Course Specification
(Bachelor)

Course Title:	Introduction to Artificial Intelligence
Course Code:	CSIT101
Program:	Computer Science
Department:	Computer science
College:	College of Engineering and Computer Science
Institution:	Jazan University
Version:	V1
Last Revision Date:	20-04-2025

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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: (Level 1/Year 1)

4. Course general Description:

This course provides a foundational and practical understanding of artificial intelligence (AI), aimed at developing AI literacy among students from various disciplines. It covers essential concepts, tools, applications, and ethical considerations. Students will learn how AI works, how it is applied across industries, how to evaluate AI systems, and how to use AI tools responsibly. Key topics include types of AI, generative AI tools, machine learning, deep learning, NLP, computer vision, AI in business and automation, model development and evaluation, ethical AI practices, and future trends.

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

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

7. Course Main Objective(s):

- **Introduce** the foundations and historical evolution of artificial intelligence (AI), addressing common misconceptions and societal impacts.
- **Explain** fundamental AI concepts such as machine learning, neural networks, and natural language processing and how AI systems approach problem-solving.
- **Describe** real-world applications of AI across industries, highlighting both current capabilities and technological limitations.
- **Illustrate** core AI principles such as learning from data through practical examples and guided lab activities.
- **Familiarize** with user-friendly AI tools and platforms to confidently explore and apply AI in everyday tasks that do not require prior programming experience.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
١.	Lectures	30
٢.	Laboratory/Studio	30
٣.	Field	
٤.	Tutorial	
٥.	Others (specify)	
Total		60

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	**Define** essential Artificial Intelligence (AI) terminologies, core subfields, and working of AI systems.	**JULO-1**	• Lectures / Presentations • Media Lectures	• Assignment 1 • Midterm Exam • Final Exam
1.2	**Describe** real-world Artificial Intelligence (AI) applications across various industries.	**JULO-1**	• Lectures / Presentations • Group Discussions / Presentations	• Assignment 1 • Midterm Exam • Final Exam
2.0	**Skills**			
2.1	**Use** accessible Artificial Intelligence (AI) platforms to perform basic tasks and experiments.	**JULO-7**	• Lectures / Presentations • Lab Demonstration • Media Lectures	• Lab Assignment • Lab Exam
2.2	**Analyze** outputs from Artificial Intelligence (AI) systems to assess factors	**JULO-4**	• Lectures / Presentations • Lab Demonstration	• Lab Assignment • Assignment- 2

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	influencing performance and accuracy.		• Group Discussions	
2.3	**Develop** simple Artificial Intelligence (AI) solutions using visual programming tools and environments.	**JULO-6**	• Lectures / Presentations • Lab Demonstration • Media Lectures	• Assignment 2 • Lab Assignment • Lab Exam
3.0	**Values, autonomy, and responsibility**			
3.1	**Recognize** ethical and social implications of Artificial Intelligence (AI) technology.	**JULO-3**	• Lectures / Presentations • Group Discussions / Presentations • Media Lectures	• Assignment 2 • Final Exam
3.2	**Collaborate** effectively within diverse teams on Artificial Intelligence (AI)-related tasks.	**JULO-2**	• Group Discussions / Presentations • Lab Demonstration / Presentations	• Assignment 2 • Lab Assignment
3.3	**Demonstrate** the ability to independently engage with emerging Artificial Intelligence (AI) trends and tools.	**JULO-5**	• Media Lectures • Group Discussions / Presentations • Lab Demonstration	• Assignment 2 • Lab Assignment

C. Course Content

No	List of Topics	Contact Hours
١.	**Chapter (1): Introduction to Artificial Intelligence:** • What is Artificial Intelligence (AI)? • History and evolution of AI • Types of AI (Narrow vs. General) • Artificial Intelligence vs. Augmented Intelligence • AI in everyday life • Myths and misconceptions about AI • Introducing Generative AI and Its Use Cases • Applications of AI in Different Industries • Generative AI Tools and Applications	**4T + 4P**
٢.	**Chapter (2): Core Concepts and Terminology:** • Cognitive Computing • Terminologies and Related Concepts of AI • Machine Learning: Techniques and Training • Deep Learning and Neural Networks	**6T + 6P**

