هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Introduction to Artificial Intelligence
Course Code:	SE1506
Program:	Bachelor of Software Engineering
Department:	Software Engineering
College:	Faculty of Computers and Informatics
Institution:	Al-Baha University
Version:	1.0
Last Revision Date:	23/4/2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (9)					
4. Course general Description:					
Artificial Intelligence (AI) has emerged as a transformative field in the world of technology, affecting various industries, from healthcare and finance to entertainment and transportation. This course in Artificial Intelligence provides students with a comprehensive introduction to the principles, techniques, and applications of AI. It equips students with the foundational knowledge and practical skills needed to understand, develop, and deploy AI systems in real-world contexts. Lecture: This course introduces students to the field of Artificial Intelligence (AI) with emphasis on its use to solve real world problems for which solutions are difficult to express using the traditional algorithmic approach. It explores the essential theory behind methodologies for developing systems that demonstrate intelligent behavior including dealing with uncertainty, learning from experience, and following problem-solving strategies found in nature. This course is intended to bring to the students the information necessary to understand the design, operation, and capabilities of intelligent systems. Students will be introduced to the fundamental concepts of machine learning with neural and fuzzy components. Topics to be covered include intelligent agents, heuristic search techniques, problem-solving as a search activity, knowledge representation, probabilistic reasoning, machine learning, neural networks, genetic algorithms, self-organizing systems, swarm computing, and biologically inspired computing.					
5. Pre-requirements for this course (if any)**:**					
Field Training SE1755					

6. Pre-requirements for this course (if any):

7. Course Main Objective(s):

This course provides a broad overview of intelligent systems. The objective of this course is to provide students an opportunity to study some selected aspects of computational intelligence methods. Students will be introduced to Evolutionary Computation (EC), and Natural Language Processing (NLP).Students enrolled in this class and having successfully completed this course,
will be able to:

- **Outline the intelligent systems fundamental principles.**
- **State knowledge representation techniques.**
- **Recognize neural networks, genetic algorithms, fuzzy logic, swarm computing,**

biologically inspired computing, expert systems, and machine learning techniques, among
others.

- **Explain when and how to apply intelligent systems techniques.**
- **Evaluate and test intelligent systems techniques.**
- **Compare with current trends and applications relates to the course.**
- **Interact in groups collaboratively.**
- Communicate concepts and techniques in oral presentations.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	100%
2	E-learning	0	0
3	Hybrid • Traditional classroom • E-learning	0	0
4	Distance learning	0	0

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	33
2.	Laboratory/Studio	0
3.	Field	0
4.	Tutorial	0
5.	Others (specify)	0
Total		33

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Describe the intelligent systems fundamental principles	K1	Lectures, Slide Presentations	Homework, Midterm exam, Final exam
1.2	Describe knowledge representation techniques	K2	Lectures, Slide Presentations	Homework, Midterm exam, Final exam
1.3	Understand neural networks, genetic algorithms, fuzzy logic, swarm computing, biologically inspired computing, expert systems, and machine learning techniques, among others	K3	Lectures, Slide Presentations	Homework, Midterm exam, Final exam
2.0	Skills			
2.1	Compare intelligent systems techniques and deployments	S1	Demonstrations, Group Discussion, Group Projects, Case Studies, Practical Exercises	Homework, Midterm exam, Final exam
2.2	Evaluate intelligent systems techniques	S2	Demonstrations, Group Discussion,	Quizzes, Midterm

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
			Group Projects, Case Studies, Practical Exercises	**exams, Lab exercises (Rubric), Final Exam**
2.3	**Explore current trends and applications relates to intelligent systems**	**S3**	**Demonstrations, Group Discussion, Group Projects, Case Studies, Practical Exercises**	**Project Assessment (Rubric)**
3.0	**Values, autonomy, and responsibility**			
3.1	**Interact in groups collaboratively**	**V1**	**Small Group and Oral Presentations**	**Project**

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Intelligent Systems	4
2.	Introduction to Knowledge Representation and Reasoning	4
3.	Search and computational complexity in Intelligent Systems	4
4.	Natural language understanding	2
5.	Introduction to Machine Learning	2
6.	Neural Networks	4
7.	Genetic Algorithms	3
8.	Probabilistic Reasoning and Bayesian Belief Networks	2
9.	Fuzzy logic Reasoning	4
10.	Intelligent Agents	4
Total		**33**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Weekly homework exercises and/or programming assignment**	**Weekly**	**10%**
2.	**Quizzes**	**Periodically**	**10%**
3.	**Midterm**	**6**	**20%**

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
4.	Project	11	20%
3.	Final Exam	12	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Russell, S. J. 1., Norvig, P., & Davis, E. (2010). Artificial intelligence: a modern approach. 3rd ed. Upper Saddle River, NJ, Prentice Hall.
Supportive References	Joshi, P. (2017). Artificial intelligence with python. Packt Publishing Ltd.
Electronic Materials	N/A
Other Learning Materials	N/A

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom
Technology equipment (projector, smart board, software)	Software and Tools
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	- Survey
Effectiveness of Students assessment	Lecturer	- Annual report
Quality of learning resources	Program Coordinator	- Survey - Evaluation of test Models - Standard sample
The extent to which CLOs have been achieved		
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**Curriculum Committee**
REFERENCE NO.	
DATE	**28 April 2024**