



## Course Specifications

<b>Course Title:</b>	Operating System Security
<b>Course Code:</b>	CYB 0204
<b>Program:</b>	Computer Science (Cybersecurity)
<b>Department:</b>	Applied Sciences
<b>College:</b>	Applied College
<b>Institution:</b>	Imam Muhammad Bin Saud Islamic University

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## A. Course Identification

<b>1. Credit hours:</b> 4(3 theory , 2 lab)
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> Third semester
<b>4. Pre-requisites for this course (if any):</b> Cyber102
<b>5. Co-requisites for this course (if any):</b> None

## 6. Mode of Instruction (mark all that apply)

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

## 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	33
2	Laboratory/Studio	22
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	<b>55</b>

## B. Course Objectives and Learning Outcomes

<p><b>1. Course Description</b></p> <p>This course presents basic principles of operating system. It covers access control as a mean of a security control in Oses. Basic OS security techniques such as logging, system call auditing will be discussed. This course discusses the security of Linux, Windows and VM systems. It concludes with common attacks on OS such as buffer overflow, remote access Trojan, self-propagating worms, etc.</p>
<p><b>2. Course Main Objective</b></p> <ul style="list-style-type: none"> <li>• Demonstrate an understanding of basic OS concepts</li> <li>• Demonstrate an understanding of security requirements and implementations of Linux and Windows systems</li> <li>• Identify and evaluate weaknesses and threats on Oses</li> <li>• Evaluate tools and technologies that can be used in protecting Oses</li> <li>• Explain and analyze possible security attacks on various Oses</li> </ul>

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge and Understanding</b>	
1.1	Demonstrate an understanding of basic OS concepts	1ε
1.2	Demonstrate an understanding of security requirements and implementations of Linux and Windows systems	5ε
2	<b>Skills :</b>	
2.1	Identify and evaluate weaknesses and threats on OSes	2ε
2.2	Evaluate tools and technologies that can be used in protecting OSes	4ε
2.3	Explain and analyze possible security attacks on various OSes	3ε
3	<b>Values:</b>	
3.1		
3.2		
3.3		
3...		

### C. Course Content

No	List of Topics	Contact Hours
1	Fundamentals of OS	8
2	OS Security Goals	5
3	Access Control	5
4	Unix Security	7
5	Windows Security	10
6	Secure VM systems	10
7	OS Attacks	10
<b>Total</b>		<b>55</b>

### D. Teaching and Assessment

#### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	<b>Knowledge and Understanding</b>		
1.1	Demonstrate an understanding of basic OS concepts	Class Discussion Questions/Answers sessions in class Case studies and analysis. Project and students	Quizzes, Exams, Project, Presentation
1.2	Demonstrate an understanding of security requirements and implementations of Linux and Windows systems	Class Discussion Questions/Answers sessions in class Case studies and analysis. Project and students	Quizzes, Exams, Project, Presentation
2.0	<b>Skills</b>		
2.1	Identify and evaluate weaknesses and threats on OSes	Class Discussion Questions/Answers sessions in class	Quizzes, Exams, Project, Presentation

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		Case studies and analysis. Project and students	
2.2	Evaluate tools and technologies that can be used in protecting OSes	Class Discussion Questions/Answers sessions in class Case studies and analysis. Project and students	Quizzes, Exams, Project, Presentation
2.3	Explain and analyze possible security attacks on various OSes	Class Discussion Questions/Answers sessions in class Case studies and analysis. Project and students	Quizzes, Exams, Project, Presentation
<b>3.0</b>	<b>Values</b>		
3.1			
3.2			
...			

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quizzes	Week3,5	10%
2	Midterm	Week 7	20%
3	Lab Assignments group or individual /Class Assignments group or individual	Week4,7,9	15%
4	Lab Evaluations	All Semester	15%
5	Final	Week13	40%

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

**Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :**

6 office hours per week.  
3 hours of weekly meetings  
Contact through the LMS  
Communication/interact via e-mails with students

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	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
<b>Essential References Materials</b>	Wenliang Du, "Computer & Internet Security: A Hands-on Approach", 2019, 2 <sup>nd</sup> edition Michael Palmer, "Guide to Operating Systems Security", THOMPSON/Course Technology, 2004

<b>Electronic Materials</b>	Online resources will be provided during class lectures.
<b>Other Learning Materials</b>	N/A

## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room with Smart board Lab with 25 Pcs
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	PC and WiFi Internet access within the class room
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N/A

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Student	Indirect using course evaluation survey
Quality of learning resources	Student and Faculty	Indirect using course evaluation and faculty survey

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

<b>Council / Committee</b>	
<b>Reference No.</b>	
<b>Date</b>	