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| **1** | **Course title** | Artificial Intelligence |
| **2** | **Course number** | 5401342 |
| **3** | **Credit hours (theory, practical)** | 3 Theory |
| **Contact hours (theory, practical)** | 3 Theory |
| **4** | **Prerequisites/corequisites** | Theory of Algorithms (5401341) |
| **5** | **Program title** | Computer Information Systems |
| **6** | **Program code** | 1 |
| **7** | **Awarding institution**  | The University of Jordan |
| **8** | **School** | Faculty of Systems and Information Technology. |
| **9** | **Department** | Department of Computer Information Systems |
| **10** | **Level of course**  | 3rd year |
| **11** | **Year of study and semester (s)** | Any |
| **12** | **Final Qualification** | Bachelor (B.Sc.) |
| **13** | **Other department (s) involved in teaching the course** | Department of Information Technology |
| **14** | **Language of Instruction** | English |
| **15** | **Date of production/revision** | Production: 28-1-2020. Revision: 05/02/2020 |

**16. Course Coordinator:**

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| Khaled AldebeiOffice numbers: MAIN Bldg. 306Office hours: Sunday: 13:00 - 14:00, Monday: 12:30 – 14:00, Tuesday and Thursday: 11:00 – 12:00.Phone numbers: 03 209 0450 Ext. 36099E-mail: k.debei@ju.edu.jo |

**17. Other instructors:**

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| N/A |

**18. Course Description:**

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| Introduction to AI and application; Exhaustive Search methods; Heuristic search Methods; First Order Logic for knowledge representation; Programming in PROLOG; Production rule systems; Principles of expert systems; Expert systems Programming in PROLOG; Knowledge Acquisition, weekly practice in the lab. |

**19. Course aims and outcomes:**

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| 1. Aims: The aim of the course is to enable students to solve problems using explicit knowledge and reasoning. Students will be able (1) to express knowledge of a simple domain in propositional and/or first order predicate calculus, (2) design a solution to simple problems where AI techniques can be employed and (3) write simple programs in Prolog that reason about the available knowledge to achieve their goals. Furthermore, student will have the ability to decide and use some appropriate search techniques (blind or heuristic) for some problems.
2. Intended Learning Outcomes (ILOs): Upon successful completion of this course students will …

OA-Knowledge and Understanding (students should)  (OA1) have some understanding of propositional calculus, first order predicate logic and other Knowledge representation techniques (OA2) have some understanding of Prolog  (OA3) have some understanding of the basic architecture of expert systems.  (OA4) have some understanding of some blind and heuristic search techniques. OB-Intellectual skills-with ability to (OB1) Appreciate the subtleties related to different approaches to AI  (OB2) Appreciate the subtleties related to different AI techniques. (OB3) Decide the suitability of AI techniques for a problem/domain. (OB4) Analyze and design a solution to a problem where AI techniques can be employed. OC- Practical Skills-With ability to  (OC1) Implement a solution to a simple problem where AI techniques can be employed.  (OC2) Write simple AI programs in PROLOG. (OC3) Express knowledge of a domain in a suitable knowledge representation formalism. OD-Transferable Skills-With ability to  (OD1) Deploy communication skills.  (OD2) Work effectively within a group to analyse, design and implement a KBS. (OD3) To work to tight deadlines (OD4) effectively present the final work in a demo. |

**20. Topic Outline and Schedule:**

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| Topic | Week | Achieved ILOs | Evaluation Methods | Reference |
| Welcome and Orientation - Introduction to artificial intelligence (concepts, research areas and applications) | 1 and 2 | OB1, OB2, OB3 | Homeworks, Discussion, Exams | Luger's book + Available Notes |
| Propositional calculus and first order predicate logic. - Translation between logic and natural language texts | 3 - 6 | OA1, OC1, OC3 | Homeworks, Discussions, Exams | Luger's book + Available Notes |
| Programming in Prolog | 7 – 9 | OA2, OC1, OC2, OC3 | Homeworks, Labs, Exams | Luger's book + Available Notes |
| Blind and heuristic search techniques | 10 – 12 | OA4, OB1, OB2, OB3, OB4 | Homeworks, Discussions, Exams | Luger's book + Available Notes |
| Production Systems | 13 | OA1, OB1, OB2, OC3 | Homeworks, Discussions, | Luger's book + Available Notes |
| Architecture of Expert systems | 14 | OB1, OB2, OB3, OB4 | Homeworks, Discussions, Exams | Luger's book + Available Notes |
| Rule-based vs Model based reasoning | 15 | OB1, OB2, OB3, OB4 | Homeworks, Discussions, Exams | Luger's book + Available Notes |

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**21. Teaching Methods and Assignments:**

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| Development of ILOs is promoted through the following teaching and learning methods: Lectures, Homeworks, Discussions, working in groups, research projects |

**22. Evaluation Methods and Course Requirements:**

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| Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methodsand requirements:30% Midterm exams10% Assignment10% Project50% Final Exam |

**23. Course Policies:**

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| A- Attendance policies:1. Students are allowed up to 7 absences. If you exceed this number, you will fail the class.
2. 2. Tardiness will not be tolerated. If you come to class after I take attendance, you are welcome to attend but you will be considered absent.
3. 3. Participation is an essential part of course works.

