THỰC TẬP CƠ SỞ (BASIC INTERNSHIP)
Đề cương chi tiết (Course Syllabus)

1. General Information

Course name: Thực tập cơ sở (Basic Internship)

Course code: SEC1404_CLC

Course type: Compulsory

Number of credits: 4

2. Objectives

Knowledge:

The aim of this course is to equip students with an understanding of information system environments in enterprise settings, practical knowledge of common incidents, essential systems and services for servers, and security-related problems that require programming skills.

Skills:

On successful completion of this course a student will be able to master system administration skills, practice installing and deploying common security technologies/techniques, troubleshoot incidents, conduct vulnerability scanning and detection, and develop basic application programming skills for information security.

Attitude:

Students are required to attend classes regularly and complete assigned exercises.

3. Abstracts

The Basic Internship is a mandatory course in the core knowledge block of the Information Security program, typically taken in Semester 6. To successfully complete this course, students must have a solid understanding of foundational concepts from prior courses, particularly Computer Networks and Windows & Linux/Unix Operating Systems. This course helps students consolidate and apply knowledge from the core subjects to solve real-world security challenges through hands-on project-based exercises. It introduces students to the basic responsibilities of a system administrator and security specialist, enabling them to protect enterprise IT infrastructures and mitigate security threats effectively. The course content includes projects on deploying workplace environments for enterprise users, troubleshooting common issues, setting up server systems and services, configuring secure server settings, implementing security software solutions, scanning, detecting, and addressing basic security threats, and developing applications for security-related problems.

4. Teaching and learning methods

Lectures: 4h

Exercises: 56h

Projects: 0h

Labs: 0h

Individual reading: 0h

5. Prerequisites: Fundamentals of Information Security - SEC1401_CLC

6. Learning outcomes

After completing this course, the student is able to:
[CLO1] Deploy basic services in MS Windows and Linux operating systems accurately.
[CLO2] Utilize tools and techniques to scan, detect, and remediate common cybersecurity threats effectively.
[CLO3] Implement common network security technologies, including firewalls, IDS, VPN, and encryption, accurately.
[CLO4] Develop cryptographic algorithms and basic data communication programs correctly.

7. Assignment criteria

Learning outcomes	**Assignment criteria**
[CLO1] Deploy basic services in MS Windows and Linux operating systems accurately.	Chapter 1
[CLO2] Utilize tools and techniques to scan, detect, and remediate common cybersecurity threats effectively.	Chapter 2
[CLO3] Implement common network security technologies, including firewalls, IDS, VPN, and encryption, accurately.	Chapter 3
[CLO4] Develop cryptographic algorithms and basic data communication programs correctly.	Chapter 4

8. Outlines

General Guidelines for Basic Internship Exercises

Chapter 1: System Administration
1.1. Installing Windows workstation OS
1.2. Installing Linux workstation OS
1.3. Installing Windows Server and configuring services
1.4. Installing Linux Server and configuring services
1.5. System backup and recovery
1.6. System log analysis

Chapter 2: Common Security Technologies and Techniques
2.1. Understanding, installing, and configuring network firewalls
2.2. Understanding, installing, and configuring NIDS

2.3. Understanding, installing, and configuring VPN servers
2.4. Ensuring information security through encryption

Chapter 3: Vulnerability Scanning and Analysis
3.1. Capturing and analyzing network packets
3.2. Password attack techniques
3.3. Vulnerability scanning and exploitation
3.4. Identifying vulnerabilities using search engine tools

Chapter 4: Security Programming
4.1. Developing client/server programs for secure communication
4.2. Implementing cryptographic algorithms in programming

9. Required Textbooks

[1] *Lab Manual for the Fundamentals of System Administration Internship*. Faculty of Information Security - Posts and Telecommunications Institute of Technology, 2020.

10. Suggested Textbooks

[2] Phạm Hoàng Duy, Đinh Trường Duy. *Lecture Notes on Windows and Linux/Unix Operating Systems*. Faculty of Information Security - Posts and Telecommunications Institute of Technology, 2020.
[3] Dauti, Bekim. *Windows Server 2016 Administration Fundamentals: Deploy, Set Up, and Deliver Network Services with Windows Server while Preparing for the MTA 98-365 Exam and Pass It with Ease*. Packt Publishing Ltd, 2017.
[4] LaCroix, Jay. *Mastering Ubuntu Server: Master the Art of Deploying, Configuring, Managing, and Troubleshooting Ubuntu Server 18.04*. Packt Publishing Ltd, 2018.

11. Schedule

Main contents	Duration	Specific contents
General Guidelines for Basic Internship Exercises	4h lecture	General Guidelines for exercises in Basic Internship course.
Chapter 1: System Administration	16h exercise	1.1. Installing Windows workstation OS 1.2. Installing Linux workstation OS 1.3. Installing Windows Server and configuring services 1.4. Installing Linux Server and configuring services 1.5. System backup and recovery 1.6. System log analysis
Chapter 2: Common Security Technologies and Techniques	14h exercise	2.1. Understanding, installing, and configuring network firewalls 2.2. Understanding, installing, and configuring NIDS 2.3. Understanding, installing, and configuring VPN servers

		2.4. Ensuring information security through encryption
Chapter 3: Vulnerability Scanning and Analysis	14h exercise	3.1. Capturing and analyzing network packets 3.2. Password attack techniques 3.3. Vulnerability scanning and exploitation 3.4. Identifying vulnerabilities using search engine tools
Chapter 4: Security Programming	12h exercise	4.1. Developing client/server programs for secure communication 4.2. Implementing cryptographic algorithms in programming

12. Grading Policy

Exam/exercises 1: 20%
Exam/exercises 2: 30%
Final examination: 50%