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>
</tr>
</thead>
<tbody>
<tr>
<td>Math 150</td>
<td>Computer Programming</td>
<td>First level (second semester)</td>
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<table>
<thead>
<tr>
<th>Specialization:</th>
<th>No. of Instructional Units:</th>
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<tbody>
<tr>
<td>Petroleum</td>
<td>Lecture 2    Tutorial 2</td>
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</tbody>
</table>

2- Course Aim

- Demonstrate theoretical knowledge and have practical skills in different areas of programming that are applicable in computer science such as flow control, loops, etc.
- Demonstrate an ability to initiate and sustain in-depth research relevant to application of real life in computer programming.
- Have an opportunity to put theory into practice via work-based learning.

3- Intended Learning Outcome

a- Knowledge and Understanding

a1. Describe the nature and operations of programming and its importance in computer science applications.

a2. Identify the steps required to carry out a piece of research on a topic within applications of programming in computer science.

a3. Basic logic concepts in computer science

a4. The binary system techniques

a5. The flow chart of algorithm

a6. Problem solving techniques
### b- Intellectual Skills

- **b1.** Use appropriate theories, principles and concepts relevant to the programming languages that are applicable to computer science;
- **b2.** Analyze and interpret information from a variety of sources relevant to the topics under consideration;
- **b3.** Develop a reasoned argument to the solution of familiar and unfamiliar problems relevant to these topics (see the contents);

### c- Professional Skills

- **c1.** Plan practical activities using techniques and procedures appropriate to applications of programming in computer science;
- **c2.** Execute a piece of independent research using *programming* and computer media and techniques;

### d- General Skills

- **d1.** Develop appropriate effective written and oral communication skills relevant to *programming applications in computer science*;
- **d2.** Work effectively as part of a group, involving leadership, group dynamics and interpersonal skills such as listening, negotiation and persuasion relevant to *programming* and computer science;
- **d3.** Use organization skills (including task and time management) relevant to *computer science* both individually and in a group situation;
- **d4.** Solve problems relevant to *applications of programming* in computer science using ideas and techniques some of which are at the forefront of the discipline;

### 4- Course Content

- High level programming language (C).
- The notions of an algorithm and the formulation of a problem.
- Standard functions.
- Procedures and top down design.
- Declarations.
- Statements.
- Expressions - Input and output.
- Compilation and execution.
- Error messages.
- Debugging techniques.
- Loops.
- Arrays.
- Functions.
- Subroutines.
- Applications.
<table>
<thead>
<tr>
<th>5- Teaching and Learning Methods</th>
<th>Lecturers – Home works - Oral discussion - Quizzes</th>
</tr>
</thead>
<tbody>
<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>
</tr>
<tr>
<td>b- Schedule:</td>
<td>Mid-Term exam… …. Week 10 Final exam …………… Week 17</td>
</tr>
<tr>
<td>c- Weighing of Assessment:</td>
<td>Term work (exam + home works) 20% Oral exam 10% Final exam 70%</td>
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<tr>
<td>8- List of References:</td>
<td>C programming for scientists and engineering</td>
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<tr>
<td>a- Course Notes</td>
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<td>b- Required Books (Textbooks)</td>
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<td>c- Recommended Books</td>
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<td>d- Periodicals, Web Sites, ..., etc.</td>
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**Course Instructor:** Dr. Yasser Fouad  
**Head of Department:** Prof. Dr. Mahmoud El-Alem.  
**Date:** 1/3/2010