University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Computing and Information Technology
Program: Software Engineering

Form No. (12)
Course Specification

1- Course Data

Course Code:	Course Title:	Academic Year/Level:
SE495	Security in Software Engineering	Year 4 / Semester 7
Specialization: Software Engineering	**No. of Instructional Units:** 2 hrs lecture 2 hrs lab	**Lecture:**

2- Course Aim	This course will enable students to put software security into practice incorporating it in the software development life cycle. Upon successful completion of the course, the student will be familiar with software security best practices, common risks such as architectural flaws, threat modeling techniques, design principles for security, and techniques for security testing. In addition, practical case studies of secure software development life cycles will be presented.
3- Intended Learning Outcome:	
a- Knowledge and Understanding	**Students will be able to demonstrate knowledge of:** K12. Understanding essential facts, concepts, principles and theories relevant to software engineering. K16. Know and understand the principles and techniques of database management systems, management, data mining, multimedia, application development, business process management, human-computer interaction, object-oriented analysis and design, e-technologies, multimedia, software security. K17. Show a critical understanding of the broad context within software engineering including issues such as quality, reliability. K18. Understand the principles of Information communication and information security.
b- Intellectual Skills	**By the end of the course, the student acquires high skills and an ability to understand:** I11. Perform comparisons between (methods, techniques, strategies ...etc). I12. Identify attributes, components, relationships, patterns, main ideas, and errors.

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<tr><td>c- Professional Skills</td><td><u>By the end of the course the student will have the ability to:</u>

P19. Identify any risks or safety aspects that may be involved in the operation of computing equipment within a given context.
P20. Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved in using computers to solve practical problems.</td></tr>
<tr><td>d- General Skills</td><td>Students will be able to:
G1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.
G2. Demonstrate skills in group working, team management, time management and organizational skills.
G3. Show the use of information-retrieval.</td></tr>
<tr><td>4- Course Content</td><td><table><tr><th>#</th><th>CLO</th></tr><tr><td>1</td><td>Understand software security best practices.</td></tr><tr><td>2</td><td>Understand risk management frameworks and processes.</td></tr><tr><td>3</td><td>Carry out code review using static analysis tools.</td></tr><tr><td>4</td><td>Understand and use architectural risk analysis.</td></tr><tr><td>5</td><td>Carry out penetration testing.</td></tr><tr><td>6</td><td>Carry out security testing.</td></tr><tr><td>7</td><td>Understand abuse case development.</td></tr><tr><td>8</td><td>Acquire threat modeling techniques.</td></tr></table></td></tr>
<tr><td>5- Teaching and Learning Methods</td><td>Lectures, Labs, Projects, Individual study & self-learning.</td></tr>
<tr><td>6- Teaching and Learning Methods for Students with Special Needs</td><td>• Students with special needs are requested to contact the college representative for special needs (currently Dr Hoda Mamdouh in room C504)
• Consulting with lecturer during office hours.
• Consulting with teaching assistant during office hours.
• Private Sessions for redelivering the lecture contents.
For handicapped accessibility, please refer to program specification.</td></tr>
<tr><td colspan="2">7- Student Assessment:</td></tr>
<tr><td>a- Procedures used:</td><td>Exams and Individual Projects</td></tr>
<tr><td>b- Schedule:</td><td>Week 7 exam
Project
Week 16Final exam</td></tr>
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c- Weighing of Assessment:	7th week exam 30% Project 20% Lab work 10% Final exam 40%

8- List of References:

a- Course Notes	
b- Required Books (Textbooks)	Gary McGraw, *Software Security: Building Security In*, Pearson, 2006.
c- Recommended Books	1. Ian Sommerville, *Software Engineering*, 9th Edition, Pearson Education, 2010. 2. Stephen R. Schach, *Object-Oriented and Classical Software Engineering*, 7th Ed, McGraw-Hill, 2007
d- Periodicals, Web Sites, ..., etc.	

Course Instructor: **Head of Department:**

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