



ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

**Course Specifications
(CS)**



Course Specifications

Institution Al-Yamamah University	Date of Report: October 2013
College/Department Computer and Information Systems	

A. Course Identification and General Information

1. Course title and code: SWE 301 Software Requirements Engineering			
2. Credit hours 3+0			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs)			
BCIS Software Engineering Concentration			
4. Name of faculty member responsible for the course			
Dr. Raed Shatnawi			
5. Level/year at which this course is offered			
Third year			
6. Pre-requisites for this course (if any)			
CIT101 programming fundamental I			
7. Co-requisites for this course (if any)			
None			
8. Location if not on main campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="100"/>
b. Blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. Other	<input type="checkbox"/>	What percentage?	<input type="text"/>
Comments:			



B Objectives

<p>1. What is the main purpose for this course?</p> <p>This course includes an overview of the contents of various documents to specify requirements and define the scope of a software product. The student will learn and practice utilizing various techniques for eliciting software requirements. Various models for analyzing requirements will be illustrated and applied to the course's case study.</p>
<p>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)</p> <p>Use of LMS(Learning Management System) Refer students to related website.</p>

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

Topics covered: Functional and Non-function requirements; Use case Modeling; Specifying functional requirements using Use cases; Specifying non-functional requirements using metrics; Requirements specification standards, and formal methods of specification such as VDM. The course will also include translating higher-level business and user requirements into software product requirements to end up with Requirement Specification Documents.

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Software Requirement Fundamentals Definition of Software Requirements Product and Process Requirements Functional and Non-Functional Requirements Quantifiable Requirements System Requirements and Software Requirements	1	3
Requirements Elicitation Requirements Sources Elicitation Techniques	1	3
Requirements Analysis Requirements Classification Conceptual Modelling Architectural Design and Requirements Allocation Requirement Negotiation	2	6
Modeling System Requirements User Goals, Events and Use Cases Use Case Descriptions "Things" in the Problem Domain The Entity-Relationship Diagram The Domain Model Class Diagram	1	3



The Traditional Approach to Requirements Traditional and Object-Oriented Views of Activities/Use Cases Data Flow Diagrams Documentation of DFD Components	1	3
The Object-Oriented Approach to Requirements Object-Oriented Requirements The System Activities - A Use Case/Scenario View Identifying Inputs and Outputs - The System Sequence Diagram Identifying Object Behaviour - The State Machine Diagram Integrating Object-Oriented Model	2	6
Requirement Specification System Definition Document Use of diagrammatic notations Software Requirements Specification	1	3
Requirements Validation and Evolution Requirements inspections and reviews Prototyping Model Validation Acceptance Test Change control	1	3
Goal Orientation in Requirements Engineering Goal type and categories The central role of goals in the RE process The relationship of goals to other requirements-related products and processes	2	6
Building System Models for Requirements Engineering Modelling system objectives Modelling conceptual objects Modelling system operations Modelling system behaviours	2	6
Issues in Software Requirements	1	3
TOTAL	15	45



2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	-	-	-		45
Credit	3	-	-	-		3

3. Additional private study/learning hours expected for students per week.	6
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
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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.

