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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:** (2316513-3) Expert Systems
2. **Credits and contact hours:** 3Credits

(Lecture: 3/week – Practical Session: Non)

1. **Instructor’s or course coordinator’s name:** Dr. Majid Al-Maraashi
2. **Text books**
3. **Main Text book:** Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, Prentice Hall, 3rd Edition, 2010.
4. **References:**

A.B. Badiru and J. Cheung, Fuzzy Engineering Expert Systems with Neural Network Applications, Wiley-InterScience, 2002.

J. Giarratano and G. Riley, Expert Systems: Principles and Programming, PWS Publishing, 4th Edition, 2004.

1. **Specific course information**
2. **brief description of the content of the course (Catalog Description):**

The course aims to teach and train the students for building and using expert systems using various intelligent techniques.

1. **prerequisites or co-requisites:** Artificial Intelligence (2316432-3)
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 expert systems fundamentals including knowledge types, engineering process activities and acquisition.
2. Apply a wide variety of representation and inference techniques to deal with the knowledge in expert systems.
3. Design and implement knowledge-based systems and production rules using appropriate programming languages.

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| *Course*  *Goals* | *Program Outcomes* | | | | | | | | | | |
| SOa | SOb | SOc | SOd | SOe | SOf | SOg | SOh | SOi | SOj | SOk |
| 1 | ✓ |  |  |  |  |  |  |  |  |  |  |
| 2 | ✓ |  |  |  |  |  |  | ✓ | ✓ |  |  |
| 3 |  |  | ✓ |  |  | ✓ |  |  | ✓ |  | ✓ |

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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 apply knowledge of computing and design to a project.* |
| **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 a software project to meet a specification.* |
| **SOf** | An ability to communicate effectively with a range of audiences.   * *The projects require communications, specifications, progress reports, and final report.* |
| **SOh** | Recognition of the need for, and an ability to engage in, continuing professional development.   * *The students often must utilize the internet to learn and apply the new technologies that they have chosen in support of their projects.* |
| **SOi** | An ability to use current techniques, skills, and tools necessary for computing practices.   * *Projects use current computing and modeling/design tools.* |
| **SOk** | An ability to apply design and development principles in the construction of software systems of varying complexity.   * *The students are required to use standard design and development principles on a significant software project.* |

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

* Introduction
* Building a knowledge base
* Logical reasoning systems
* Expert systems design
* Fuzzy logic
* Neural networks
* Genetic algorithms
* Expert systems languages