



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

Form no. (12): Course Specification

1- Course Data

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| Course Code: CC112 | Course Title: Structured Programming | Academic Year/Level: 1th year / 2nd semester |
| Specialization: Computer Engineering | Credit Hours: 3 Lecture: 2 Lab: 2 | Prerequisite ----- CC111 |

2- Course Aim

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

3- Intended Learning Outcomes

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| a- Knowledge and Understanding | <p>Through knowledge and understanding, students will be able to:</p> <p>a1. Concepts and theories of mathematics and sciences, appropriate to the computer engineering.</p> <ul style="list-style-type: none"> • Define in English a solution to a problem. • Explain the steps for compiling a program. • Define the software development lifecycle. <p>a3. Methodologies of solving engineering problems, data collection and interpretation.</p> <ul style="list-style-type: none"> • List the different data type operators. • Identify some simple functions using C. • Demonstrate the use of input/output commands. • Define the, if statement and its various uses. • Examine the use of the switch statement vs. if statement. • List the different looping structures. <p>a6. Related research and current advances in the field of computer software and hardware and contemporary engineering topics.</p> <ul style="list-style-type: none"> • Demonstrate the different uses of each looping structure. • Demonstrate the use of functions. • Define arrays and their uses • Define multidimensional arrays. |
| b- Intellectual Skills | <p>Through intellectual skills, students will be able to:</p> <p>b1. Select/Apply appropriate mathematical and computer-based methods for modeling and analyzing problems and select appropriate solutions for engineering problems based on analytical thinking.</p> <ul style="list-style-type: none"> • Solve problems by writing pseudo code. <p>b2. Think in a creative and innovative way in problem solving and design using the latest technologies and solve engineering problems, often on the basis of limited and possibly contradicting information while identifying symptoms in problematic situations.</p> <p>b5. Select, synthesize, and apply suitable IT tools to computer engineering problems.</p> <ul style="list-style-type: none"> • Apply the knowledge of C to create programs to solve problems. |

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| c- Professional Skills | <p>Through professional and practical skills, students will be able to: c1. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems.</p> <ul style="list-style-type: none"> • Explain the Borland C interface • Experiment with the IDE • Apply the simple functions in a program. • Design a program that uses input/output functions. • Design a program that uses if statements. • Differentiate between the if statement and the switch statement. • Design a program that uses looping structures • Design programs that use functions. • Design programs that use arrays • Design programs that use multidimensional arrays. |
| d- General Skills | <p>Through general and transferable skills, students will be able to: d2. Work in stressful environment and within constraints, communicate effectively, lead and motivate individuals and effectively manage tasks, time, and resources.</p> <ul style="list-style-type: none"> • Analyze operations, realize requirements and constraints of projects and, consequently, achieve an appropriate cost effective design • Perform troubleshooting in computer systems • Demonstrate inductive reasoning abilities, figuring general rules and conclusions about seemingly unrelated events • Analyze the local and global impact of computing on individuals, organizations and society <p>d3. Demonstrate efficient IT capabilities.</p> <ul style="list-style-type: none"> • Use current advanced techniques, skills, and tools necessary for computing practices. • Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs • Use general computer and software tools professionally |

4- Course Content

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| Week No.1 | An introduction to computer and programming. |
| Week No.2 | Problem solving skills and software development methods. |
| Week No.3 | Data type operators and simple functions.. |
| Week No.4 | Input/output statements and expressions. |
| Week No.5 | Selection structures and switch statements. |
| Week No.6 | Selection structures and switch statements continued. |
| Week No.7 | Revision + 7 th Week Exam. |
| Week No.8 | Repetition and loop statements. |
| Week No.9 | Repetition and loop statements continued. |
| Week No.10 | Functions and modular programming. |

Week No.11 Functions and modular programming continued.

Week No.12 Revision + 12th Week Exam.

Week No.13 Arrays applications

Week No.14 Arrays applications continued

Week No.15 Multidimensional arrays.

Week No.16 Presentation of projects and Final Exam.

5- Teaching and Learning Methods

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

6-Teaching and Learning Methods for Students with Special Needs

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

The academic advisors of each student, as well as dedicated department TAs monitor the students' progress and solve any problem he/she may encounter.

7- Student Assessment

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

8- List of References:

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| a- Course Notes | N/A |
| b- Required Books (Textbooks) | • C Program Design for Engineers By: Jerry R.Hanly & Elliot B.Koffman |
| c- Recommended Books | • The C programming language By: Brian Kerning & Dennis Ritchie • Programming with C By: Byron S. G. Hfield |
| d- Periodicals, | N/A |

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| Web Sites, etc. | |
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Course Instructor:
Prof. Dr. Abd El Baith Mohamed

Program Manager:
Prof. Dr. Mohamad AbouEI-Nasr

**Dean of College of Engineering and
Technology of AASTMT**
Name: **Prof. Moustafa Hussein Aly**
Signature:

**Executive Manager of Quality Assurance
Center of AASTMT**
Name: **Prof. Aziz Ezzat**
Signature: