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>CS 212</td>
<td>Structure of programming Languages</td>
<td>Second level (First semester)</td>
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<thead>
<tr>
<th>Specialization:</th>
<th>No. of Instructional Units:</th>
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<tbody>
<tr>
<td>Computer Science</td>
<td>Lecture: 2  Lab: 3</td>
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2- Course Aim

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

3- Intended Learning Outcome

4- Knowledge and Understanding

a1. Describe the main concepts, definitions of language Design  
a2. Review theories and concepts used in Compiler Design  
a3. Identify an understanding of the contribution and impacts of language Design in scientific, social, economic, environmental, political and cultural terms.  
a4. The basic syntax and semantic analysis  
a5. The basic data types for all languages  
a6. The loop, selection and expression statement
### b- Intellectual Skills

- **b1.** Manipulate and apply appropriate theories, principles and concepts relevant to language Design
- **b2.** Critically assess and evaluate the literature within the field of language Design
- **b3.** Deduce and interpret information from a variety of sources relevant to language Design

### c- Professional Skills

- **c1.** Plan, design and execute practical activities using techniques and procedures appropriate to Compiler Design
- **c2.** Execute a piece of independent research using languages, computer media and techniques;

### d- General Skills

- **d1.** Develop appropriate effective written and oral communication skills relevant to the specific course of language Design
- **d2.** Demonstrate the ability to work effectively as part of a group
- **d3.** Solve problems relevant to language 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 old and new languages some of which are at the forefront of the discipline;

### 4- Course Content

- Design and implementation of programming language translators.
- Parsing and scanner
- Run-time storage management
- Error recovery.
- Code generation
- Register allocation.
- Data flow and optimization.
- Data types and names
- Statements
- Selection, iterative and conditional statements
- Object and class
<table>
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<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% Lab exam 10% Oral exam 10% Final exam 60%</td>
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<tr>
<td>a- Course Notes</td>
<td>Course notes provided by the Faculty member of Computer Science Division, Math department, to be handled at the beginning of the semester.</td>
</tr>
<tr>
<td>b- Required Books (Textbooks)</td>
<td>Concepts of programming languages, J. Sebasta, 2007</td>
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<tr>
<td>c- Recommended Books</td>
<td>Concepts of programming languages, J. Sebasta, 2007</td>
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<tr>
<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:** 1/10/2010