Syrian Arab Republic	SVU	الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليـم العالـــــي
Syrian Virtual University	الجامعـة الإفتراضيـة السوريـة	الجامعة الافتراضية السورية

Course Description: Artificial Intelligence

1- Basic Information:

Course Name	Aritifical Intelligence
Course ID	Ise_ae
Contact Hours (Registered Sessions)	10 sessions 15 hours
Contact Hours (Synchronized Sessions)	16 sessions, 24 hours
Mid Term Exam	-
Exam	75 min
Registered Sessions Work Load	15 h
Synchronized Session Work Load	24h
Credit Hours	4

2- Pre-Requisites:

Course	ID
Computer Programming 1, 2	CP1, CP2
Data Structures and Algorithms	DSA

3- Course General Objectives:

To introduce Artificial Intelligence techniques, knowledge representation and reasoning on this knowledge to deduce new knowledge and solve real problems. In addition to other subjects like search, learning and genetic algorithms.

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4- Intended Learning Outcomes (ILO):

Code	Intended Learning Outcomes
ILO1	Know definition of artificial intelligence, knowledge engineering. Knowledge representation using propositions, predicates, production rules, semantic nets, frames, conceptual dependencies and scenarios.
ILO2	Learning eclips programming language
ILO3	Local search and search algorithms
ILO4	Uncertain knowledge and reasoning
ILO5	Machine learning
ILO6	Communication perception and action
ILO7	Genetic algorithms and new trends
ILO8	

5- **Course Syllabus**   (16 sessions of 1 hour and a half each of total synchronized sessions;10 sessions of 1 hour and a half each of total Recorded Sessions)

- **RS:** Recorded Sessions**; SS:** Synchronized Sessions**;**

ILO	Course Syllabus	RS	SS	Type	Additional Notes
ILO1	Know definition of artificial intelligence, its scope, knowledge engineering, roles of knowledge representation. Knowledge representation using propositions and predicates (the language, inference, resolution, Horn phrases, unification,	4.5	7.5	√Exercises √Assignments ☐ Seminars ☐ Projects √Practices ☐ Others	

	solution by contradiction, finding responses), production rules (forward and backward chaining), semantic nets, frames, conceptual dependencies and scenarios.				
ILO2	Learning eclips programming language: representing, facts, rules, reasoning after matching facts in rules, template, representing uncertain facts.	3	4.5	√Exercises √Assignments ☐ Seminars ☐ Projects √Practices ☐ Others	
ILO3	Local search and search algorithms: states space and search in it, sub-problem graphs, and-or trees, heuristic search	1.5	1.5	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	
ILO4	Uncertain knowledge and reasoning: revision of probability, Bayes rule for reasoning, uncertainty, certainty factors, and fuzzy logic.	1.5	3	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	
ILO5	Machine learning: introduction, inductive learning (neural networks), deductive learning through	1.5	1.5	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices	

	examples and game learning.			☐ Others	
ILO6	Communication perception and action: sensing-planning and action loops, learning heuristic cost functions, rewards instead of targets, planning in 2-players games, min-max procedure.	1.5	1.5	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	
ILO7	Genetic algorithms and new trends: problems that intelligent systems solve, genetic algorithms, genetic programs, hybrid intelligent systems.	1.5	3	√Exercises √Assignments ☐ Seminars ☐ Projects ☐ Practices ☐ Others	With exams questions samples

6- Assessment Criteria (Related to ILOs)

ISC	Interactive Synchronized Collaboration	Ex	Exams	Rpt	Reports
PF2F	Presentations and Face-to-Face Assessments	PW	Practice Work		

ILO Code	ILO	Intended Results	Assessment Type				
			ISC	PW	Ex	PF2F	Rpt
ILO1	Know definition of artificial intelligence, knowledge engineering Knowledge representation using propositions, predicates, production rules, semantic nets,	**Understand knowledge concept and representation techniques: propositions, predicates, expert systems, semantic**	√	☐	√		√

	frames, conceptual dependencies and scenarios.	**nets, frames, conceptual dependencies, scenarios**					
ILO2	Learning eclips programming language	Learn how to represent knowledge using eclips programming language	√	□	√		√
ILO3	Local search and search algorithms	**Search in State space from a beginning state to a target one. Heuristic search**	√	□	√		√
ILO4	Uncertain knowledge and reasoning	**Bayes laws, uncertainty factors and fuzzy logic**	√	□	√		√
ILO5	Machine learning	**Learning deduction rules**	√	□	√		□
ILO6	Communication perception and action	Planning in two players games. Min-max algorithm	√	□	√		□
ILO7	Genetic algorithms and new trends	Genetic algorithms, genetic programming and heterogeneous systems	√	□	√		□

7-Practice Tools:

Tool Name	Description
eclips	Artificial intelligence programming language

8-Main References

- "Artificial Intelligence" by Dr Oumayma al Dakkak and Bassel Khateeb, in

Arabic, Damascus university, Informatics faculty, 2003.

- "Artificial Intelligence : anew vision" translated by Dr Oumayma Al Dakkak and others, in Arabic, Syrian Computer Society Publications, 2004.

9-Additional References

-M. Negnevisky "Artificial Intelligence: A guide to intelligent systems, Addison Wisley, 2002

−Giarratano & Riley "Expert Systems: Principles and Programming", 3d Edition, 1998

- "What is Knowledge Representation" R. Davis et al. (on the web, and on module)