Course Specification

— (Bachelor)

Course Title: **Software Security Development**	
Course Code: **CYB 0207**	
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: (3(2 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 deals with security analysis in software development. Identify and detect vulnerabilities that threaten systems. Topics include risk modeling, defensive and security programming on the Internet, the interaction between usability and trust management, safe usage control, the principle of least privilege, information overflow, check time versus time to access, and other related security issues. Advanced topics in the secure design of computer systems. Security services and models. Determining security requirements for computer systems, designing secure software architectures, and verifying the security of software and computer systems. Types of attack, means of checking the credibility of messages.

5. Pre-requirements for this course (if any):

CYB 0101 – Information Security Fundamentals

6. Co-requisites for this course (if any):

None

7. Course Main Objective(s):

Students should be able to understand in deep the software development using different systems, and the matter of the secured system. Also, a clear concept must be clear for them in the design matters for security, foundation, threats, mitigation, and the pattern of the secure development. Furthermore, students should be aware of the implementation of any secure design in analyzing level as a developer.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3 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	24
2.	Laboratory/Studio	24
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		48

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	Understand the secured software design.	**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	Demonstrate the main aspects and of secured deign.	**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.
2.0	**Skills**			
2.1	Learning about secured design, programming, reviewing, level of codes, or level of flows in design.	**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.

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.2	Analysis of secured system requirements.	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	Provide a software secured design for a system.	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.	Introduction, Why design matters for security	4
2.	Foundation: Core concepts of domain driven design	4
3.	Concept: Foundation	4
4.	Concept: Threats	4
5.	Concept: Mitigation	4
6.	Concept: Pattern	4
7.	Design: Secure Design	4
8.	Design: Security Design Reviews	6
9.	Implementation: Secure Programming	6
10.	Implementation: Low level coding flaws	4
11.	Implementation: Untrusted input	4
Total		**48**

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	Designing Secure Software: A Guide for Developers,2022,By Loren Kohnfelder.
Supportive References	N/A
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

Assessment Areas/Issues	Assessor	Assessment Methods
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	