Course Specification
(Bachelor)

Course Title:	Operating System Security
Course Code:	CYB 0209
Program:	Computer Science(Cybersecurity)
Department:	Applied Science
College:	Applied Collage
Institution:	Imam Muhammad Bin Islamic Universirty
Version:	*Course Specification Version Number*
Last Revision Date:	*Pick Revision Date.*

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (4(3 Theory, 2 Lab))					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (First Semester)					
4. Course General Description:					
This course presents basic principles of operating systems security and practical tools necessary to secure widely used operating systems such as Linux and Windows. Through a comprehensive curriculum, students will explore key topics including access control as a means of a security control in OSes, Basic OS security techniques. By the end of the course, students will be proficient in dealing with designing, deploying, and maintaining secure OS environments in real-world scenarios.					
5. Pre-requirements for this course (if any)**:**					
CYB 0104 – Basic Cryptographic					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
• **Demonstrate an understanding of basic OS concepts.** • **Demonstrate an understanding of security requirements and implementations** • **of Linux and Windows systems.** • **Identify and evaluate weaknesses and threats on OSes.** • **Evaluate tools and technologies that can be used in protecting OSes.** • **Explain and analyze possible security attacks on various OSes.**					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	4 hours\week	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	36
2.	**Laboratory/Studio**	24
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Demonstrate an understanding of basic OS concepts.	**K1**	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports.
1.2	Illustrate the basic functions and services of operating systems and explain main cybersecurity issues related to operating systems.	**K2**	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.
1.3	Understanding security requirements of several operating systems to deeply recognize the interactions with hardware components and other software applications.	**K3**	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.
2.0	**Skills**			

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.1	Evaluate tools and technologies that can be used in protecting OSes.	**S1**	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.
2.2	Analyze weaknesses and attacks on various OSes.	**S2**	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments Quizzes Case studies and Analysis.	Quizzes Homework and Assignments. Written exams (Midterm and final). Writing reports. Study cases.
3.0	**Values, autonomy, and responsibility**			
3.1	Develop self-managed work, skills, awareness of the values of global citizenship.	**V2**	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments	Project Writing reports. Study cases.
3.2	Being able to see different perspectives, show empathy and understanding.	**V3**	Class lectures Class Discussion Questions/Answers sessions in class Home work assignments	Project Writing reports. Study cases.

C. Course Content

No	List of Topics	Contact Hours
1.	Fundamentals of OS	4
2.	OS security goals	6
3.	Access control	10
4.	Unix security	10
5.	Windows security	10
6.	Virtual machine security	10
7.	OS attacks	10
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizes	3, 8	10%
3.	Midterm	7	20%
4.	Lab Assignments group or individual /Class Assignments group or individual	4,7,9	15%
4.	Lab Evaluations	All Semester	15%
5.	Project	10	10%
6.	Final	13, 14	30%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Trent Jaeger, "Operating System Security" (Synthesis Lectures on Information Security, Privacy, and Trust), 2008 Abraham Silberschatz, Peter B. Galvi, Greg Gagne, "Operating System Concepts", 10th Ed, 2018
Supportive References	Wenliang Du, "Computer & Internet Security: A Hands-on Approach", 2019, 2nd edition Michael Palmer, "Guide to Operating Systems Security", THOMPSON/Course Technology, 2004
Electronic Materials	Online resources will be provided during class lectures.
Other Learning Materials	N/A

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture room with Smart board Lab with 25 Pcs
Technology equipment (projector, smart board, software)	PC and WiFi Internet access within the classroom
Other equipment (depending on the nature of the specialty)	N\A

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	Indirect using course evaluation survey
Effectiveness of Students assessment	Student	Indirect using course evaluation survey
Quality of learning resources	Student and Faculty	Indirect using course evaluation and faculty survey
The extent to which CLOs have been achieved		
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	