Course Specifications

Course Title:	**Secure Application development**
Course Code:	ICS 411
Program:	**Information and Computer Science**
Department:	**Computer Science and Information**
College:	**College of Science**
Institution:	**Majmaah University**

Table of Contents

A. Course Identification

1. Credit hours:3
2. Course type **a.** University ☐ College ☐ Department ☐ Others ☐ **b.** Required √ Elective ☐
3. Level/year at which this course is offered:7
4. Pre-requisites for this course (if any)**:** Algorithms and Data Structures – ICS 223
5. Co-requisites for this course (if any)**:** N/A

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	48	80%
2	**Blended**	6	10%
3	**E-learning**	6	10%
4	**Correspondence**	0	0
5	**Other**	0	0

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	30
2	**Laboratory/Studio**	15
3	**Tutorial**	15
4	**Others** (specify)	0
	Total	60
Other Learning Hours*		
1	**Study**	45
2	**Assignments**	15
3	**Library**	20
4	**Projects/Research Essays/Theses**	20
5	**Others** (specify)	0
	Total	100

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

Secure Software Development explores the implementation of security controls within web applications, mobile applications, utility applications, and traditional applications. Students will explore secure coding and testing techniques as well as application security configuration techniques. Specific review of secure coding techniques will include: Data Validation, Session Management, Exception Handling, and Data Encryption. Specific review of application security configuration techniques will include the secure configuration management of the application web server, middleware, and database. Students will also review policy specific requirements necessary to implement a secure development program within enterprise organizations. Specifically, students will use source code analysis tools, HTTP Proxies, automated scanners, command-line tools to appraise software security.

2. Course Main Objective

The main course objectives can be outlined in the following points:

- Analyze insecure software development utilizing static source code analysis techniques.
- Analyze insecure software deployment utilizing manual and automated application security tools.
- Develop a secure development program within enterprise organizations.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge:**	
1.1	Understand the role of security throughout the SDLC process.	K3-CSEC
1.2	Identify application security vulnerabilities.	
2	**Skills:**	
2.1	Appraise application vulnerability mitigation techniques.	S3-CSEC
2.2	Implement a secure development program within enterprise organizations	
3	**Competence:**	
3.1	Work to excel as an individual for the benefit of the group.	C3-CSEC
3.2	Explore secure coding and testing techniques as well as application security configuration techniques	

C. Course Content

No	List of Topics	Contact Hours
1	Overview of Secure Software Development	12
2	Secure Data Validation & Secure Authentication and Authorization	12
3	Secure Data Encryption	12
4	Secure Error Handling and Logging	12
5	Secure Server Configuration	12
Total		60

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	**Knowledge**		
1.1	Understand the role of security throughout the SDLC process.	Lectures Lab demonstrations Case studies Individual presentations	Written Exam Homework assignments Lab assignments Class Activities Quizzes
1.2	Identify application security vulnerabilities.		
2.0	**Skills**		
2.1	Appraise application vulnerability mitigation techniques.	Lectures Lab demonstrations Case studies Individual presentations Brainstorming	Written Exam Homework assignments Lab assignments Class Activities Quizzes Observations
2.2	Implement a secure development program within enterprise organizations		
3.0	**Competence**		
3.1	Work to excel as an individual for the benefit of the group.	Small group discussion Whole group discussion Brainstorming Presentation	Observations Homework assignments Lab assignments Class
3.2	Explore secure coding and testing techniques as well as application security configuration techniques		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	15%
2	Second written mid-term exam	12	15%
3	Presentation, class activities, and group discussion	Every week	10%
4	Homework assignments	After each chapter	10%
5	Implementation of presented protocols	Every two weeks	10%
6	Final written exam	16	40%
7	Total		100%

***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:

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Wenliang Du, Computer Security: A Hands-on Approach, ISBN-13: 978-1548367947, ISBN-10: 154836794X
Essential References Materials	Seitz Justin, Black Hat Python: Python Programming for Hackers and Pentesters, Latest Edition, Inc, 2015
Electronic Materials	https://www.bookdepository.com
Other Learning Materials	Video and presentation will be available during the time of classes

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom and Labe available at College of science in Zulfi.
Technology Resources (AV, data show, Smart Board, software, etc.)	All resource is available in the halls
Other Resources (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	Students Reviewers	Questionnaires (course evaluation) filled by the students and electronically organized by the university. Student-faculty and management meetings.
Quality of learning resources	Program Leaders	Direct/indirect

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

Council / Committee	

Reference No.	
Date	