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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:** (2316331-4) Programming Language
2. **Credits and contact hours:** 4Credits

(Lecture: 4/week – Practical Session: Non)

1. **Instructor’s or course coordinator’s name:** Dr. Abdel-Rahman Hedar
2. **Text books**
3. **Main Text book:** K. Louden, Programming Languages: Principles and Practice, Thompson, 2003.
4. **Reference:** Allen Tucker and Robert Noonan, Programming Languages: Principles and Paradigm, McGraw-Hill Companies; 2nd Edition, 2006.
5. **Specific course information**
6. **brief description of the content of the course (Catalog Description):**

The course aims to let students obtaining an understanding of programming languages, environments, translation, and implementation.

1. **prerequisites or co-requisites:** Advanced Programming (2316205-3), Logic Programming (2316317-3)
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 role of certain theoretical formalisms, and apply them in the context of programming languages.
2. Apply the grammar attributes to specify context-sensitive conditions, compile-time analyses, and translational semantics.
3. Define the axiomatic semantics of simple imperative constructs, and using it to prove program properties.
4. Explain the operational semantics of programming languages.
5. Identify the differences between programming methodologies.
6. Implement parts of simple interpreters and compilers.

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| *Course*  *Goals* | *Program Outcomes* | | | | | | | | | | |
| SOa | SOb | SOc | SOd | SOe | SOf | SOg | SOh | SOi | SOj | SOk |
| 1 |  | **🗸** |  |  |  |  |  |  |  |  |  |
| 2 |  | **🗸** |  |  |  |  |  |  |  |  |  |
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| **Relationship of Course Goals to the Program Student Outcomes** | |
| **SOb** | An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.   * *Students could determine the language that is suitable language for programming each problem.* |
| **SOd** | An ability to function effectively on teams to accomplish a common goal.   * *Students work in team to accomplish a research on certain language.* |
| **SOf** | An ability to communicate effectively with a range of audiences.   * *The assigned research on a language and presentation at the end of course enable students to communicate effectively.* |
| **SOh** | Recognition of the need for, and an ability to engage in, continuing professional development.   * *Students learn how to differentiate between programming languages domains is useful in continuation of professional development.* |
| **SOi** | An ability to use current techniques, skills, and tools necessary for computing practices.   * *Students get knowledge about different language as tools and technologies to be used in developing applications.* |

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

* Introduction
* Computer Language History
* Language Design
* Syntax
* Basic Semantics
* Data Types and Memory Management
* Control I: Expressions and Statements
* Control II: Procedures and Environments
* Programming Paradigms: Object-Oriented, Functional & Logic