





# **Course Specifications**

Course Title:	Artificial Intelligence
Course Code:	ICS 411
Program:	Information and Computer Sciences
Department:	CSI
College:	Science in AL Zulfi
Institution:	Majmaah University



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#### A. Course Identification

1. Credit hours: 3		
2. Course type		
<b>a.</b> University College Department $$ Others		
<b>b.</b> Required $$ Elective		
3. Level/year at which this course is offered: 7 <sup>th</sup> Level		
<b>4. Pre-requisites for this course</b> (if any): Algorithms and data structures ICS 223		
5. Co-requisites for this course (if any): NA		

#### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	<b>Contact Hours</b>	Percentage
1	Traditional classroom	48	80 %
2	Blended	6	10 %
3	E-learning	6	10 %
4	Correspondence		
5	Other		

#### 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contac	t Hours	
1	Lecture	30
2	Laboratory/Studio	20
3	Tutorial	10
4	Others (Presentations & group discussions)	
	Total	60
Other Learning Hours*		
1	Study	20
2	Assignments	15
3	Library	10
4	Projects/Research Essays/Theses	5
5	Others (seminars)	
	Total	50

\* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

#### **B.** Course Objectives and Learning Outcomes

#### 1. Course Description

Artificial intelligence (AI) is the study of solutions for problems that are difficult or impractical to solve with traditional methods. It is used pervasively in support of everyday applications such as email, word-processing and search, as well as in the design and analysis

of autonomous agents that perceive their environment and interact rationally with the environment. The solutions rely on a broad set of general and specialized knowledge representation schemes, problem solving mechanisms and learning techniques. They deal with sensing (e.g., speech recognition, natural language understanding, computer vision), problem-solving (e.g., search, planning), and acting (e.g., robotics) and the architectures needed to support them (e.g., agents, multi-agents). The study of Artificial Intelligence prepares the student to determine when an AI approach is appropriate for a given problem, identify the appropriate representation and reasoning mechanism, and implement and evaluate it.

#### 2. Course Main Objective

- Introduce the basic ideas and techniques underlying the design of intelligent computer systems

- Prepare the student to determine when an AI approach is appropriate for a given problem

Identify the appropriate representation and reasoning mechanism for a given problem Study and analyze uninformed and informed search problems

- Understand and build autonomous agents that efficiently make decisions in fully informed, partially observable and adversarial settings

Understanding how intelligent agent behaves, learns and acts autonomously.

#### **3.** Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge:	
1.1	Describe Turing test and the "Chinese Room" thought experiment.	a1
1.2	Differentiate between the concepts of optimal reasoning/behavior and human-like reasoning/behavior.	b3
1.3	Formulate an efficient problem space for a problem expressed in natural language (e.g., English) in terms of initial and goal states, and operators	a1, c1
1.4	Select and implement an appropriate informed search algorithm for a problem by designing the necessary heuristic evaluation function.	c1
1.5		
2	Skills :	
2.1	Compare and contrast the most common models used for structured knowledge representation, highlighting their strengths and weaknesses	b3
2.2	Translate a natural language (e.g., English) sentence into predicate logic statement.	c1
2.3	Group works and learning time management	b3
2		
3	Competence:	
3.1	List the defining characteristics of an intelligent agent.	b3
3.2		
3.3		
3		

#### C. Course Content

No	List of Topics	Contact Hours	
1	Artificial Intelligence /Fundamental Issues	4	
2	Basic Search Strategies	8	
3	Basic Knowledge Representation and Reasoning	8	
4	Advanced Search	8	
5	Advanced Representation and Reasoning	12	
6	Reasoning Under Uncertainty	8	
7	Intelligent Agents and their Applications	12	
	Total		

#### **D.** Teaching and Assessment

## 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge	•	• •
		Lectures,	Written Exam
	Formulate an efficient problem space for a problem expressed in natural	Lab demonstrations	Homework assignments
1.1	language (e.g., English) in terms of	Case studies	Class & lab
	initial and goal states, and operators	Individual	Activities
		presentations	Quizzes
2.0	Skills		
2.1	Compare and contrast the most common models used for structured knowledge representation, highlighting their strengths and weaknesses	Group discussions, Lab demonstrations, Brainstorming	Home works and assignments
2.0	Competence	Presentations	
5.0	List the defining characteristics of an intelligent agent.	Group discussions, Case Studies,	Written Exam Homework assignments
3.1		Brainstorming Presentations	Class & lab Activities
			Quizzes

#### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	10%
2	Second written mid-term exam	12	10%



#	Assessment task*	Week Due	Percentage of Total Assessment Score
3	Presentation, class activities, and group discussion	Every	10%
5		week	
	Homework assignments	After	10%
4		Every	
		chapter	
5	Practical exam	15	20%
6	Final exam	16	40%
	Total		100%

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

#### E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Office hours: Sun: 1-3, Mon. 12-1, Wed. 12-1 Office call: Sun. 12-1 and Wed 9-10 Email: y.qawqzeh@mu.edu.sa

#### **F. Learning Resources and Facilities**

#### **1.Learning Resources**

Required Textbooks	Artificial Intelligence: A Modern Approach. Stuart Russell and Peter Norvig (2009). ISBN-13: 978-0136042594
Essential References Materials	Artificial Intelligence: With an Introduction to Machine Learning. Richard E. Neapolitan, Xia Jiang (2018). ISBN 9781138502383
Electronic Materials	http://nptel.ac.in/courses/106105077/ http://cs.mcgill.ca/~jpineau/comp424/schedule.html
Other Learning Materials	Video and presentations that available with the instructor

#### 2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms and Laboratories are available at the college of science at Al-Zulfi.
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Smart Boards, software, data shows and AV technological resources are available.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	N/A



#### **G.** Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	<b>Evaluation Methods</b>

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify) Assessment Methods (Direct, Indirect)

#### H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

