

Module Specification

1. Factual information			
Module title	TM103: Computer Organization and Architecture	Level	1
Module tutor	Ms. Amal Ghazi	Credit value	15
Module type	Taught	Notional learning hours	4

2. Rationale for the module and its links with other modules
This module offers a clear and comprehensive survey about computer organization and architecture. It introduces the inner workings of a modern digital computer through an integrated presentation of fundamental concepts and principles.

3. Aims of the module
<p>To emphasize on the concept of computer organization.</p> <p>To emphasize on the concept computer architecture.</p> <p>To comprehend the different core concepts behind the hardware layer of a computer system.</p> <p>To recognize the mathematical concepts of the low level computer structure (circuits and gates).</p> <p>To know the processor's instruction sets architecture and implementation.</p> <p>To recognize the memory organization concept and methods.</p>

4. Pre-requisite modules or specified entry requirements
EL111 is a mandatory Pre-requisite for TM103 Module.

5. Intended learning outcomes	
A. Knowledge and understanding	Learning and teaching strategy
<p>The module provides student with an understanding of:</p> <p>A1. Historical developments of computers.</p> <p>A2. The Von-Neumann Model.</p> <p>A3. Data representation and arithmetic in Computer Systems.</p> <p>A4. Boolean Algebra and Digital Logic.</p> <p>A5. Assembly language of an intuitive architecture (MARIE).</p> <p>A6. Memory organization and addressing modes.</p> <p>A7. Cache memory mapping Schemes.</p>	<ul style="list-style-type: none"> • 25% face-to-face tutorial sessions • Quiz and Take Home Project • Module learning text book and support material

B. Cognitive skills	Learning and teaching strategy
<p><u>To be able to</u></p> <p>B1. Identify the different parts of any computer system and understand their roles.</p> <p>B2. Understand the instruction set of any modern computer system.</p> <p>B3. Evaluate the performance of modern computer systems.</p>	<ul style="list-style-type: none"> • 25% face-to-face tutorial sessions • Quiz and Take Home Project • Module learning booklets and support material

C. Practical and professional skills	Learning and teaching strategy
<p><u>To be able to</u></p> <p>C1. Have an awareness of the process of designing, writing and testing MARIE assembly programs.</p> <p>C2. Use low level programming skills appropriate to a task.</p> <p>C3. Ability to use the MARIE and data path simulator software.</p>	<ul style="list-style-type: none"> • 25% face-to-face tutorial sessions • Project • Module learning booklets and support material

D Key transferable skills	Learning and teaching strategy
<p><u>To be able to</u></p> <p>D1. Interact effectively within a group using electronic conferencing techniques.</p> <p>D2. Contribute to discussions on a conference.</p> <p>D3. Improve own learning and performance.</p> <p>D4. Communicate effectively about testing strategies, design and low level codes.</p> <p>D5. Use electronic media (the web and electronic conferencing) for information retrieval and communication.</p>	<ul style="list-style-type: none"> • 25% face-to-face tutorial sessions • Quiz and Take Home Project • Module learning booklets and support material

6. Indicative content.
<p>CHP1.: Introduction to Computer Organization & Architecture CHP2 : Data Representation in Computer Systems</p>

6. Indicative content.
CHP3 : Boolean Algebra and Digital Logic CHP4 : MARIE - An Introduction to a Simple Computer CHP5 : A Closer Look at Instruction Set Architectures (short summary) CHP6 : Memory

7. Assessment strategy, assessment methods and their relative weightings
Quiz: 10% Project: 10% MTA: 30% Exam: 50%

8. Mapping of assessment tasks to learning outcomes																		
Assessment tasks	A 1	A 2	A 3	A 4	A 5	A 6	A 7	B 1	B 2	B 3	C 1	C 2	C 3	D 1	D 2	D 3	D 4	D 5
Quiz	✓	✓	✓	✓	✓													
Project								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MTA	✓	✓	✓	✓				✓		✓						✓	✓	
Exam	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓				✓	✓	

9. Teaching staff associated with the module	
Tutor's name and contact details	Contact hours
Name: Ms. Amal Ghazi Email ID: aghazi@aou.edu.kw	

10. Key reading list				
Author	Year	Title	Publisher	Location
Linda Null & Julia Lobur	2015 4 th Edition	The essentials of computer organization and architecture	Jones and Bartlett Publishers	UK

11. Other indicative text (e.g. websites)
https://lms.arabou.edu.kw/ http://computerscience.jbpub.com/ecoa/2e/student_resources.cfm



Module specification

1. Factual information			
Module title	TM105: Introduction to Programming	Level	1
Module tutor	Ms. Amal Naji	Credit value	15 points
Module type	Taught	Notional learning hours	4 credit hours

2. Rationale for the module and its links with other modules

This module is an introductory level programming module and it is meant to provide basic foundation in computer programming to students. Students will learn how to develop solutions (algorithms) using pseudocode to solve simple problems. Thereafter, they will learn how to implement these solutions using a programming language (Java). This module serves as foundation for second level programming modules.