B- Absences from exams and handing in assignments on time:1. All projects and assignments are to be uploaded to the course website.
2. Upload assignments to elearning.ju.edu.jo (moodle) by 11:55 PM on its due date.
3. Everyone should check their e-mail and moodle regularly. Students are responsible for information posted there. If critical information is posted in moodle that you must read today, an announcement to check moodle will be sent to the mailing list.
4. Project should be determined by the end of the 7th week of the semester. I’ll provide you with some suggested project. And these projects will be distributed as a queue.
5. By the end of the 9th week the group should send me a project proposal. 30% of the project grade is for the proposal.

C- Health and safety procedures:Practical sessions need labs which are suitable adjustable chairs, safe computers and wires should be well organized.D- Honesty policy regarding cheating, plagiarism, misbehaviour:Discussion of the concepts and principles between students is fine and very welcomed. Also, students are allowed to debug each other’s code. However, Student cooperation should not result in identical or near identical answers/code/documentation. ALL THE MATERIAL SUBMITTED FOR GRADING MUST BE YOUR OWN EFFORT.If this policy is violated then the following steps may be taken: (1) reduction of points by dividing by the number of students involved in an incident, (2) assignment of a grade of ZERO for all students involved in an incident.E- Grading policy:**Intended (Tentative) Grading Scale:**

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| Range | LG | الحرف | Range | LG | الحرف | Range | LG | الحرف |
| 95-100 | A | أ | 75-79 | B- | ب- | 55-50 | D+ | د+ |
| 90-94 | A- | أ- | 70-74 | C+ | ج+ | 50-54 | D | د |
| 85-89 | B+ | ب+ | 65-69 | C | ج | 35-49 | D- | د- |
| 80-84 | B | ب | 60-64 | C- | ج- | 0-34 | F | ه |

**Grading and Evaluation Criteria: 100 points distributed as follows:**

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| **Weight** | **Criteria**  | **Comments**  |
| 30% | Midterm Exam | 26/3/2020 |
| 10% | Short Exams | During the Semester |
| 10% | Projects | TBA |
| 50% | Final Exam | TBA |

F- Available university services that support achievement in the course:Computer Labs. |

**24. Required equipment: (** Facilities, Tools, Labs, Training….)

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| Computer laboratory, data show and white board |

**25. References:**

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| 1. Required book (s), assigned reading and audio-visuals: Luger G., Artificial Intelligence, The Benjajmin/Cummings Publishing Company, 5th Edition, 2004.
2. Recommended books, materials, and media:

1. Rich E. and Kevin K., Artificial Intelligence, McGraw Hill, 1991. 2. Cawsey A., The Essence of Artificial Intelligence, Prentice Hall, 1997. 3. Jones M. T., AI Application Programming, 2nd edition, Charles River Media, 2005 |

**26. Additional information:**

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| 1. Supplementary notes are made available of the e-learning (Moodel) system.2. Students are encouraged to make use of JU library, E-LIBRARY: access within the university: http://e-library access from outside: http://ezlibrary.ju.edu.jo/login . Some important/relevant journals include: (1) Artificial Intelligence (2) Applied Intelligence (3) AI Review3. Tardiness and/or absenteeism will have a negative impact on the course grade.4.الامتناع المدبر عن حضور المحاضرات أو الدروس أو عن ألاعمال الاخرى التي تقضي الانظمة بالمواظبة عليها، وكل تحريض على هذا الامتناع سوف يؤدي الى حرمان الطالب من المادة المعنية.5.في حالة التغيب عن امتحان منتصف الفصل لن يكون هناك امتحان تعويضي الا في حالة وجود عذر وحالة طارئة من المستشفى. على الطاالب ابراز العذر لمدرس المادة في فترة لا تتجاوز الثلاثة ايام من تاريخ تقديم الامتحان. وللمدرس الحق في قبول او رفض العذر, وحسب التعليمات.6. Concerns or complaints should be expressed in the first instance to the module lecturer; if no resolution is forthcoming then the issue should be brought to the attention of the module coordinator (for multiple sections) who will take the concerns to the module representative meeting. Thereafter problems are dealt with by the Department Chair and if still unresolved the Dean and then ultimately the Vice President. For the final complaints, there will be a committee to review grading the final exam.7. For more details on University regulations please visit http://www.ju.edu.jo/rules/index.htm |

Name of Course Coordinator: -----Dr. Khaled Aldebei------Signature: ------------------ Date: 17/2/2020

Head of curriculum committee/Department: ----------------------------- Signature: ---------------------------

Head of Department: ------------------------------------------------------------ Signature: -----------------------

Head of curriculum committee/Faculty: ----------------------------------------- Signature: --------------------

Dean: --------------------------------------------------------- -Signature: -------------------------------------------