# Course Specifications

<table>
<thead>
<tr>
<th>Institution: University of Tabuk</th>
<th>Date: December 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>College/Department:</td>
<td></td>
</tr>
<tr>
<td>Faculty of Computers and Information Technology / Department of Information Technology</td>
<td></td>
</tr>
</tbody>
</table>

## A. Course Identification and General Information

1. **Course title and code:**
   Advanced Software Engineering  CSC 423

2. **Credit hours:**
   3 hrs.

3. **Program(s) in which the course is offered:**
   (If general elective available in many programs indicate this rather than list programs)
   Bachelor in Information Technology

4. **Name of faculty member responsible for the course:**
   Dr. Mofreh Ahmed Hegou

5. **Level/year at which this course is offered:**
   Year 4 (Elective)

6. **Pre-requisites for this course (if any):**
   Software Engineering - (CSC 221)

7. **Co-requisites for this course (if any):**
   N/A

8. **Location if not on main campus:**
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9. **Mode of Instruction (mark all that apply)**
   a. Traditional classroom  
      Yes  What percentage?  100%
   b. Blended (traditional and online)  
      No  What percentage? 0%
   c. e-learning  
      No  What percentage? 0%
   d. Correspondence  
      No  What percentage? 0%
   f. Other  
      No  What percentage? 0%

   Comments:  
   N/A
B. Objectives

1. What is the main purpose for this course?
   This course aims to:
   
   - Learn the students the state-of-the-art in terms of what problems can be solved and what are the current exciting challenges.
   - Describe to students how select the best approach for large systems and small systems.
   - Teach the students the main concepts of agile software engineering.
   - Familiarize the students with the software evolution and software reuse.
   - Give the students the fundamentals of development of distributed systems and embedded systems.
   - State the concepts of Dependability and Security Engineering
   - State the concepts of quality management.
   - Teach the students how to review, analyze and evaluate selected papers.
   - Train students to work in a team effectively and independently.
   - Present software engineering concepts in a concise manner to an audience as well as writing a technical report for a specific system development.

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)
   
   - Upload the Course materials to faculty Website in order to be accessed by the students.
   - Increase the use of tutorials videos.
   - Increase the use of internet to find new researches and techniques.

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

1. Topics to be Covered

<table>
<thead>
<tr>
<th>List of Topics</th>
<th>No. of Weeks</th>
<th>Contact Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agile software development</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>2. OOD using UML</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3. Software Evolution and Software Reuse</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>4. Component-based</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>5. Distributed Software Engineering</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>6. Embedded Systems engineering</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>7. Dependability and Security Engineering</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>8. Quality management</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>9. Selected papers review and analysis</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>10. Projects presentation</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
3. Additional private study/learning hours expected for students per week.

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

<table>
<thead>
<tr>
<th>NQF Learning Domains And Course Learning Outcomes</th>
<th>Course Teaching Strategies</th>
<th>Course Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 Knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Describe the main agile software development concepts and process.</td>
<td>▪ Lecture ▪ Small group discussion ▪ Research activities ▪ Case studies</td>
<td>▪ Exams ▪ Analytical reports ▪ Case studies ▪ Group reports ▪ Interviews ▪ Peer evaluation</td>
</tr>
<tr>
<td>1.2 Memorize the object oriented development concepts.</td>
<td>▪ Lectures ▪ Small group discussion ▪ Research activities ▪ Brainstorming ▪ Case studies</td>
<td>▪ Exams ▪ Analytical reports ▪ Case studies ▪ Group reports ▪ speeches ▪ Interviews ▪ Peer evaluation</td>
</tr>
<tr>
<td>1.3 State the concepts of software evolution and software Reuse</td>
<td>▪ Lectures ▪ Small group discussion ▪ Research activities ▪ Brainstorming ▪ Case studies ▪ projects</td>
<td>▪ Exams ▪ Analytical reports ▪ Case studies ▪ Group reports ▪ Interviews ▪ Peer evaluation</td>
</tr>
<tr>
<td>1.4 State the fundamentals of software dependability and security engineering</td>
<td>▪ Lectures ▪ Small group discussion ▪ Research activities ▪ Brainstorming ▪ Case studies ▪ projects</td>
<td>▪ Exams ▪ Analytical reports ▪ Case studies ▪ Group reports ▪ Interviews ▪ Peer evaluation</td>
</tr>
<tr>
<td>1.5 Describe the fundamentals of distributed software and component based software.</td>
<td>▪ Lectures ▪ Small group discussion ▪ Research activities ▪ Brainstorming ▪ Case studies</td>
<td>▪ Exams ▪ Analytical reports ▪ Case studies ▪ Group reports ▪ Interviews ▪ Peer evaluation</td>
</tr>
</tbody>
</table>

4 office hours weekly
2.0 Cognitive Skills

2.1 Analyze and compare different methods used in large system modeling.
- Lectures
- Small group discussion
- Research activities
- Brainstorming
- Case studies
- Projects
- Exams
- Case studies
- Group reports
- Interviews
- Peer evaluation

2.2 Utilize the concepts of agile software development.
- Lectures
- Small group discussion
- Research activities
- Brainstorming
- Case studies
- Projects
- Exams
- Analytical reports
- Individual presentation
- Posters
- Case studies
- Group reports
- Interviews
- Peer evaluation

2.3 Utilize the concepts of components based software development and distributed systems.
- Lectures
- Small group discussion
- Research activities
- Brainstorming
- Case studies
- Projects
- Exams
- Analytical reports
- Individual presentation
- Posters
- Case studies
- Group reports
- Interviews
- Peer evaluation

