Kingdom of Saudi Arabia
National Commission for
Academic Accreditation & Assessment

المملكــة العربيــة السعوديــة
الهيئـــة الوطنيـــة للتقويــم
والاعـتمــاد الأكـاديـمــي

ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Course Specifications
(CS)

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Course Specifications

Institution	Date of Report
Najran University	
College/Department : Faculty of Art and Science /Computer Science Department	

A. Course Identification and General Information

1. Course title and code: Title: Computer Security　　　　Code: 712CS-3 (٧١٢عال-٣)
2. Credit hours : (3)
3. Program(s) in which the course is offered.   (If general elective available in many programs indicate this rather than list programs)   Computer Science Program
4. Name of faculty member responsible for the course   Dr. Khaled Ahmed Abood
5. Level/year at which this course is offered: level 7 / Forth Year
6. Pre-requisites for this course (if any)   504 ENG-3 Data communication and networks
7. Co-requisites for this course (if any)   Non
8. Location if not on main campus   main campus
9. Mode of Instruction (mark all that apply)   a. Traditional classroom ✓　What percentage? 100%   b. Blended (traditional and online)　What percentage?   c. e-learning 　What percentage?   d. Correspondence 　What percentage?   f. Other 　What percentage?   Comments: We still teach this course using traditional methods but there is a plan to transform all course into electronic format using E-learning

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B Objectives

1. What is the main purpose for this course?   1) Understand the secure and protection techniques for information in computer systems and networks   2) Demonstrate ethical, scientific, and professional responsibility for information security   3) Analyze the security problems and develop proper solutions in information security area.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

Overview: Computer Security Concepts, Threats, Attacks, and Assets**.** Cryptographic Tools: simplified DES block cipher, RC4 stream cipher, Message Authentication and Hash Functions, Public-Key Encryption RSA, Digital Signatures. User Authentication: Password-Based, Token-Based, Biometric Authentication. Access Control: Subjects, Objects, and Access Rights, UNIX File Access Control**.** Database Security: Database Access Control, Database Encryption**.** Malicious Software: Viruses, Worms, SPAM E-mail, Trojans, System Corruption, Zombie,…, Countermeasures**.** Firewalls: Characteristics, Types, Firewall Location and Configurations**.** Software Security: Handling Program Input, Writing Safe Program Code, Handling Program Output. Operating System Security**.**

1. Topics to be Covered		
List of Topics	**No. of Weeks**	**Contact Hours**
Overview: Computer Security Concepts, Threats, Attacks, and Assets, Security Functional Requirements,	1.5	3
Cryptographic Tools: Symmetric Encryption, simplified DES block cipher, RC4 stream cipher, Message Authentication and Hash Functions, Public-Key Encryption RSA, Digital Signatures and Key Management	3.5	7
User Authentication: Means of Authentication, Password-Based Authentication, Token-Based Authentication, Biometric Authentication.	1.5	3
Access Control: Access Control Principles, Subjects, Objects, and Access Rights, UNIX File Access Control	1.5	3
Database Security: The Need for Database Security, Database Access Control, Database Encryption	1.5	3
Mid term Examination	0.5	1
Malicious Software: Types of Malicious Software (Malware), Viruses, Worms, SPAM E-mail, Trojans, System Corruption, Zombie,…, Countermeasures	2	4
Firewalls: The Need for Firewalls, Firewall Characteristics, Types of Firewalls, Firewall Basing, Firewall Location and Configurations	1.5	3
Software Security: Software Security Issues, Handling Program Input, Writing Safe Program Code, Handling Program Output. Operating System Security: Introduction, System Security Planning.	1.5	3

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1. Topics to be Covered Lab		
List of Topics	**No. of Weeks**	**Contact Hours**
Revision: String Management and File Management	1	2
Substitution cipher: Caesar Cipher and Monoalphabetic Cipher	1	2
One Time Pad Algorithm	1	2
Transpose Cipher	1	2
Message Authentication: Simple Hash Function	1	2
RC4 Stream Cipher	1	2
S-DES Block Cipher	2	4
Public-Key Encryption RSA, Digital Signatures	1	2
Mid Term Test	1	2
Password Management	1	2
Antivirus Software	1	2
Firewall basic Operations	1	2
Operating System Security	1	2

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30		30			60
Credit	30		15			45

3. Additional private study/learning hours expected for students per week.	4 hours

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

Course Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning, assessment, and teaching.

