cybercrime Investigation and Litigation, Computer Forensics; Cyber Security Certifications (CISSP, CEH, CISM, etc.); Careers in Cyber security. **Self-Learning Topic**: Cyber Threat Intelligence and Threat Hunting	
10	**Text Books:** 1. N. Godbole, S. Belapure, *Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives*, Wiley, 2011. 2. A. Basta, N. Basta, M. Brown, R. Kumar, *Cyber Security and Cyber Laws*, Cengage, 2018.	
11	**Reference Books:** 1. W. Stallings and L. Brown, *Computer Security: Principles and Practice*, 4th ed. Pearson, 2018. 2. R. Meeuwisse, *Cybersecurity for Beginners* (2nd ed.). Cyber Simplicity Ltd., 2017. 3. T. Singh, *The Indian Cyber Law*. Universal Law Publishing, 2016.	
12	**Internal Continuous Assessment: 40%**	**External, Semester End Examination : 60%** **Individual Passing in Internal and External Examination**

13	**Continuous Evaluation through:** IAT-1 : 15 marks IAT-2: 15 marks Average of IAT-1 & IAT-2 = 15 marks. Projects, Presentation and assignments, (5 marks)etc.	**Semester End Examination (30 marks) - Duration 1 hours.**
14	**Format of Question Paper: End-semester examination** ● Question Paper will comprise three questions each with 10 marks. All modules must be covered. All three questions need to be answered.	

Sd/- **BoS Chairman** **Value Education**	**Sd/-** **Offg. Associate Dean** **Faculty of Interdisciplinary Studies** **University of Mumbai.**	**Sd/-** **Offg. Dean** **Faculty of Interdisciplinary Studies** **University of Mumbai.**