Course Syllabus

Faculty: Computing & Information Technology
Department: CS, IT, IS
Program: CS, IT, IS

I. General information about the course instructor :

Name	Abdulrahman Al-Molegi	**Office Hours(3 Hours Weekly)**					
Location & phone number	Information System Department	**Sat**	**Sun**	**Mon**	**Tue**	**Wed**	**Thu**
Email	aqmolijy2@yahoo.com						√

II. General information about the course:

1.	**Course Title :**	Programming and Problem Solving				
2.	**Course Code and Number :**	CIT05				
3.	**Credit Hours :**	**Credit Hours**				**Total**
		Theoretical	**Seminar/Tutorial**	**Practical**	**Training**	
		2	**0**	**2**	**0**	**3**
4.	**Study Level and Semester:**	1th year , 2nd semester				
5.	**Pre-requisites (if any):**	CIT04 - Computer fundamentals				
6.	**Co-requisites (if any):**	-				
7.	**Program in which the course is offered:**	CIT				
8.	**Teaching Language:**	English				
9.	**Instruction location:**					

I. Course Description

- This course will cover the abstract and structure of programming, problem-solving techniques and tools, flowcharts and algorithms. Abstract data types and their list, variables declarations and memory locations. Arithmetic operators, operator's precedence, equality and relational operators, cohesion and coupling. Abstract programming structure types: sequences, selection (decision making), iteration, multiple iteration, and errors types and program structure correctness and verification, one and multi-Dimensions arrays (basics using and operations). According to the course plan, the prerequisite of this course is Computer fundamentals. To achieve the course goals, different teaching strategies will be applied such as direct, indirect and interactive and self-learning.

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II. Course Aims:

1. Expand student's knowledge with the importance of Knowledge of problem solving and programming concepts.
2. Learn students with multiple programming techniques and apply those techniques to specific problems.
3. Expand student's knowledge with the basics of mathematical functions and operators.
4. Train Students to utilize problem-solving tools, such as problem analysis charts, interactivity charts, IPO charts, algorithms, and flowcharts to design a solution to a problem.
5. Train Students to consider various problems and solve it using C-like procedural programming language.
6. Train Students to read and write effectively technical reports related to the field of Programming and Problem Solving.

III. Course Intended Learning Outcomes (CILOs) :

1. **a1-** Understand the importance of Knowledge of problem solving and programming concepts.
2. **a2-** Recognize the three logic structures (sequential, decision and loop) and explain the need for it.
3. **b1-** Draw a diagram to represent and solve problems.
4. **b2-** Differentiate between terms related to programming concepts.
5. **b3-** Analyze several alternative solutions to determine the best approach.
6. **c1-** Apply certain organizational tools for solution
7. **c2-** Demonstrate how organizational tools help you learn to solve problems on the computer
8. **c3-** Implement C-like programs to various problem.
9. **d1-** Write and present technical ideas and problem solving issues based on the acquired knowledge.

IV. Course Contents

Theoretical Aspect:

No.	Course Units	Sub-topics	Week due	Contact Hours
1	General Problem-Solving Concepts	- Problem Solving in Everyday Life. - Types of Problems. - Problem Solving with Computers. - Difficulties with Problem Solving.	1	2
2	Beginning Problem-Solving Concepts for the Computer	- Constants and Variables. - Data Types. - How the Computer Stores Data. - Functions. - Operators. - Expressions and Equations.	2	4
3	Planning Your Solution	- Organizing the Solution. - Using the Tools. - Testing the Solution. - Coding the Solution.	2	4
5	Mid Term Exam		1	2
6	An Introduction to Programming Structure	- Cohesion and Coupling. - Local and Global Variable. - Parameters. - Return Values. - Variable Names and the Data Dictionary. - The Three Logic Structures.	2	4

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7	Problem Solving with the Sequential Logic Structure	- Algorithm Instructions, Flowchart Symbols، and Pseudo-code. - The Sequential Logic Structure. - Solution Development.	2	4
8	Problem Solving with Decisions	- The Decision Logic Structure. - Multiple If/Then/Else Instructions. - Using Straight-Through Logic. - Using Positive Logic. - Using Negative Logic.	2	4
9	Problem Solving with Loops	- The Loop Logic Structure. - Incrementing. - While/WhileEnd. - Repeat/Until. - Automatic-Counter Loop. - Nested Loops.	2	4
10	Revision		1	2
11	Final Term exam		1	2
Total number of weeks and hours			**16**	**32**

Second: Practical/Tutorial/Clinical Aspects :

Write up practical/tutorial/clinical topics

No.	Practical/Tutorial/Clinical topics	No. of Weeks	Contact Hours
1.	Get started with C++ language environment program	1	2
2.	Data types	2	4
3.	Mathematical, Relational and Logical operator	1	2
4.	Problem Solving with Computers	2	4
5.	C++ Functions	1	2
6.	Sequential Logic Structure	2	4
7.	Decision Logic Structure	2	4
8.	Loop Logic Structure	2	4
9.	Revision	1	2
Total number of weeks and hours		**14**	**28**

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V. Teaching Strategies

1. Lectures.
2. Problem solving.
3. Classroom Discussion.
4. Assignment.
5. Tutorial
6. Research and Self-learning.

VI. Tasks and Assignments

No.	Task/Assignment	Week due	Mark
1	Complete the six problem-solving steps to solve problems.	3	5
2	Write the Algorithm for following problems.	6	5
3	Draw the flowchart for the following problems.	9	5
4	Write C++ code for the following problems.	12	5
5	Evaluate the following equations.	15	5

VII. Learning Assessment:

No.	Assessment Tasks	Assessment day & date	Mark	Weight
1	**Homework/Tasks/Assignments**	2	20	20%
2	**Quiz 1**	4	5	5%
3	**Midterm Exam**	7	20	20%
4	**Quiz 2**	10	5	5%
5	**Final Exam**	16	50	50%
	Total			

VIII. Learning Resources

1. Textbooks:

- Sprancle, M., 2005, Problem Solving and Programming Concepts, 7th Edtion, Prrentice Hall, USA.
- Walter Savitch, Problem Solving with C++ , 7th Edition, Addison Wesley.

2. Essential References:

- Deitel and Deitel, 2000, How to Program, 5th edition, Inc. and Prentice Hall.
- D.S. Malik, Thomson, 2007, C++ Programming: From Problem Analysis to Program Design, Third Edition, Course Technology.

3. Electronic Materials and Web Sites:

- www.deakin.edu.au/~agoodman/Ctutorial.html
- www.tldp.org/howto/c++programming.howto.html
- www.vb-bookmark.com/cpptutorial.html

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IX. Course Policies (To be determined by Faculty Deanship)	
1.	**Class Attendance :**
2.	**Tardy :**
3.	**Exam Attendance/Punctuality:**
4.	**Assignments & Projects:**
5.	**Cheating:**
6.	**Plagiarism:**
7.	**Other policies:**

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