	• Machine Learning vs Deep Learning • Generative AI Models • Large Language Models • Machine Learning vs. Deep Learning vs. Foundation Models	
٣.	**Chapter (3): AI Application Domains** • Natural Language Processing (NLP) • speech recognition • computer vision • Self-driving cars and autonomous systems • Integration of AI with cloud computing, edge computing, and the Internet of Things (IoT)	**2T + 2P**
٤.	**Chapter (4): Impact of AI on Business and Career Transformation** • AI's role in transforming various sectors and industries • What are AI Agents? • Robotics and Automation • The Rise of Generative AI for Business • Become a Value Creator with Generative AI • What is Retrieval-Augmented Generation (RAG)? • Adopting AI in Your Business • Frameworks for AI Adoption • Transforming Work Through AI Tools • Career Opportunities with AI • Humans vs. AI: Who should make the decision?	**4T + 4P**
٥.	**Chapter (5): Creating and Evaluating AI Solutions** • Workflow of an AI project • Building AI Models using Visual Programming (Orange) • Interpreting AI results and performance metrics • Evaluating model accuracy and limitations • Prompt Engineering Techniques and Approaches	**6T + 6P**
٦.	**Chapter (6): AI Ethics, Responsible AI, and Explainable AI (XAI)** • Ethical concerns: bias, fairness, transparency • Why Large Language Models Hallucinate? • The concept of Explainable AI as a potential tool to overcome the inherent limitations underlying AI/ML predictions and recommendations • Data, Privacy, Compliance and Strategy • Accountability and human oversight • Social impact of AI technologies	**4T + 4P**

	• How to Implement AI Ethics • The Importance of AI Governance	
٧.	**Chapter (7): Emerging trends in AI and potential future developments** • How AI Will Impact the Future? • Job Disruption • What Industries Will AI Impact the Most? • Narrow AI, AGI, and Super AI • Milestones and Potential Timelines for Achieving AGI • Technological Singularity • Impact of AGI and Super AI on Education and The Workforce	**4T + 4P**
Total		**30T+30P**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
١.	Midterm Exam	7th-8th week	15%
٢.	Assignment I	6th week	10%
٣.	Assignment II (Case Study/ Group assignment)	12th week	15%
٤.	Lab Exam + Lab Assignment	15th Week	20%
٥.	Final Theory Exam	As per schedule	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	• Stuart Russell & Peter Norvig. Artificial Intelligence: A Modern Approach (4th Edition, 2020) https://aima.cs.berkeley.edu/ • Witten, I. H., Frank, E., Hall, M. A., & Pal, C. J. (2016). *Data mining: Practical machine learning tools and techniques*(4th ed.). Morgan Kaufmann. https://www.elsevier.com/books/data-mining/witten/978-0-12-804291-5 • Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep learning*. MIT Press. https://www.deeplearningbook.org/
Supportive References	• Demšar, J., & Zupan, B. (Eds.). (2020). Orange data mining: A textbook. University of Ljubljana, Faculty of

	Computer and Information Science. https://orangedatamining.com/ • Géron, A. (2022). *Hands-on machine learning with Scikit-Learn, Keras, and TensorFlow: Concepts, tools, and techniques to build intelligent systems* (3rd ed.). O'Reilly Media. • Hunter, N. (2023). *The art of prompt engineering with ChatGPT: Crafting effective prompts for real-world applications*. Independently published. • Foster, D. (2019). *Generative deep learning: Teaching machines to paint, write, compose, and play*. O'Reilly Media.
Electronic Materials	**Orange Tutorials (Interactive & Videos)** • https://orangedatamining.com/widget-catalog/ • YouTube Channel: Orange Data Mining **OpenAI Prompt Engineering Guide** • https://platform.openai.com/docs/guides/gpt-best-practices **Google AI: Responsible AI Practices** • https://ai.google/responsibilities/responsible-ai-practices/ **IBM Generative AI Learning Path** • https://cognitiveclass.ai/learn/generative-ai
Other Learning Materials	• Lab Manual

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	• Classroom equipped with projector, whiteboard, and sufficient seating arrangements. • Lab with software installed and individual computer terminal for each student.

Technology equipment
(projector, smart board, software)
	• Whiteboards and projectors for classroom
	• Following software for lab work:
	  ○ Orange Data Mining
	  ○ ChatGPT / OpenAI Playground

Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect (Course evaluation survey form)

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Students assessment	CRC / QAU / HoD	Direct (Course reports / result analysis)
Quality of learning resources	Track leaders / CRC	Indirect (Review, meetings and star rating with suggestions for further modification and improvements)
The extent to which CLOs have been achieved	CRC / QAU	Direct (CLO assessment template further verified at course coordinator, Track leader and QAU level)
Other	Students	Indirect (Course evaluation survey form)

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**CS DEPARTMENT COUNCIL**
REFERENCE NO.	**ENGCSCS2510**
DATE	**٢٦ MAY 2025**