The *National Qualification Framework* provides five learning domains. Course learning outcomes are required. Normally a course has should not exceed eight learning outcomes which align with one or more of the five learning domains. Some courses have one or more program learning outcomes integrated into the course learning outcomes to demonstrate program learning outcome alignment. The program learning outcome matrix map identifies which program learning outcomes are incorporated into specific courses.

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. **Fourth**, if any program learning outcomes are included in the course learning outcomes, place the @ symbol next to it.

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Every course is not required to include learning outcomes from each domain.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Memorize basic knowledge, concepts and principles in the area of information security	Lecture Discussion	Achievement test
1.2	Define and describe the ethical and professional responsibilities related to information security	Lecture Discussion	Achievement test
2.0	**Cognitive Skills**		
2.1	Criticize issues in information security using creative logical thinking.	Discussion Practical Lab Problem Solving	Written test
2.2	Analyze the results obtained experimentally and develop proper solutions in the area of information security.	Discussion Problem Solving Practical Lab	Assignment
3.0	**Interpersonal Skills & Responsibility**		
4.0	**Communication, Information Technology, Numerical**		
4.1	Research basic statistical methods and mathematics in the area of information security	Discussion Problem Solving	Achievement test Assignment
5.0	**Psychomotor**		
5.1			

Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
Knowledge	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
Cognitive Skills	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
Interpersonal Skills & Responsibility	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
Communication, Information Technology, Numerical	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize
Psychomotor	demonstrate, show, illustrate, perform, dramatize, employ, manipulate, operate, prepare, produce, draw, diagram, examine, construct, assemble, experiment, and reconstruct

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Suggested *verbs not to use* when writing measurable and assessable learning outcomes are as follows:

Consider	Maximize	Continue	Review	Ensure	Enlarge		Understand
Maintain	Reflect	Examine	Strengthen	Explore	Encourage		Deepen

Some of these verbs can be used if tied to specific actions or quantification.

Suggested assessment methods and teaching strategies are:

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Differentiated teaching strategies should be selected to align with the curriculum taught, the needs of students, and the intended learning outcomes. Teaching methods include: lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, guest speakers, memorization, humor, individual presentation, brainstorming, and a wide variety of hands-on student learning activities.

	5. Schedule of Assessment Tasks for Students During the Semester		
	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Midterm examination	8th week	15
2	Practical midterm test	10th week	10
3	Alternative methods Evaluation ▪ Individual and group assignments ▪ Short tests (Quizzes)	Over the semester	15
4	Attendance and participation	Over the semester	10
5	Final Practical examination	15th week	10
6	Final written examination	Semester end	40
			100%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

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E. Learning Resources

1. List Required Textbooks 1- William Stallings, Lawrie Brown, 2012, " COMPUTER SECURITY *PRINCIPLES AND PRACTICE"* Second Edition, Pearson Education,
2. List Essential References Materials (Journals, Reports, etc.)
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) • M. Goodrich, "Introduction to Computer Security ", Addison Wesley, 1st edition., 2010 • Andrew S. Tanenbaum (1987), Computer Networks, Prentice-Hall • D. Gollmann, "Computer Security", John Wiley 2011, 3rd edition
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Classrooms for 20-30 students with data show Laboratories 20-30 students
2. Computing resources (AV, data show, Smart Board, software, etc.) Classrooms Should include data show and also laboratories
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)   None

G   Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching: ✓ Distribution of a questionnaire for students to know how to achieve the goals in the theoretical and practical side.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor: ✓ Discussions with colleagues who specialize in teaching methods and means of learning. ✓ Self-evaluation of the performance of the teacher. ✓ Discussions with other colleagues who taught this course.
3 Processes for Improvement of Teaching ✓ Diagnose weaknesses and turn them into strengths. ✓ Discussions about the decision and methods of teaching ✓ Study the needs of the labor market of college graduates
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

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5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Faculty or Teaching Staff: Dr Khaled Ahmed Abood_____ _____

Signature: _____   **Date Report Completed:** _____

Received by: _____   **Dean/Department Head**

Signature: _____   **Date:** _____