University: *Fayoum University*
Faculty: *Computers and Information*
Department: *Computer Science*
First Year

Course Specification

1- Basic Information	
Code:	**Course Title:** Fundamentals Of Structured Programming
Programme: Computer Science	**Number of units:** **Lecture:** 2 hrs/ week **Tutorial:** 0 hrs/ week **Practical:** 2 hrs/ week

2- Aims of Course:	1. To illustrate some advanced topics in structured programming, such as structures, enumerations, functions, array, pointers, and files. 2. To illustrate techniques in the design and development of medium-sized applications and libraries using some programming language 3. To master the basics in designing subprograms, procedures and functions

3- Intended Learning Outcomes	
A- Knowledge and Understanding:	A9) Identify programming fundamentals and languages, algorithms analysis, and data structures. A13) Define the mapping of real-world problems to algorithmic solutions **Through the following**: a1 List the Concepts of structured programming a2. identify validation techniques used to produce quality software a3 Define the principals of creating and running a computer program a4. Identify the basic terminologies used in structured programming (C ++)..
B- Intellectual Skills:	B1 Analyze real problems, and appropriate problem solving methods that satisfy commercial or industrial constraints and analyze results B2 Determine different computer- system application attributes, components, relationships, patterns, architecture, and source of errors. B8 Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.

	Through the following:
	b1. Analyze a variety of simple algorithms and provide solution b2. Compare the usage of different data types in a computer program. b3 Compare different algorithms of the same problem b4. Modular development
C- Professional and Practical Skills:	C12 Design, implement, maintain, and manage software systems. Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context. **Through the following:** c1. Categorize the problem into its input, processing and output components, c2. identify what data is already available to the program and what must be inputted. c3. Compose the algorithm in an acceptable format; e.g., pseudo-code, structured chart. c4. Set computer programs based on the terminologies used in structured programming (C++). c5. Suggest software solutions.
D- General and transferable Skills	D4 Demonstrate independent critical thinking and problem solving skills. D6 Demonstrate skills in team work, team management, time management and organizational skills. **Through the following:** d1. Search the library and/or the internet for statements of programming languages. . d2. Enhance structured programs (functional decomposition).

4-Course Content:	1. Structured program development: Problem solving 2. decision structures, 3. repetition structures, 4. top-down and stepwise refinement. 5. Subprograms: Procedures, 6. functions. 7. Structured data types: one-dimension arrays, 8. **Mid Term Exam** 9. two-dimension arrays. Sets. 10. Records. Files: Text files random handling files. 11. String 12. Recursion: Recursive functions, towers of Hanoi.

5- Teaching and Learning Methods:	1. Lectures 2. Tutorials 3. Computer-lab Sessions 4. Practical lab work

	5. Class discussions 6. Internet searches 7. Problem-based Learning

6- Teaching and Learning Methods for handicapped students :   -

7- Student Assessment

A- Assessment Methods:	1. Midterm written exam:15 2. Oral exam:10 3. Practical exam:20 4. Final written exam:105
B- Assessment schedule:	Midterm Examination: Week 8 Practical examination: Week 13 Oral Examination: Week 14 Final Examination: Week 15
C- Weighting of assessments:	Assignments and Quizzes: Mid-Term Examination: Oral Examination: Practical Examination : Final-term Examination:

8- Books and References

A- Notes:	Handouts and notes prepared by the instructor
B- Essential Books (Text Books):	▪ **C++ How to Program (10th Edition) 10th Edition (2016)** ▪
C- Recommended Books:	▪ . Object Oriented Programming in C++, Primer (5th Edition)(2012) ▪ The C++ Programming Language, by B. Stroustrup, Addison-Wesley. 4th edition (2013)
D- Periodicals, Web sites, … etc	▪ http://www.cplusplus.com/

Course Professor: Dr. Mohamed Khafagy   Department Head: Dr. Amira Edress

Course Content Intended Learning Outcomes Matrix

Course Title: Fundamentals Of Structured Programming

Course Code:

Course Content	a. Knowledge &Understanding				B.Intellectual Skills				c. Professional Skills					D.General Skills	
	a1	a2	a3	a4	b1	b2	b3	b4	c1	c2	c3	c4	c5	d1	d2
1. Structured program development: Problem solving,	√	√	√	√	√	√			√	√	√				
2. decision structures,	√		√	√	√		√				√	√	√	√	√
3. repetition structures,	√		√	√	√		√				√	√	√	√	√
4. top-down and stepwise refinement.			√	√			√	√					√	√	√
5. Subprograms: Procedures,			√	√		√	√						√	√	
6. functions.			√	√			√	√					√	√	
7. Structured data types: one-dimension arrays,			√	√			√					√	√	√	

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8. MidTerm	√	√	√	√	√	√	√	√	√	√	√		√	√	√
9. two-dimension arrays. Sets.				√					√			√			√
10. Records. Files: Text files random handling files.			√					√							
11. String			√					√							√
12. Recursion: Recursive functions, towers of Hanoi.			√					√							√

Course coordinator: … **Dr. Mohamed Khafagy**   ………   Head of Department: Dr.Amira Edress