

QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Department
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Study plan No.	2021-2022	University Specialization	Software Engineering
Course No.	0114382	Course name	Intelligent System engineering
Credit Hours	3	Prerequisite Co-requisite	Systems Analysis and Design
Course type	<input type="checkbox"/> MANDATORY UNIVERSITY REQUIREMENT	<input type="checkbox"/> UNIVERSITY ELECTIVE REQUIREMENTS	<input type="checkbox"/> FACULTY MANDATORY REQUIREMENT
			<input type="checkbox"/> Support course family requirements
			<input type="checkbox"/> Mandatory requirements
			<input checked="" type="checkbox"/> Elective requirements
Teaching style	<input type="checkbox"/> Full online learning	<input type="checkbox"/> Blended learning	<input checked="" type="checkbox"/> Traditional learning
Teaching model	<input type="checkbox"/> 2Synchronous: 1asynchronous	<input type="checkbox"/> 2 face to face : 1synchronous	<input checked="" type="checkbox"/> 3 Traditional

Faculty member and study divisions information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Mohammed Lafi	Assistant professor	302		lafi@zuj.edu.jo	
Division number	Time	Place	Number of students	Teaching style	Approved model
1				traditional	

Brief description

<p>A comprehensive introduction to different AI solutions will be discussed. The main focus will be on providing a basis for AI research and applications. The students are expected to learn how to approach a problem, how to formulate a solution and what tools are present in AI literature. The course will try to establish what a rational solution is and will discuss common techniques to find a viable solution. Course will cover goal formulation, problem formulation, searching for an optimal solution, representation of knowledge through logic and an introduction to machine learning methods.</p>

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	S. Russell, and P. Norvig, Artificial Intelligence: A Modern Approach, Prentice-Hall, 4rd ed., 2020.			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1- M. Negnevitsky, Artificial Intelligence: A Guide to Intelligent Systems, Addison Wesley, 2001. (Available at Çankaya University Library). 2- G.F. Luger and W.A. Stubblefield, Artificial Intelligence, 4 th ed., Addison Wesley, 2002. (Available at Çankaya University Library).			
Supporting websites				
The physical environment for teaching	<input checked="" type="checkbox"/> Class room	<input checked="" type="checkbox"/> labs	<input type="checkbox"/> Virtual educational platform	<input type="checkbox"/> Others
Necessary equipment and software				

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Supporting people with special needs	
For technical support	

Course learning outcomes (S= Skills, C= Competences K= Knowledge.)

No.	Course learning outcomes	The associated program learning output code
Knowledge		
K1	describe the key components of the artificial intelligence (AI) field	MK2
K2	explain search strategies and solve problems by applying a suitable search method and and list the key aspects of planning in artificial intelligence	MK2
K3	describe the key aspects of intelligent agents and machine learning	MK2
Skills		
S1	apply artificial intelligence techniques, including search heuristics, knowledge representation, planning and reasoning	MS2
S2	analyze problem specifications and derive appropriate solution techniques for them	MS2
S3	design and implement appropriate solutions for search problems and for planning problems	MS2
Competences		
C1	make judgments with regards to relevant scientific, societal and ethical aspects, and- decide whether a given problem is tractable or requires exponential time for automated solving	MC1

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm exam	30%	30%	40%	30%
Participation / practical applications	0	0	10%	30%
Asynchronous interactive activities	30%	30%	0	0
Final exam	40%	40%	50%	40%

Note 1: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

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Note 2: According to the Regulations of granting Master's degree at Al-Zaytoonah University of Jordan, 40% of final evaluation goes for the final exam, and 60% for the semester work (examinations, reports, research or any scientific activity assigned to the student).

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	Artificial Intelligence: Introduction 1.1 What Is AI? 1.2 The Foundations of Artificial Intelligence	Lecture, learning through projects, learning through problem solving	1-34
2	1.3 The History of Artificial Intelligence 1.4 The State of the Art 1.5 Risks and Benefits of AI	Lecture, learning through projects, learning through problem solving	35-53
3	2 Intelligent Agents 54 2.1 Agents and Environments 2.2 Good Behavior: The Concept of Rationality	Lecture, learning through projects, learning through problem solving	54-59
4	2.3 The Nature of Environments 2.4 The Structure of Agents	Lecture, learning through projects, learning through problem solving	60-80
5	II Problem-solving 3 Solving Problems by Searching 3.1 Problem-Solving Agents 3.2 Example Problems	Lecture, learning through projects, learning through problem solving	81-88
6	3.3 Search Algorithms 3.4 Uninformed Search Strategies 3.4.1 breadth-first search 3.4.2 uniform-cost search 3.4.3 depth first search	Lecture, learning through projects, learning through problem solving	89-101
7	3.5 Informed (Heuristic) Search Strategies 3.5.1 Greedy best-first search 3.5.2 A* search 3.6 Heuristic Functions	Lecture, learning through projects, learning through problem solving	102-127
8	Introduction to python, variables, conditions statements, iteration statements methods,	Lecture, learning through projects, learning through problem solving	
9	Midterm Exam		
10	Python libraries : numpy, pandas, and matplotlib	Lecture, learning through projects, learning through problem solving	
11	19 Learning from Examples 19.1 Forms of Learning	Lecture, learning through projects, learning through problem solving	669-670
12	19.2 Supervised Learning	Lecture, learning through projects, learning through problem solving	671-675
13	19.6 Linear Regression and Classification	Lecture, learning through projects, learning through problem solving	694-703
14	19.9 Developing Machine Learning Systems	Lecture, learning through projects, learning through	722-738