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 After successful completion of the course students will be able to		
1.1	<ul style="list-style-type: none"> Outline the fundamental concepts, principles and techniques for requirements engineering. 	This knowledge will be imparted via a combination of formal lectures.	Written exams (quizzes, mid-term, and final exams)
1.2	<ul style="list-style-type: none"> List, elicit, recognize and capture requirements for information systems. 	Group discussion and case studies, free reading.	Oral presentations
1.3	<ul style="list-style-type: none"> Demonstrate and design using UML tools. Produce appropriate deliverables. 	A practical project.	Project Assignments/ Homework
2.0	Cognitive Skills After successful completion of the course students will be able to		
2.1	<ul style="list-style-type: none"> The ability to compare and contrast the different aspects and software requirements management and elicitation techniques 	Achieving these skills will be developed by a combination of formal lectures, group discussion and case studies, free reading, and a practical project.	Continuous assessment during the semester: <ul style="list-style-type: none"> Quizzes Assignment Class participation Presentations Analysis of cases Project work
3.0	Interpersonal Skills & Responsibility After successful completion of the course students will be able to		
3.1	<p>The ability to cooperate constructively in groups.</p> <p>Students should be responsible for using specific tools to search for new information, data and techniques of analysis.</p>	<p>Students are required to perform presentations either individually or in groups to meet specific requirements of some assignments.</p> <p>Project and assignments are designed to include tasks that require students to search for information on their own.</p>	<ul style="list-style-type: none"> Presentations and case studies
3.2	<p>Students should be aware of ethical and professional values and moral judgments. The ability to practice values relevant to the professional code.</p>	<ul style="list-style-type: none"> Students will be exposed to ethical and professional issues throughout the course. 	<ul style="list-style-type: none"> Presentations
4.0	Communication, Information Technology, Numerical After successful completion of the course students will be able to		
4.1	<ul style="list-style-type: none"> The ability to demonstrate team communicate effectively in oral and written English. The ability to effectively search the web using top rated search engines and verified searching techniques. The ability to calculate metrics for software requirements. 	Course work, project, and assignments will implement tasks that support the above mentioned skills throughout the course.	<ul style="list-style-type: none"> Presentations



	<ul style="list-style-type: none"> The ability to assess the quality of software specification from metrics. The ability to use MS Project. The ability to use requirements management tools 		
4.2	<ul style="list-style-type: none"> The ability to use the AI Yamamah University information systems, such as: Students' email system, Students' Absence system (EDUGATE), AI Yamamah Electronic Community (YEC), and e-registry. 	Posting material online.	<ul style="list-style-type: none"> Observation and participation
5.0	Psychomotor		
	After successful completion of the course students will be able to		
5.1	None	None	None
5.2			

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



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	Assignments	3, 5, 8, 11, 15	10%
2	Project and presentations	16	20%
3	Quizzes	2, 4, 7, 10, 14	10%
4	Mid-Term Exam	7,8	20%
5	Final exam	16	40%



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)

All faculties are required to assign in average 8 office hours every week dedicated for individual student consultations and academic advice. The schedule of the office hours are posted on faculty office door.

E. Learning Resources

1. List Required Textbooks

Textbook: Karl Wieggers, Software Requirements, (Nov 30, 2009)..

2. List Essential References Materials (Journals, Reports, etc.)

- Requirements Engineering for Software and Systems (Applied Software Engineering Series) by Phillip A. Laplante (Mar 27, 2009)
- Peter Zielczynski, Requirements management using IBM Rational RequisitePro, IBM press, 2008.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

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4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

- Carnegie Mellon-Software Engineering Institute <http://www.sei.cmu.edu/>
- R. S. Pressman and Associates <http://www.rspa.com//>

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.)

One lecture room and one lab with 24 PCs and Internet connection. An overhead projector is normally installed in every class and lab throughout the university campuses.



2. Computing resources (AV, data show, Smart Board, software, etc.) Real applications and case study stories. Data show. IDE.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) PCs

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching During the course, students receive a feedback forms that covers all aspects relating to their learning experience. These forms will then be collected and analysed by the Academic Advising and Counselling Department. Next, the Academic Advising and Counselling Department will conduct a meeting with the concerned faculty to discuss the students' feedback outcomes.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor Peer review visits are normally conducted among faculties wherever possible during academic year. During the lecture time Chair (Head)/ Dean of the department visits the classroom. At the end of each visit, faculties are usually set together to discuss related issues.
3 Processes for Improvement of Teaching Specialised workshops and seminars are conducted throughout academic year to address specific teaching strategies and improvements.
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) Peer review and discussion with course coordinator. There should be a strong liaison with teacher from some external university/institute in order to exchange ideas related to marking/ evaluating quizzes and assignments.



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

Curricula & Academic Development committee members are regularly conducting meetings to revise the ongoing courses performance and faculties' feedbacks.

Faculty or Teaching Staff: Dr. Raed Amin Shatnawi

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

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

Signature: _____ **Date:** _____