



University: *Fayoum University*
Faculty: *Computers and Information*
Department: *Information Systems*



Course Specification

1- Basic Information		
Code: CSC 343	Course Title: Artificial Intelligence	Year/Level: Third year – Second term
Programme: B.Sc degree in Information Systems	Number of units:	Lecture: 3 hrs/ week
		Tutorial: 0 hrs/ week
		Practical: 2 hrs/ week
		Total: 5 hrs/ week

2- Aims of Course:	The primary objective of this course is to provide an introduction to the basic principles and applications of Artificial Intelligence. Programming assignments are used to help clarify basic concepts (using python Programming language). The emphasis of the course is on teaching the fundamentals, and not on providing a mastery of specific commercially available software tools or programming environments. In short, this course is about the design and implementation of intelligent agents-software or hardware entities that perform useful tasks with some degree of autonomy.
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3- Intended Learning Outcomes	
A- Knowledge and Understanding:	On completing this course, students should have knowledge and understanding of : A3. Demonstrate the essential mathematics and physics relevant to computer science. A6. Explain essential concepts, principles, and theories related to computer-application development such as: databases, information systems development. A8. Express the main concepts of statistics, probability theory, algebra and numerical analysis and their role in the computing and information discipline. A12. Selects advanced topics to provide a deeper understanding of some aspects of the subject such as Unified Process, object-oriented analysis and design, e-commerce technologies, and Decision support systems. A13. Define the mapping of real-world problems to algorithmic solutions. Through the following: a1) An understanding of the basic concepts and techniques of Artificial Intelligence (AI).

	<p>a2) An understanding of the basic areas of artificial intelligence including problem solving, knowledge representation, reasoning, decision making, planning, perception and action, and learning -- and their applications (e.g., data mining, information retrieval).</p> <p>a3) A good Learning to the AI by doing it, i.e. developing skills of using AI algorithms for solving practical problems.</p>
<p>B- Intellectual Skills:</p>	<p>On completion of this course the successful student will be able to:</p> <p>B1. Analyze real problems, and appropriate problem solving methods that satisfy commercial or industrial constraints and analyze results.</p> <p>B2, Determine different computer- system application attributes, components, relationships, patterns, architecture, and source of errors.</p> <p>B5.Discuss factors other than computational efficiency that influence the choice of algorithms, such as programming time, maintainability, and the use of application-specific patterns in the input data.</p> <p>Through the following:</p> <p>b1) How to solve a problem using the AI techniques and methodologies.</p> <p>b2) How to interact with the various AI paradigms to represent well semantic information</p>
<p>C- Professional and Practical Skills:</p>	<p>At the end of the course, the student will be able to:</p> <p>C1. Analyze and improve organizational processes from an ICT perspective.</p> <p>C2. Negotiate effectively with clients, other stakeholders and peers.</p> <p>C6.Employ the statistical, probabilistic and mathematical techniques in analyzing data and interpreting experimental results.</p> <p>C10.Evaluate computer-based systems from various perspectives.</p> <p>Through the following:</p> <p>c1) Be able to differentiate between declarative and procedural languages.</p> <p>c2) Discover the working process of prolog inference engine.</p> <p>c3) Solve different AI problems such as planning using prolog language.</p>
<p>D- General and transferable Skills</p>	<p>At the end of the course, the student will have:</p> <p>D2. Use effective information-retrieval skills (including the use of browsers, search engines and catalogues) and general IT facilities.</p>