2.4 Utilize the activities of quality management process.
- Lectures
- Small group discussion
- Research activities
- Brainstorming
- Case studies
- Projects
- Exams
- Analytical reports
- Individual presentation
- Posters
- Case studies
- Group reports
- Interviews
- Peer evaluation

2.5 Analyze and evaluate a selected paper in software engineering.
- Lectures
- Small group discussion
- Research activities
- Brainstorming
- Case studies
- Projects
- Exams
- Case studies
- Group reports
- Interviews
- Peer evaluation

3.0 Interpersonal Skills & Responsibility
3.1 Show the ability to work in a team and sharing idea.
- Small group work
- Small group discussion
- Research activities
- Brainstorming
- Case studies
- Projects
- Group presentation
- Posters
- Case studies
- Group reports
- Speeches
- Interviews
- Peer evaluation

3.2 Demonstrate software engineering concepts in a concise manner to an audience as well as write a technical report for a specific system development.
- Small group work
- Small group discussion
- Research activities
- Brainstorming
- Case studies
- Projects
- Analytical reports
- Individual presentation
- Group presentation
- Posters
- Case studies
- Group reports
- Speeches
- Interviews
- Peer evaluation

4.0 Communication, Information Technology, Numerical

4.1 Operate with CASE tool to Perform a variety of models as part of the overall design process.
- Case studies
- Projects
- Exams
- Group reports

5.0 Psychomotor
N/A

5. Schedule of Assessment Tasks for Students During the Semester

<table>
<thead>
<tr>
<th>Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)</th>
<th>Week Due</th>
<th>Proportion of Total Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>5,10</td>
<td>10 %</td>
</tr>
<tr>
<td>Midterms Exam.</td>
<td>6, 12</td>
<td>30 %</td>
</tr>
<tr>
<td>Projects</td>
<td>8, 14</td>
<td>20 %</td>
</tr>
<tr>
<td>Final Exam</td>
<td>16</td>
<td>40 %</td>
</tr>
</tbody>
</table>

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)

- 6 hours/week
- Faculty member web-page with communication tools
## E. Learning Resources

1. **List Required Textbooks:**

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

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

4. **List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)**
   - [http://www.software-engin.com](http://www.software-engin.com)
   - Instructor course lectures notes, can be accessed online from instructor web page on the faculty web site: [http://ut.edu.sa/web](http://ut.edu.sa/web)

5. **Other learning material such as computer-based programs/CD, professional standards or regulations and software.**
   - The course will use the following software tools:
     - Rational Rose Software
     - Visio 2008 Software Tool.
     - Microsoft Project 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.)

<table>
<thead>
<tr>
<th>1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</th>
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</thead>
<tbody>
<tr>
<td>Lecture room with proper capacity based on the number of students in the section</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Computing resources (AV, data show, Smart Board, software, etc.)</th>
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<tbody>
<tr>
<td>Data-Show and Whiteboard in lectures.</td>
</tr>
<tr>
<td>Software tools as following:</td>
</tr>
<tr>
<td>Rational Rose Software</td>
</tr>
<tr>
<td>Visio 2008 Software Tool.</td>
</tr>
<tr>
<td>Microsoft Project Software.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)</th>
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<tbody>
<tr>
<td>NA</td>
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</tbody>
</table>
G. Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
   1. Course Evaluation Survey conducted by Quality Assurance Committee.
   2. Office hours discussing the students problems.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor
   1. Peer consultation on teaching.
   2. Departmental council discussions with the annual program report results.
   3. Discussions within the group of faculty members who were teaching the course.
   4. CLO Evaluation Survey conducted by Instructor.
   5. Outcomes Evaluation Surveys conducted by Instructor.
   6. Teaching Evaluation Survey conducted by Academic Advising Committee.

3 Processes for Improvement of Teaching
   1. Collecting all results obtained from the different surveys and the concluded recommendations and actions approved by the Department Council for course teaching improvement are reported to next course instructor to take it into consideration.
   2. Conducting workshops given by experts on the teaching and learning methodologies.
   3. Periodical departmental revisions of its updated methods and strategies of teaching.
   4. Monitoring of teaching activates by senior faculty members.
   5. Students self-learning.

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)
   1. Quality Assurance and Accreditation Unit will review every semester the overall course work and monitor the ILO (indirect learning outcomes) achievement.
   2. Deanship of Development and Quality Assurance will investigate the Quality assurance procedures, and review program accreditation progress.
   3. External reviewers from a reputable university will be invited to evaluate the course binder as well as review the accuracy of the grading policy.
   4. Independent faculty members who were teaching the same course are requested to grade same questions for various students.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
   1. Quality Assurance Committee analyses all questionnaires results and files a full detailed report. Subjective students and graduates recommendations are reported to the Department council
   2. Course reports are compiled and instructor recommendations are also reported to the department council.
   3. Recommendations are discussed and forwarded to the “curriculum committee. The curriculum committee will provide the department council with the suggested modification of the program or courses according to the University regulation.
   4. Proper actions based on these conclusions will be taken by the department management and faculty deanship to improve the performance and overcome the challenges faces the
course teaching.
Faculty or Teaching Staff: Mofreh Ahmed El Sayed Hegou

Signature: ___________________________ Date Report Completed: __________________

Received by: ___________________________ Dean/Department Head

Signature: ___________________________ Date: ______________