FACULTY OF COMPUTER SCIENCE & IT

SYLLABUS

of

Master of Science (Information and Network Security)
(Semester I -IV)

(Under Credit Based Continuous Evaluation Grading System)

Session: 2022-23
Batch: 2022-24

The Heritage Institution

KANYA MAHA VIDYALAYA JALANDHAR
(Autonomous)

PROGRAMME SPECIFIC OUTCOMES

Master of Science (Information and Network Security)

Students of this Post Graduation will be able to:

PSO1: Highlight the need of security architecture and its relevance to system, services, continuity and reliability.

PSO2: Identify the trade-offs for functionality usability and security and to differentiate between controls to protect system availability and reliability: controls to protect information.

PSO3: Measure the performance of security systems within an enterprise-level information system and to troubleshoot, maintain and update an enterprise-level information security system.

PSO4: Comprehend the role of forensics, cyber incidents, intrusions and investigations in revealing how an attack was carried out and understand how to support investigation.

PSO5: Apply skills gained for evaluation and protection of computer networks and security system.

Master of Science (Information and Network Security) Semester – I
(Session 2022-23)
COURSE CODE: MINL-1111
COMPUTER NETWORKS

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend basics of networks and network reference models.

CO2: Comprehend signal conversion and network transmission media.

CO3: Implement error detection and correction techniques on data.

CO4: Identify routing patterns in different routing algorithm and various QoS parameters.

Master of Science (Information and Network Security) Semester – I
(Session 2022-23)
COURSE CODE: MINL - 1113
NETWORK OPERATING SYSTEM

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend installation and file structure of Linux operating system.

CO2: Administer user accounts in Linux.

CO3: Identify disk structure and different RAID levels.

CO4: Comprehend backup, recovery and troubleshooting of network operating system.

Master of Science (Information and Network Security) Semester – I

(Session 2022-23)
COURSE CODE: MINL - 1114
INFORMATION SECURITY AND THREATS

Course Outcomes:
After passing course the student will be able to:
CO1: Comprehend essential terminology of cyber security and its importance.
CO2: Comprehend various security measures for security at web and operating system level.
CO3: Identify various Information security threat and its countermeasures.
CO4: comprehend hosting at different platforms, virtualization, firewall deployment and digital certificates.

Master of Science (Information and Network Security) Semester – I

(Session 2022-23)
COURSE CODE: MINL-1115
OBJECT ORIENTED PROGRAMMING

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend fundamentals of Java programming and OOPs concepts.

CO2: Apply event handling and multithreading in Java.

CO3: Work with Graphical User Interface through Swings and AWT.

CO4: Connect Java application with an existing database and access it through JDBC.

Master of Science (Information and Network Security) Semester – II

(Session 2022-23)

COURSE CODE: MINL-2111
NETWORK PLANNING, ANALYSIS AND PERFORMANCE

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend planning requirements for building a network.

CO2: Analyze network performance through design tools, traffic matrix, etc.

CO3: Analyze various network technologies available for data transmission against different parameters such as throughput, delay, response time, etc.

CO4: Comprehend and tune various network design.

Master of Science (Information and Network Security) Semester – II

(Session 2022-23)
COURSE CODE: MINL-2112
NETWORK SECURITY PRACTICES

Course Outcomes:

After passing this course the student will be able to:

CO1: Demonstrate various security attacks like Interruption, Interception, Modification, integrity, non–repudiation, etc.

CO2: Analyze the performance of various Classical and Modern Cryptography Techniques.

CO3: Comprehend authentication and different public key cryptography mechanism.

CO4: Comprehend various security protocols implemented at application level.

(Session 2022-23)
COURSE CODE: MINL-2113
COMPUTER FORENSIC FUNDAMENTALS

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend the role of digital forensics and techniques used by attackers to trigger cyberattacks.

CO2: Apply various principles of effective digital forensics investigation techniques.

CO3: Identify housing, hardware and software requirements for Computer Forensics and sampling of forensic software.

CO4: Comprehend processing of evidence and report preparation.

Master of Science (Information and Network Security) Semester – II

(Session 2022-23)
COURSE CODE: MINL-2114
SECURE CODE DEVELOPMENT

Course Outcomes:

After passing this course the student will be able to:

CO1: Identify and evaluate various process model used for development of software.

CO2: Comprehend the incorporation of security requirements at different phases of secure system development.

CO3: Comprehend various securities related techniques and methodologies.

CO4: Apply security testing, secure code review and installation along with preparation of security document.

Master of Science (Information and Network Security) Semester – II

(Session 2022-23)
COURSE CODE: MINL-2115
MOBILE APPLICATION DEVELOPMENT AND SECURITY

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend Integrated Development Environment and project structure for developing and configuring mobile applications.

