



Course Specifications

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| Institution: | Majmaah University. |
| Academic Department : | College of Science at Az Zulfi. |
| Programme : | Department of Computer Science and Information |
| Course : | Artificial Intelligence (CSI 411) |
| Course Coordinator : | Dr.Loai Bani Melhim |
| Programme Coordinator : | Asoc.Prof.YOSRY AZAAM |
| Course Specification Approved Date : | 24/ 12 / 1435 H |



A. Course Identification and General Information

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|--|-------------------------------------|------------------|----------------|
| 1 - Course title : Artificial Intelligence | Course Code: (CSI 411) | | |
| 2. Credit hours : 3 (2 lectures + 2 labs) | | | |
| 3 - Program(s) in which the course is offered: Computer Science and Information Program | | | |
| 4 – Course Language : English | | | |
| 5 - Name of faculty member responsible for the course: Dr. Loai Bani Melhim | | | |
| 6 - Level/year at which this course is offered : 7th level – 2013/2014 | | | |
| 7 - Pre-requisites for this course (if any) : CSI321 | | | |
| <ul style="list-style-type: none"> • Design and Analysis of Algorithms | | | |
| 8 - Co-requisites for this course (if any) : none | | | |
| <ul style="list-style-type: none"> • N/A | | | |
| 9 - Location if not on main campus : | | | |
| (College of Science at Az Zulfi) | | | |
| 10 - Mode of Instruction (mark all that apply) | | | |
| A - Traditional classroom | <input checked="" type="checkbox"/> | What percentage? | 80 % |
| B - Blended (traditional and online) | <input checked="" type="checkbox"/> | What percentage? | 10 % |
| D - e-learning | <input type="checkbox"/> | What percentage? | 5 % |
| E - Correspondence | <input type="checkbox"/> | What percentage? | % |
| F - Other | <input checked="" type="checkbox"/> | What percentage? | 5 % |
| <p>Comments : One-tenth of the course is presented mainly inside video lectures of other instructors worldwide. They illustrate the same topics that I introduced in my lectures with a different presentation.</p> | | | |

B Objectives

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| <p>What is the main purpose for this course?</p> <p>The course provides an introduction to the types of problems and techniques in Artificial Intelligence. Problem-Solving methods and major structures used in Artificial Intelligence programs, constraint satisfaction problems.</p> <p>Study of knowledge representation techniques such as predicate logic, non-monotonic logic, and probabilistic reasoning. Application areas of AI such as game playing, expert systems, Machine learning and natural language processing.</p> <p>Project: cover some course areas using a logic programming tool (Prolog language for example).</p> |
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Briefly describe any plans for developing and improving the course that are being implemented :

1. Provide an introduction to Artificial Intelligence programming by exploring Common Lisp and Prolog languages.
2. Updating the study material of the course in order to incorporate the new research in the field.
3. Use online resources and animations to help students to enhance knowledge about the topics that are presented in the course.

C. Course Description

1. Topics to be Covered

| List of Topics | No. of Weeks | Contact Hours |
|-------------------------------------|--------------|---------------|
| 1. Introduction | 1 | 3 |
| 2. Intelligent Agents | 2 | 6 |
| 3. Problem Solving | 3 | 9 |
| 4. LISP programming | 2 | 6 |
| 5. Informed search methods | 2 | 6 |
| 6. Constraint Satisfaction Problems | 1 | 3 |
| 7. Adversarial Search | 1 | 3 |
| 8. Logical Agents | 1 | 3 |
| 9. First-Order Logic | 2 | 6 |
| 10. Inference in First-Order Logic | 2 | 6 |
| 11. Knowledge Representation | 2 | 6 |
| 12. Learning from Observations | 1 | 3 |

2. Course components (total contact hours and credits per semester):

| | Lecture | Tutorial | Laboratory | Practical | Other: | Total |
|----------------------|---------|----------|------------|-----------|--------|-------|
| Contact Hours | 30 | - | 30 | - | - | 60 |
| Credit | 30 | - | 15 | - | - | 45 |





3. Additional private study/learning hours expected for students per week.

5 Hours

The private self-study of my student is crucial for this course. It includes:

Before the lectures start students are required to study some topics on their own.