3. Aims of the module

The module aims to:

- Introduce the technique of solving simple problems using pseudocode.
- Introduce Java programming via writing, compiling and executing simple programs.
- Present how to store and deal with data including variables, constants, and expressions.
- Cover deeply the concepts of program control structure and illustrate each concept with a diagrammatic notation using UML.
- Present how these concepts are implemented in Java.
- Introduce the concept of modularization and how to write Java methods.
- Present how to deal with basic data structures like strings, arrays and two dimensional arrays.

4. Pre-requisite modules or specified entry requirements

Students are expected to have completed study of EL111 module before they can undertake this module.

5. Intended learning outcomes	
A. Knowledge and understanding	Learning and teaching strategy
<p>After studying the module, <u>the student will be able to:</u></p> <p>A1. Understanding of the design and programming processes</p> <p>A2. Knowledge of the main constructs and mechanisms in programming using Java language.</p> <p>A3. Understanding of the techniques used in developing a medium Java application.</p> <p>A4. Understanding of the basic data structures like strings, arrays and two dimensional arrays.</p>	<ul style="list-style-type: none"> • 25% face-to-face tutorial sessions • Video recorded sessions • TMA • MTA and final exam • Text book and supporting material

B. Cognitive skills	Learning and teaching strategy
<p>After studying the module, <u>the student should be able to:</u></p> <p>B1. Describe and apply key concepts and techniques in software design and development.</p> <p>B2. Analyse and abstract away from the details of a problem.</p> <p>B3. Design and formulate an appropriate solution to a problem and evaluate it.</p> <p>B4. Deal professionally with the basic data structures.</p>	<ul style="list-style-type: none"> • 25% face-to-face tutorial sessions • Video recorded sessions • TMA • MTA and final exam • Text book and supporting material

C. Practical and professional skills	Learning and teaching strategy
<p>After studying the module, <u>the student should be able to:</u></p> <p>C1. Create, develop and trace Java programs.</p> <p>C2. Use software tools such as a Java IDE and an On-line Java compiler.</p> <p>C3. Use appropriate programming skills.</p> <p>C4. Traverse data in the basic data structures in a professional way.</p>	<ul style="list-style-type: none"> • 25% face-to-face tutorial sessions • Video recorded sessions • TMA • MTA and final exam • Text book and supporting material

D Key transferable skills	Learning and teaching strategy
<p>After studying the module, <u>the student should be able to:</u></p> <p>D1. Find information from a range of sources to support a task.</p> <p>D2. Plan medium tasks.</p> <p>D3. Use Java libraries.</p> <p>D4. Use appropriate numerical, mathematical and abstraction skills.</p>	<ul style="list-style-type: none"> • 25% face-to-face tutorial sessions • Video recorded sessions • TMA • MTA and final exam • Text book and supporting material

6. Indicative content.

Chapter 1: Introduction to Computers, Programming, and Java
Chapter 2: Elementary Programming
Chapter 3: Selections
Chapter 4: Mathematical Functions, Characters, and Strings
Chapter 5: Loops
Chapter 6: Methods
Chapter 7: Single-Dimensional Arrays
Chapter 8: Multidimensional Arrays

7. Assessment strategy, assessment methods and their relative weightings

TMA: 20% (Online Quiz 10%+ Small Project 10% (presentation 5% + code 5%))
MTA: 30%
Final Exam: 50%

8. Mapping of assessment tasks to learning outcomes

Assessment tasks	Learning outcomes															
	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
TMA - Online Quiz	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
TMA - Small Project	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
MTA	✓	✓			✓	✓	✓		✓		✓				✓	✓
Final Exam	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓			✓	✓

9. Teaching staff associated with the module

Name and contact details

Ms. Amal Naji, anaji@aou.edu.kw

10. Key reading list

Author	Year	Title	Publisher	Location
Y. Liang	2014 10 th edition	Introduction to Java Programming, Comprehensive Version, Global Edition	Pearson	http://catalogue.pearsoned.co.uk/catalog/academic/product?ISBN=9781292070018
Paul Deitel and Harvey Deitel	2014 10 th edition	Java How to Program, Late	Pearson	http://www.pearsoned.co.uk/bookshop/detail.asp?item=100000000574517

10. Key reading list				
Author	Year	Title	Publisher	Location
		Objects Version, Global Edition		
Cay S. Horstmann	2016 2 nd edition	Big Java, Late Objects	Wiley	http://eu.wiley.com/WileyCDA/WileyTitle/productCd-1119321077.html
Walter Savitch	2015 6 th edition	Absolute Java, Global Edition	Pearson	http://www.pearsoned.co.uk/bookshop/detail.asp?item=100000000613443
Tony Gaddis	2015 6 th edition	Starting Out with Java: From Control Structures through Objects, Global Edition	Pearson	http://www.pearsoned.co.uk/bookshop/detail.asp?item=100000000611758

11. Other indicative text (e.g. websites)
http://www.cs.armstrong.edu/liang/intro10e/ http://www.tutorialspoint.com/compile_java8_online.php