CO2: Apply various UI widgets and components for designing User Interface of application.

CO3: Manage view and navigation in mobile application through intents, activities, fragments, etc.

CO4: Link android application to SQLite database and implement security in the application.

Master of Science (Information and Network Security) Semester – III

(Session 2023-24)
COURSE CODE: MINL - 3111
CYBER INCIDENT HANDLING AND REPORTING

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend handling of system security related incidents.

CO2: Analyze compromised systems through the utilization of tools and common processes.

CO3: Identify Denial-of-Service attacks and its appropriate countermeasures.

CO4: Apply different incident handling tools.

Master of Science (Information and Network Security) Semester – III

(Session 2023-24)
COURSE CODE: MINL - 3112
CLOUD COMPUTING AND ITS SECURITY

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend cloud reference model, associated threats and security requirements.

CO2: Analyze the Virtualization concept and cloud security model.

CO3: Identify different cloud service provider and mini variations of cloud computing.

CO4: Identify the application of different security tools and technologies for trustworthiness of cloud.

Master of Science (Information and Network Security) Semester – III

(Session 2023-24)
COURSE CODE: MINL - 3113
PROACTIVE SECURITY TOOLS AND TECHNOLOGY

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend the taxonomy of security tools.

CO2: Identify the working of different honeypots.

CO3: Articulate various commands used in the implementation of proactive security.

CO4: Analyze and track botnets, malware and client honeypots.

(Session 2023-24)
COURSE CODE: MINL - 3114
PENETRATION TESTING AND AUDITING

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend risk management and penetration testing.

CO2: Implement penetration testing in routers, firewalls and IDS.

CO3: comprehend penetration testing for social engineering and password cracking.

CO4: Write penetration testing report.

Master of Science (Information and Network Security) Semester – III

(Session 2023-24)
COURSE CODE: MINL - 3115
CRYPTOGRAPHY AND NETWORK SECURITY

Course Outcomes:

After passing course the student will be able to:

CO1: Analyze the performance of various Classical Cryptography Techniques.

CO2: Comprehend various symmetric and public key cryptography techniques.

CO3: Evaluate the authentication and hash algorithms.

CO4: Comprehend concepts of cryptanalysis and internetwork security.

Master of Science (Information and Network Security) Semester – IV

(Session 2023-24)
COURSE CODE: MINL-4111
INTRUSION DETECTION SYSTEM

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend the importance of intrusion detection.

CO2: Identify various Intrusion Detection systems and methodologies associated with them.

CO3: Evaluate the impact of Intrusion Detection Systems through its capabilities.

CO4: Identify the integration of multiple IDS.

Master of Science (Information and Network Security) Semester – IV

(Session 2023-24)
COURSE CODE: MINL-4112
REVERSE ENGINEERING AND MALWARE

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend complete taxonomy of malware.

CO2: Comprehend the Reverse Engineering Malware Methodology and associated tools.

CO3: Comprehend various resources utilized for detection of malware.

CO4: Apply tools for examination, analysis and mitigation of malware attack.

Master of Science (Information and Network Security) Semester – IV

(Session 2023-24)
COURSE CODE: MINL-4113
ETHICAL HACKING

Course Outcomes:

After passing this course the student will be able to:

CO1: Articulate the concept of security and phases involved in hacking.

CO2: Comprehend various hacking techniques Sniffing Traffic, DNS and IP Sniffing, HTTPS Sniffing, WLAN Sniffers, etc.

CO3: Comprehend session hijacking along with its types and tools for implementation.

CO4: Comprehend the process of hacking wireless networks.

Master of Science (Information and Network Security) Semester – IV

(Session 2023-24)
COURSE CODE: MINL-4114
BLOCKCHAIN FOR ENTERPRISE APPLICATIONS

Course Outcomes:

After passing this course the student will be able to:

CO1: Identify elements, working and role of Blockchain.

CO2: Comprehend implementation of Blockchain in bitcoin.

CO3: Comprehend about setup of bitcoin node and development of alternative cryptocurrencies.

CO4: Comprehend the networking and components of Ethereum.

Master of Science (Information and Network Security) Semester – IV

(Session 2023-24)
COURSE CODE: MIND-4115
DISSERTATION

Course Outcomes:

After passing course the student will be able to:

CO1: Apply the tools and techniques learnt to frame problems and their corresponding solutions.

CO2: Develop skills necessary to structure, manage and execute projects.

CO3: Learn to work as a member of a cohesive unit.

CO4: Develop presentation skills.

CO5: Perform documentation related to development of the project.