The topics cover:

- Overview of AI areas of application
- Structures & strategies for state space search
- First-order logic
- Knowledge representation
- Stochastic methods
- Expert system development and AI programming
- Neural networks

The total workload of the student in this course is then: $60 + 5 * 15 = 135$ work hours

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

| | NQF Learning Domains And Course Learning Outcomes | Course Teaching Strategies | Course Assessment Methods |
|------------|---|---|--|
| 1.0 | Knowledge | | |
| 1.1 | Have an understanding of space search and search algorithms, logic based knowledge representation of issues in reasoning methods. | Lectures Lab demonstrations | Written Exam Homework assignments |
| 1.2 | Have an understanding of the limitations of current symbolic AI paradigm. | Case studies Individual presentations | Lab assignments Class Activities Quizzes |
| 1.3 | | Team work Exercises | |
| 2.0 | Cognitive Skills | | |
| 2.1 | Be able to select appropriate search paradigms for selected problems | Lectures. Lab demonstrations. | Written Exam Homework assignments |
| 2.2 | Be able to design a simple agent system with its associated ontology | Case studies. Individual presentations. | Lab assignments Class Activities Quizzes |
| 2.3 | | Brainstorming. | |
| 3.0 | Interpersonal Skills & Responsibility | | |
| 3.1 | Work in groups and learn how to manage the time. | Small group discussions. | Written Exam Homework |
| 3.2 | Present short report in a written form orally using an appropriate | | |





| | NQF Learning Domains And Course Learning Outcomes | Course Teaching Strategies | Course Assessment Methods |
|------------|--|--|--|
| | scientific language. | Whole group discussions. Brainstorming. Presentations. | assignments Class Activities Quizzes |
| 4.0 | Communication, Information Technology, Numerical | | |
| 4.1 | Communicate with instructor, ask questions, solve problems, and use computers. | Small group discussions. | Written Exam Homework |
| 4.2 | Use Information technology and computer skills to gather information about a selected topic. | Whole group discussions. | assignments Lab assignments |
| 4.3 | Ask questions during the lecture, learn to work in groups, and communicate with the instructor. Also periodically visit the recommended sites. | Brainstorming. Presentations. | Class Activities Quizzes |
| 5.0 | Psychomotor | | |
| 5.1 | N/A | | |

5. Schedule of Assessment Tasks for Students During the Semester:

| | Assessment task | Week Due | Proportion of Total Assessment |
|----------|--|------------------------|---|
| 1 | First written mid-term exam | 6 | 10% |
| 2 | Second written mid-term exam | 12 | 10% |
| 3 | Presentation, class activities, and group discussion | Every week | 10% |
| 4 | Homework assignments | After Every chapter | 10% |
| 5 | Practical exam | 15 | 20% |
| 6 | Final exam | 16 | 40% |
| | Total | | 100% |





D. Student Academic Counseling and Support

Office hours: Sun: 1-3, Mon. 10-1, Wed. 10-12

Office call: Sun. 10-12 and Wed 10-12

Email: l.banimelhim@mu.edu.sa

E. Learning Resources

1. List Required Textbooks :

- Artificial Intelligence A Modern Approach, Stuart Russell & Peter Norvig, Prentice Hall, Published Date: Dec 1, 2009.

2. List Essential References Materials :

- George F. Luger, Artificial Intelligence: structures and strategies for complex problem solving, Addison-Wesley; 6 edition, (March 9, 2011)

3. List Recommended Textbooks and Reference Material :

- David Poole and Alan Mackworth, Artificial Intelligence: Foundations of Computational Agents, Cambridge University Press, 2010.

4. List Electronic Materials :

- <http://nptel.ac.in/courses/106105077/>
- <http://cs.mcgill.ca/~jpineau/comp424/schedule.html>

5. Other learning material :

Video and presentations that available with the instructor

F. Facilities Required

1. Accommodation

- Classrooms and Laboratories, as those that are available at the college of science at AzZulfi.

2. Computing resources

- Smart Board

3. Other resources

- N/A

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Analysis of students' results.
- Observation during class work.
- Students' evaluations.
- Colleagues' evaluations.
- Evaluation questionnaire filled by the students.
- Interview a sample of students enrolled in the course to take their opinions.





2 Other Strategies for Evaluation of Teaching by the Program/Department

Instructor :

- Self-assessment.
- External evaluation.
- Periodic review of course (the Commission of study plans).

3 Processes for Improvement of Teaching :

- Periodical departmental revision of methods of teaching.
- Monitoring of teaching activates by senior faculty members.
- Training courses

4. Processes for Verifying Standards of Student Achievement

- Reviewing instructor's assessment strategy
- Designing assessments which allow students to demonstrate their achievement of the learning outcomes
- Common assessment tasks
- Assessing group work
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5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :

- Comparison of the course to its counterparts offered in similar departments.
- Periodic revision of course description by faculty member.
- Periodic revision of course description by the study plans and schedules commission.
- Update learning resources related to the course to ensure that the course is kept up with developments in the field.
- Make use of the statistical results of course evaluation made by students to improve and develop the course.
- Giving the opportunity for students to express their opinions about what is taught and receive suggestions and study their effectiveness.

Course Specification Approved Department Official Meeting No (6) Date ... / / H

Course's Coordinator

Name : Dr.Loai Bani Melhim

Signature :

Date : 24/ 12 / 1435 H

Department Head

Name : Asoc.Prof.Yosry
Azaam

Signature :

Date : 22./ 12 / 1435 H