	<p>D3. Work as a member of a development team, recognizing the different roles within a team and different ways of organizing teams.</p> <p>D6. Demonstrate skills in team work, team management, time management and organizational skills.</p> <p>Through the following:</p> <p>d1) Work as a part of a team to find a solution for practical problems and projects.</p> <p>d2) Write structural reports.</p> <p>d3) Make oral communication skills by making report presentation.</p>
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<p>4-Course Content:</p>	<ol style="list-style-type: none"> 1. Artificial and Human intelligence: Domains of AI-symbolic processing: Semantic nets, modeling, model based reasoning, frames. 2. Inference techniques: Implication, forward and backward chaining, inference nets, 3. Predicate logic, quantifiers, tautology, resolution, and unification. 4. Rule based systems: Inference engine, production systems, problem solving, planning, decomposition, 5. Basic search techniques. 6. AI languages: Symbolic and coupled processing prolog: Objects and relations, compound goals, 7. Backtracking, search mechanism, dynamic databases, 8. Python: program structure and operations, functions, unification, memory models. 9. Fields of AI: heuristics and game playing, automated reasoning, problem solving, computational linguistics and natural language processing, computer vision, robotics. 10. AI based computer systems: Sequential and parallel inference machines, relation between AI and artificial neural nets, fuzzy systems.
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<p>5- Teaching and Learning Methods:</p>	<ol style="list-style-type: none"> 1. Lectures 2. Computer-lab Sessions 3. Practical lab work 4. Class discussions 5. Internet searches 6. Independent Work 7. Group projects 8. Problem-based Learning
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<p>6- Teaching and Learning Methods for handicapped students :</p>	-
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<p>7- Student Assessment</p>

A- Assessment Methods:	<ol style="list-style-type: none"> 1. Assignments and Quizzes 2. Midterm written exam 3. Oral exam 4. Practical exam 5. Final written exam
B- Assessment schedule:	Midterm Examination: Week 7 or 8 Practical examination: Week 13 Oral Examination: Week 14 Final Examination: Week 15-17
C- Weighting of assessments:	Assignments and Quizzes: 0% Mid-Term Examination: 10% Oral Examination: 10% Practical Examination: 15% Final-term Examination: 65%

8- Books and References	
A- Notes:	-
B- Essential Books (Text Books):	<ul style="list-style-type: none"> • Stuart Russell, Peter Norvig, “Artificial Intelligence: A Modern Approach”, Second Edition, Prentice Hall. 2003, ISBN: 0-13-790395-2. • Stuart Russell, Peter Norvig, “Artificial Intelligence: A Modern Approach”, Prentice Hall.
C- Recommended Books:	<ul style="list-style-type: none"> • Learning to program using python, Cody Jackson Published: June 2013.
D- Periodicals, Web sites, ... etc	<ul style="list-style-type: none"> • http://www.tutorialspoint.com/python/

- **Course Coordinator:** Dr. Shereen Aly Taie

- Head of Department: Dr. Amira Edress

Signature:.....

Date:

Course Content Intended Learning Outcomes Matrix

Course Title: Artificial Intelligence

Course Code: CSC 343

Course Content	Week	Knowledge & Understanding			Intellectual Skills		Professional & Practical Skills			General & Transferable Skills		
		a1	a2	a3	b1	b2	C1	c2	c3	d1	d2	d3
1. Artificial and Human intelligence: Domains of AI- symbolic processing: Semantic nets, modeling, model based reasoning, frames.	1	x			x	x	x			x	x	x
2. Inference techniques: Implication, forward and backward chaining, inference nets,	2	x			x			x		x	x	x
3. predicate logic, quantifiers, tautology, resolution, and unification.	3	x			x	x	x			x	x	x
4. Rule based systems: Inference engine, production systems, problem solving, planning, decomposition,	4		x		x	x				x	x	x
5. Basic search techniques.	5:6		x		x	x			x	x	x	x
6. AI languages: Symbolic and coupled processing prolog: Objects and relations, compound goals,	7			x	x		x	x		x	x	x
7. backtracking, search mechanism, dynamic databases,	8			x	x			x		x	x	x
8. Python: program structure and operations, functions, unification, memory models.	9			x	x			x		x	x	x
9. Fields of AI: heuristics and game playing, automated reasoning, problem solving, computational linguistics and natural language processing, computer vision, robotics.	10:11		x	x					x	x	x	x
10. AI based computer systems: Sequential and parallel inference machines, relation between AI and artificial neural nets, fuzzy systems.	12		x	x					x	x	x	x

Course coordinator: Dr. Shereen Aly Taie

Head of Department: Dr. Amira Edress