

**Faculty of Computers and Information Technology**

**Artificial Intelligence**

**Information :**

**Course Code :** CS341

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Department of Computer Science

**Instructor Information :**

| Title               | Name   | Office hours |
|---------------------|--|--------------|
| Associate Professor | Osama Fathy Saleh Hegazy                         | 2            |
| Lecturer            | HEBA MOHSEN MOHAMED MOSAAD HUSSIEN               | 5            |
| Lecturer            | HEBA MOHSEN MOHAMED MOSAAD HUSSIEN               | 5            |
| Assistant Lecturer  | Hadeer Khalid Tawfik El Zayat                    |              |
| Assistant Lecturer  | Hadeer Khalid Tawfik El Zayat                    |              |
| Teaching Assistant  | Belal Taha Fathi Taha Hussien                    |              |
| Teaching Assistant  | Kareem Hossam Mahmoud Shamseldeen                |              |
| Teaching Assistant  | Omar Khaled Mohamed Mohey Eldein Ahmed El Azhary |              |
| Teaching Assistant  | Salma Mohamed Shalaby Abdelaziz                  |              |

**Area Of Study :**

Use and adopt fundamental and advanced mathematics, basic sciences and computer science theories in all development phases of knowledge Base Systems.  
Understand knowledge that enhances skills in analyzing and interpreting knowledge in Artificial Intelligence area.  
Evaluate effectively the merits of Artificial Intelligence Science using appropriate analytical skills.  
Comprehend deeply the basic concepts of computer science to be ready for further and continuous learning in field of Artificial Intelligence.

**Description :**

Knowledge Representations: Predicate Calculus, Structured Representations, Network Representations. State Space Search: trees and graphs, heuristic search, model based reasoning, case-based reasoning, reasoning with uncertain or incomplete knowledge. Overview of AI languages, Overview of AI Application Areas. In particular, we consider the use of Prolog for database querying, parsing, meta-programming, and problem solving in AI. The programming assignments can be coded in SWI\_Prolog or XSB.

**Course outcomes :**

**a.Knowledge and Understanding: :**

|     |  |
|-----|--|
| 1 - | Describe the fundamental mathematical logic to solve problems in AI field.       |
| 2 - | Explain different qualitative and quantitative methods for knowledge analysis.   |
| 3 - | Define the principles and techniques of different Artificial Intelligence areas. |

**b. Intellectual Skills: :**

|     |  |
|-----|--|
| 1 - | Identify main ideas, patterns, components, attributes and detect relationships between these components in the field of Artificial Intelligence.                                 |
| 2 - | Select appropriate methodologies and techniques for a given problem solution and setting out their limitations, restrictions and errors in the field of Artificial Intelligence. |
| 3 - | Evaluate and justify different solutions using well-defined criteria in the field of Artificial Intelligence.  |

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

|     |   |
|-----|---|
| 1 - | Analyze, Design, Implement and test Knowledge Based Systems.  |
| 2 - | Deploy effective supporting tools to develop and document of Knowledge base systems.                                    |
| 3 - | Apply, design methodologies, AI programming languages and different supporting tools to develop Knowledge base systems. |

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

|     |  |
|-----|--|
| 1 - | Apply communication skills in presentations and report writing using various methods and tools |
| 2 - | Work in a team to develop the requirement documentation.                                       |

**ABET Course outcomes :**

|     |   |
|-----|---|
| 1 - | Understand knowledge that enhances skills in analyzing and interpreting knowledge in Artificial Intelligence subject areas. |
| 2 - | Use appropriate mathematics and basic sciences in designing different Artificial Intelligence applications                  |
| 3 - | Recognize the different machine learning techniques.  |
| 4 - | Develop applications utilizing Artificial Intelligence concepts.  |
| 5 - | Effectively evaluate the merits of Artificial Intelligence using appropriate analytical skills.                             |

**Course Topic And Contents :**

| Topic                       | No. of hours | Lecture | Tutorial / Practical |
|-----------------------------|--------------|---------|----------------------|
| Introduction to AI Concepts | 4            | 2       | 2                    |
| Introduction to AI Concepts | 4            | 2       | 2                    |
| Problems and Problem space  | 4            | 2       | 2                    |
| Problem Characteristics     | 4            | 2       | 2                    |
| Problem Characteristics     | 4            | 2       | 2                    |
| AI-Search                   | 4            | 2       | 2                    |
| AI-Search                   | 4            | 2       | 2                    |
| Knowledge Acquisition       | 4            | 2       | 2                    |
| Mid Term                    | 2            |         |                      |
| Knowledge Acquisition       | 4            | 2       | 2                    |
| Knowledge representation    | 4            | 2       | 2                    |
| Geometric analogy net       | 4            | 2       | 2                    |
| Recording Cases             | 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)

Problem Solving

**Course Assessment :**

| Methods of assessment     | Relative weight % | Week No | Assess What |
|---------------------------|-------------------|---------|-------------|
| Assignments               | 10.00             |         |             |
| Final Exam                | 40.00             | 14      |             |
| Midterm Exam (s)          | 20.00             | 9       |             |
| Others<br>(Participation) | 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 :**

Ivan Bratko, Prolog: programming for artificial intelligent, Addison Wesley, , (last edition).

**Web Sites :**

IEEE intelligent systems & their applications  
 IEEE transactions on pattern analysis and machine intelligence  
 Intelligence : new visions of AI in practice international journal of robotics & automation AI magazine  
 Technological Innovations Artificial Intelligence Periodical  
[www.ekb.eg](http://www.ekb.eg)  
[www.ai.com](http://www.ai.com)  
[www.robotics.com](http://www.robotics.com)