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| المملكة العربية السعودية  وزارة التعليم العالي  **جامعة أم القرى**  الكلية الجامعية بالجموم – قسم الحاسب الآلي |  | Kingdom of Saudi Arabia  Ministry of Higher Education  **Umm Al-Qura University**  University College in Al-Jamoum  Computer Dept. |

Course Specification

1. **Course number and name:** (2316204-3) Structured Programming
2. **Credits and contact hours:** 3Credits

(Lecture: 2/week – Practical Session: 2/week)

1. **Instructor’s or course coordinator’s name:** Dr. Wael Deabes
2. **Text books**
3. **Main Text book:** P. Deitel, H. Deitel, C++ How to Program, 8th Edition, Prentice Hall, 2011.
4. **Reference:** D. S. Malik, C++ Programming: From Problem Analysis to Program Design, 6th Edition, Cengage Learning, 2012.
5. **Specific course information**
6. **brief description of the content of the course (Catalog Description):**

This course examines advanced features of modern programming languages such as pointers, files, modules. Upon the completion of this course, the student will have learned, through appropriate classroom and laboratory experiences, the essential of the concepts of the structured programming paradigm. They should identify the steps involved in creating a structured program and understand the nature and function, arrays, pointers and main file processing. They should also use these structures within a high-level language constructs and syntax (C++) to design, write and debug appropriate computer programs.

1. **prerequisites or co-requisites:** Computer Programming (2316103-3)
2. **indicate whether a required, elective, or selected elective course in the program:** required
3. **Specific goals for the course**

The student will be able to:

1. Understand the advanced terminology and concepts of structured programming technique.
2. Demonstrate basic knowledge and understanding of functions, arrays and file streams.
3. Interpret verbal problem specifications and algorithms into program code using C++ language.
4. Design, write and debug computer programs in C++ language within the structured programming paradigm.

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| *Course*  *Goals* | *Program Outcomes* | | | | | | | | | | |
| SOa | SOb | SOc | SOd | SOe | SOf | SOg | SOh | SOi | SOj | SOk |
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| **Relationship of Course Goals to the Program Student Outcomes** | |
| **SOa** | An ability to apply knowledge of computing and mathematics appropriate to the discipline   * *Students acquire the concepts of Object Oriented Programming and use it to design applications.* |
| **SOb** | An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.   * *Students acquire the ability to decompose problems into components and design and code each component.* |
| **SOc** | An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs.   * *Students are required design and implement software to meet specifications.* |
| **SOj** | An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.   * *Students acquire the ability to design advanced logical algorithms by decomposing it and writing objects realizing these tasks.* |
| **SOk** | An ability to apply design and development principles in the construction of software systems of varying complexity.   * *Students acquire the principles of structured programming through the use of UML design principles and tools.* |

1. **Brief list of topics to be covered**

* Functions
* Recursion
* Global Variables and Global Constants
* Arrays and Vectors
* Pointers
* Files processing
* Modules