

**Faculty of Computers and Information Technology**

**Knowledge Based Systems**

**Information :**

**Course Code :** CS442

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Department of Computer Science

**Instructor Information :**

Title	Name	Office hours
Associate Professor	Khaled Tawfic Hassan Wassif	1
Associate Professor	Khaled Tawfic Hassan Wassif	1
Associate Professor	Khaled Tawfic Hassan Wassif	1
Teaching Assistant	Mariam Ali Ibrahim Elsayed	1
Teaching Assistant	Mariam Ali Ibrahim Elsayed	1
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**Area Of Study :**

Understand knowledge that enhances skills to create and appreciate the value of good knowledge engineering design.

Use and adopt fundamental and advanced methods to develop Knowledge based Systems.

Evaluate effectively the merits of the application of a Knowledge based System.

Use all available principles and tools of Knowledge based Systems in all phases.

Comprehend deeply the basic concepts of computer science to be ready for further and continuous learning.

Develop and evaluate Knowledge based Systems.

**Description :**

Introduction to Knowledge-based Systems. Knowledge representation principles and techniques. Knowledge acquisition and construction, practical problem solving, uncertainty in knowledge. Knowledge-based systems development methodologies and tools. Focuses on current methods of implementing expert systems. Topics include the structure of problem- solving engines and knowledge bases for expert performance, problem taxonomies, Methods to automate the acquisition of human experiential knowledge, Methods to automate the expiation of problem- solving behaviors, examples of existing expert systems. And their application areas. Recent correlated software packages should be used through labs

**Course outcomes :**

**a. Knowledge and Understanding: :**

1 -	Identify fundamental knowledge, principal achievements and shortcomings of knowledge based systems
2 -	Describe the basic concept of testing techniques used in Knowledge based Systems illustrating new trends in modern intelligent computing and Knowledge based Systems
3 -	Explain the principles and techniques of different areas of Knowledge based Systems

**b. Intellectual Skills: :**

1 -	Analyze and design a solution of computational and natural intelligence to implement such solution for problem solving and application development
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2 -	Evaluate and verify different solutions of knowledge based systems approaches needed to model intelligent processing using well-defined criteria
3 -	Compare and differentiate between methods used to evaluate the applicability of knowledge based systems techniques in novel applications

**c. Professional and Practical Skills: :**

1 -	Analyze, design and implement intelligent systems in given specification
2 -	Apply different computing technologies in projects development and deployment knowledge based Systems
3 -	Apply effective information to acquire and manage information storage and retrieval techniques in computing knowledge based Systems
4 -	Acquire and manage different information using different resources to implement intelligent systems

**d. General and Transferable Skills: :**

1 -	Exploit a range of learning resources
2 -	Work in a team effectively and efficiently considering time and stress management
3 -	Apply communication skills and techniques in presentations and report writing

**ABET Course outcomes :**

1 -	Demonstrate understanding and appreciation of adequate knowledge engineering design.
2 -	Use and adopt fundamental and advanced methods to develop Knowledge based Systems.
3 -	Evaluate effectively the merits of Knowledge-based applications.
4 -	Use principles and advanced available tools in all phases of development cycle of Knowledge-based Systems.
5 -	Develop and evaluate Knowledge-based Systems.

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to knowledge based Systems	4	2	2
knowledge engineering, expert systems, rule-based reasoning	4	2	2
Intelligent Agents and case-based reasoning	4	2	2
Knowledge based Systems Search algorithms	4	2	2
Ontological Engineering and Semantic Web	4	2	2
Fuzzy Logic Based Systems	4	2	2
ID3 Algorithms	4	2	2
Neural networks	4	2	2
Mid Term	2		
Genetic algorithms	4	2	2
Probabilistic Knowledge based Systems	4	2	2
Robot	4	2	2
Projects evaluation	4	2	2
Final Exam	2		

**Teaching And Learning Methodologies :**

Interactive Lectures including discussion

Practical Lab Sessions

Self-Study (Project / Reading Materials / Online Material / Presentations)

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	5.00	5	
Final Exam	40.00	14	
Midterm Exam (s)	20.00	9	
Others (Participation)	5.00		
Practical Exam	10.00		
Quizzes	10.00	5	
Team Work Projects	10.00		

**Course Notes :**

Course Notes are available with all the slides used in lectures in electronic form on Learning Management System (Moodle)

**Recommended books :**

Stuart Russell, Peter Norvig, Artificial Intelligence: A Modern Approach, Prentice Hall, last edition.

**Web Sites :**

IEEE intelligent systems & their applications

[www.ekb.eg](http://www.ekb.eg)

[www.ai.com](http://www.ai.com)

[www.robotics.com](http://www.robotics.com)