Course Specifications

Course Title:	IoT Security
Course Code:	CSEC 424
Program:	**Information and Computer Sciences**
Department:	Computer Science and Information
College:	College of Science at Az Zulfi
Institution:	Majmaah university

Table of Contents

A. Course Identification **3**

6. Mode of Instruction (mark all that apply) 3

B. Course Objectives and Learning Outcomes **4**

1. Course Description 4

2. Course Main Objective 4

3. Course Learning Outcomes 4

C. Course Content **5**

D. Teaching and Assessment **5**

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods 5

2. Assessment Tasks for Students 5

E. Student Academic Counseling and Support **6**

F. Learning Resources and Facilities **6**

1.Learning Resources 6

2. Facilities Required 6

G. Course Quality Evaluation **7**

H. Specification Approval Data **7**

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: 7th level
4. Pre-requisites for this course (if any)**:** **Object-Oriented Programming - ICS 211**
5. Co-requisites for this course (if any)**: Nil**

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**		
5	**Other**		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others** (specify)	
	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

The Securing the Internet of Things course will examine the security and ethical issues of the vast implementation of smart devices known as the Internet of Things (IoT). The IoT is an environment where smart devices sense, anticipate, and respond to our needs as we manage them remotely. These smart devices often act as the gateway between our digital and physical world. The IoT touches many aspects of life including transportation, health care, safety, environment, energy, and more. This course will examine and discuss IoT technology and market specific topics, relevant case studies of IoT security vulnerabilities and attacks, and mitigation controls. Students will assess the health, safety, privacy, and economic impacts of IoT security events

2. Course Main Objective

1. students become acquainted with IoT security
2. Students will be able to understand or master IoT security related to hardware, system and networking
3. touches many aspects of life including transportation, health care, safety, environment, energy, and more
4. examine and discuss IoT technology and market specific topics, relevant case studies of IoT security vulnerabilities and attacks, and mitigation controls.
5. Students will assess the health, safety, privacy, and economic impacts of IoT security events

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	Conceptually describe countermeasures for Internet of Things devices	K3
1.2	Demonstrate knowledge and understanding of the security and ethical issues of the Internet of Things	K3-CSEC
2	**Skills :**	
2.1	Analyze the societal impact of IoT security events	S2
2.2	Identify vulnerabilities, including recent attacks, involving the Internet of Things	S3-CSEC
2.3	Develop critical thinking skills	
3	**Competence:**	
3.1	Compare and contrast the threat environment based on industry and/or device type	C3-CSEC

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to IoT Security	8
2	IoT Ethics and Privacy	8
3	Building Automation and Security	12
4	IoT in Energy and Environment	8
5	IoT in Infrastructure	8
6	IoT in Healthcare	8
7	IoT Consumer Electronics	8
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	Conceptually describe countermeasures for Internet of Things devices	Lectures. Case studies	Written Exam Homework assignments Quizzes
1.2	Demonstrate knowledge and understanding of the security and ethical issues of the Internet of Things		
2.0	**Skills**		
2.1	Analyze the societal impact of IoT security events	Lectures. Lab Case studies. Individual presentations. Brainstorming.	Written Exam Homework assignments Lab assignments Class Activities Quizzes
2.2	Identify vulnerabilities, including recent attacks, involving the Internet of Things		
2.3	Develop critical thinking skills		
3.0	**Competence**		
3.1	Compare and contrast the threat environment based on industry and/or device type	Lectures. Lab Case studies. Individual group discussions. Brainstorming. Presentations.	Written Exam Homework assignments Lab assignments Class Activities Quizzes

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%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
4	Homework assignments	After Every chapter	10%
5	Implementation of presented programs	Every two weeks	10%
6	Final written exam	16	40%
7			
8			

***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 :
Office hours - Office call – Email - Mobile

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	**Securing the Internet of Things 1st Edition, Shancang Li Li Da Xu, Direct science**, 2017
Essential References Materials	
Electronic Materials	Fundamental papers/texts reviewing prerequisite material in crypto and networking. Recent papers from IoT conferences
Other Learning Materials	Video and presentation

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom and Lab, as those that are available at college of science at AzZulfi.
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart Board - data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	A/N

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
course evaluation	Student-faculty management meeting	Questionnaires
Evaluation of Teaching	Program/Department Instructor	Discussion within the staff members teaching the course Departmental internal review of the course.

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	