University: Alexandria  
Faculty: Science  
Program: Computer Science

Form no. (12)  
Course Specification

1- Course Data

<table>
<thead>
<tr>
<th>Course Code:</th>
<th>Course Title:</th>
<th>Academic Year/Level:</th>
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| CS 311       | Intermediate Software Design and Engineering | Third level  
              (First semester) |

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<tr>
<th>Specialization:</th>
<th>No. of Instructional Units:</th>
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| Computer Science | Lecture 2  
                  Lab 1 |

2- Course Aim

- This course is designed to encourage in students a sense of interest for Component Software Design and its application in different contexts
- Provide a solid foundation in the major areas of Component Software Design
- Provide education and training of high quality in Component Software Design

3- Intended Learning Outcome

a- Knowledge and Understanding

a1. Describe the main concepts, definitions of Component Software Design  
a2. Review theories and concepts used in Design Patterns  
a3. Identify an understanding of the contribution and impacts of Component Software Design in scientific, social, economic, environmental, political and cultural terms.  
a4. The component interface and CBSE  
a5. The component testing for all Component Software  
a6. The different types of design patterns
| **b- Intellectual Skills** | b1. Manipulate and apply appropriate theories, principles and concepts relevant to Component Software Design  
  b2. Critically assess and evaluate the literature within the field of Component Software Design  
  b3. Deduce and interpret information from a variety of sources relevant to Component Software Design |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| **c- Professional Skills** | c1. Plan, design and execute practical activities using techniques and procedures Appropriate to Component Software Design  
  c2. Execute a piece of independent research using Component Software, computer media and techniques;  |
| **d- General Skills**      | d1. Develop appropriate effective written and oral communication skills relevant to the specific course of Component Software Design  
  d2. Demonstrate the ability to work effectively as part of a group  
  d3. Solve problems relevant to Component Software Design using ideas and techniques some of which are at the forefront of the discipline  
  d4. Solve problems relevant to applications in real life in computer science using Component Software and design patterns some of which are at the forefront of the discipline;  |
| **4- Course Content**      | • Introduction to software engineering  
  • Software design and architecture  
  • Data flow diagram and UML  
  • Software coding and implementation  
  • Project management and risk analysis  
  • Component based software  
  • Reuse component software  
  • Component software design and process  
  • Component testing  
  • Design patterns  
  • Creational design patterns  
  • Structural design patterns  
  • Behavior design patterns  
  • Applications  |
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<tr>
<th>Section</th>
<th>Description</th>
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<tbody>
<tr>
<td>5- Teaching and Learning Methods</td>
<td>Lecturers – Home works - Oral discussion - Quizzes</td>
</tr>
<tr>
<td>6- Teaching and Learning Methods for Students with Special Needs</td>
<td>NONE</td>
</tr>
<tr>
<td>7- Student Assessment:</td>
<td></td>
</tr>
<tr>
<td>a- Procedures used:</td>
<td>Lecturers – tutorials- homework – oral discussion - Quizzes</td>
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</tbody>
</table>
| b- Schedule: | Mid-Term exam... .... Week 10  
Final exam .............. Week 17 |
| c- Weighing of Assessment: | Term work (exam + home works) 20%  
Oral exam 10%  
Final exam 70% |
| 8- List of References: | Object oriented and classical software engineering, schach, 2002  
Design patterns, Gamma, 1996 |
<p>| a- Course Notes | Course notes provided by the Faculty member of Computer Science Division, Math department, to be handled at the beginning of the semester. |</p>
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<tr>
<td><strong>b- Required Books (Textbooks)</strong></td>
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</tr>
<tr>
<td><strong>c- Recommended Books</strong></td>
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<td><strong>d- Periodicals, Web Sites, ..., etc.</strong></td>
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**Course Instructor:** Dr. Yasser Fouad  
**Head of Department:** Prof. Dr. Wagdy Gomaa.  
**Date:** 1/10/2014