



Arab Academy for Science, Technology & Maritime Transport  
College of Engineering & Technology  
Department of Computer Engineering

**University/Academy:** Arab Academy for Science, Technology & Maritime Transport  
**Faculty/Institute:** College of Engineering & Technology  
**Program:** B.Sc. Mechanical Engineering

**Form no. (12)**  
**Course Specification**

**1- Course Data**

|  |  |                           |                       |  |
|--|--|---------------------------|-----------------------|--|
| Course Code:<br><b>CC 213</b>                  | Course Title:<br><b>Programming Applications</b> |                           |                       | Academic Year/Level:<br><b>3<sup>rd</sup> year / 6<sup>th</sup> semester</b> |
| Specialization:<br><b>Computer Engineering</b> | Credit Hours:<br><b>3</b>                        | Lecture:<br><b>2 Hrs.</b> | Lab:<br><b>2 Hrs.</b> | <b>Prerequisite</b><br>-----<br>CC 112                                       |

**2- Course Aim**

To help students develop engineering skills to design and solve problems using C structured programming

**3- Intended Learning Outcomes**

|                                       |  |
|---------------------------------------|--|
| <b>m- Knowledge and Understanding</b> | <p><b>Through knowledge and understanding, students will be able to:</b></p> <ul style="list-style-type: none"> <li>• How to write a program using C language (K4)(K 8)</li> <li>• using flowcharts to develop programs (K5)</li> <li>• Using one dimensional arrays to map and store different types of data (K4)</li> <li>• Learn about different types of sorting and searching algorithms (K4)(K 8)</li> <li>• Learn how to use the different algorithms to solve real life problems (K5)</li> <li>• Using two dimensional arrays to map and store different types of data (K4)</li> <li>• Learn about points and how they can be used to store some types of data (K4)(K 8)</li> <li>• Learn about strings and their usage (K4)</li> <li>• Learn how to use the String.h library (K 8)</li> <li>• Learn about structures and how can they be used to map and store complex types of data (K4)(K 8)</li> <li>• Using structures and unions effectively to store and represent different types of data (K4)</li> <li>• Learn about recursive functions and how they can be used to solve different types of engineering related problems (K5)(K 8)</li> <li>• Learn about text files and their manipulation (K4)(K 8)</li> <li>• Learn about binary files and their manipulation (K4)(K 8)</li> <li>• Learn about bitwise operators (K4)</li> <li>• Learn about I/O interfacing (K4)</li> <li>• Case study a number of advanced problems and how they can be solved using C language (K5)(K 8)</li> </ul> |
| <b>n- Intellectual Skills</b>         | <p><b>Through intellectual skills, students will be able to:</b></p> <ul style="list-style-type: none"> <li>• Using Visual C++ watches and debugging tools to insure a bug free programs (I8)</li> </ul>   |
| <b>o- Professional Skills</b>         | <p><b>Through professional and practical skills, students will be able to:</b></p> <ul style="list-style-type: none"> <li>• Use Microsoft Visual Studio to develop C applications. (P6)</li> <li>• Write C applications that reads different types of data from the user and perform various operations on them.(P1)(P6)</li> <li>• Write C applications that implements and use one dimensional arrays (P6)</li> <li>• Write C applications that implements and use the different sorting and searching techniques (P6)(P15)</li> <li>• Write C applications that implements and use two dimensional arrays (P6)</li> </ul>   |

|                          |   |
|--------------------------|---|
|                          | <ul style="list-style-type: none"> <li>• Write C applications that implements and use pointers (P6)</li> <li>• Write C applications that implements and use strings (P3)(P6)</li> <li>• Write C applications that implements and use structures (P6)</li> <li>• Write C applications that implements and use structures and unions (P2)(P6)</li> <li>• Write C applications that implements and use recursive functions (P2)(P3)</li> <li>• Write C applications that implements and use text files (P3)</li> <li>• Write C applications that implements and use binary files (P3)</li> <li>• Write C applications that implements and use bitwise operators and I/O interfacing (P3)</li> <li>• Write C applications that implements and use advanced algorithms and programming techniques to solve a number of real life engineering problems (P1)(P3)(P15)</li> </ul> |
| <b>p- General Skills</b> | <p><b>Through general and transferable skills, students will be able to:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |

#### 4- Course Content

|                   |  |
|-------------------|--|
| <b>Week No.1</b>  | Revision of structured programming constructs: selection, repetition, and Functions. |
| <b>Week No.2</b>  | Revision of one dimensional array.   |
| <b>Week No.3</b>  | Searching and sorting.   |
| <b>Week No.4</b>  | Two dimensional arrays.  |
| <b>Week No.5</b>  | Pointers.  |
| <b>Week No.6</b>  | Strings.   |
| <b>Week No.7</b>  | 7th week exam.   |
| <b>Week No.8</b>  | Structures.  |
| <b>Week No.9</b>  | Structures/Unions.   |
| <b>Week No.10</b> | Recursion.   |
| <b>Week No.11</b> | Text Files.  |
| <b>Week No.12</b> | 12th week exam.  |
| <b>Week No.13</b> | Binary Files.  |
| <b>Week No.14</b> | Bitwise Operators/ I/O Interfacing.  |
| <b>Week No.15</b> | Advanced Applications.   |
| <b>Week No.16</b> | Revision of structured programming constructs: selection, repetition, and Functions. |

#### 5- Teaching and Learning Methods

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|---|
| <ul style="list-style-type: none"> <li>• Lectures</li> <li>• Tutorials</li> <li>• Reports &amp; sheets</li> <li>• Laboratories</li> <li>• Seminars</li> </ul> |
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**6-Teaching and Learning Methods for Students with Special Needs**

- Personalized teaching is available for special needs students and an academic advisor is appointed to follow up with these students and to monitor progress.

**7- Student Assessment**

|                                  |   |
|----------------------------------|---|
| <b>a-Procedures used</b>         | 1-Written Examinations to assess The Intended Learning Outcomes.<br>2-Class Activities (Reports, Discussions, -----) to assess The Intellectual Skills.   |
| <b>b- Schedule:</b>              | Assessment 1 7 <sup>th</sup> Week Written Exam<br>Assessment 2 12 <sup>th</sup> Week Written Exam<br>Assessment 3 Continuous Assessments<br>Assessment 4 16 <sup>th</sup> Week Final Written Exam         |
| <b>c- Weighing of Assessment</b> | 7 <sup>th</sup> Week Examination 25 %<br>12 <sup>th</sup> Week Examination 15 %<br>Final-term Examination 40 %<br>Oral Examination 00 %<br>Practical Examination 10 %<br>Semester Work 10 %<br>Total 100% |

**8- List of References:**

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| <b>a- Course Notes</b>                 | •  |
| <b>b- Required Books (Textbooks)</b>   | • J.Hanly and E. Koffman, "C Program Design for Engineers", Addison Wesley, latest edition |
| <b>c- Recommended Books</b>            | • H.Schildt, "C, the complete reference ", Osborne McGrawHill, latest edition.             |
| <b>d- Periodicals, Web Sites, etc.</b> |  |

Course coordinator:

Program Manager: