

**DEPARTMENT OF TECHNOLOGY EDUCATION, IER
UNIVERSITY OF THE PUNJAB, LAHORE-PAKISTAN
Course Outline**

Programme	BS Technology Education	Course Code	BSTE311	Credit Hours	3
Course Title	Introduction to Artificial Intelligence(AI)				
Course Introduction					
This course provides a basic introduction to the principles and practices of Artificial Intelligence (AI). Students will learn about the history, key concepts, techniques, and applications of AI. The course includes theoretical understanding and practical exercises to develop a foundational knowledge of AI.					
Learning Outcomes					
On the completion of the course, the students will:					
<ol style="list-style-type: none"> 1. Understand the basic concepts and history of AI. 2. Describe various AI techniques and their applications. 3. Implement simple AI algorithms. 4. Analyze the ethical implications of AI. 5. Explore current trends and future directions in AI. 					
Course Content				Assignments/Readings	
Week 1	Introduction to AI		Reflective essay on the impact of AI on society		
	<ul style="list-style-type: none"> • Unit 1.1: Overview of AI • Unit 1.2: History and Evolution of AI 				
Week 2	Basic Concepts of AI		Research and present a timeline of key developments in AI		
	<ul style="list-style-type: none"> • Unit 2.1: Definition and Scope of AI • Unit 2.2: AI vs. Human Intelligence 				
Week 3	Problem-Solving and Search		Develop a simple problem-solving algorithm		
	<ul style="list-style-type: none"> • Unit 3.1: Problem-Solving Techniques in AI • Unit 3.2: Search Algorithms 				
Week 4	Knowledge Representation		Write a report on different		

	<ul style="list-style-type: none"> • Unit 4.1: Introduction to Knowledge Representation 	methods of knowledge representation
	<ul style="list-style-type: none"> • Unit 4.2: Semantic Networks and Ontologies 	
Week 5	Machine Learning Basics	Research and present on the types of machine learning (supervised, unsupervised, reinforcement)
	<ul style="list-style-type: none"> • Unit 5.1: Introduction to Machine Learning • Unit 5.2: Basic Algorithms in Machine Learning 	
Week 6	Neural Networks	Implement a simple machine learning algorithm (e.g., linear regression)
	<ul style="list-style-type: none"> • Unit 6.1: Introduction to Neural Networks • Unit 6.2: Basic Neural Network Implementation 	
Week 7	Natural Language Processing (NLP)	Write a report on the structure and function of neural networks
	<ul style="list-style-type: none"> • Unit 7.1: Basics of NLP • Unit 7.2: Simple NLP Techniques 	
Week 8	Robotics and AI	Research and present on the applications of NLP
	<ul style="list-style-type: none"> • Unit 8.1: Introduction to Robotics and AI • Unit 8.2: Simple Robotics Programming 	
Week 9	Expert Systems	Write a report on the role of AI in robotics
	<ul style="list-style-type: none"> • Unit 9.1: Introduction to Expert Systems • Unit 9.2: Developing a Simple Expert System 	
Week 10	AI in Games	Develop a basic program for a simple robotic task
	<ul style="list-style-type: none"> • Unit 10.1: AI Techniques in Game Development • Unit 10.2: Developing a Simple Game AI 	
Week 11	Ethical and Social Implications of AI	Research and present on the

	<ul style="list-style-type: none"> • Unit 11.1: Ethical Issues in AI 	components of expert systems
	<ul style="list-style-type: none"> • Unit 11.2: Social Implications of AI 	
Week 12	Current Trends in AI <ul style="list-style-type: none"> • Unit 12.1: Current Trends and Developments in AI 	Write a report on the use of AI in game development
	<ul style="list-style-type: none"> • Unit 12.2: Future Directions in AI 	
Week 13	AI in Industry <ul style="list-style-type: none"> • Unit 13.1: AI Applications in Various Industries 	Write an essay on the ethical considerations in AI development
	<ul style="list-style-type: none"> • Unit 13.2: Case Studies of AI in Industry 	
Week 14	AI Tools and Software <ul style="list-style-type: none"> • Unit 14.1: Overview of AI Tools and Software 	Research and present on a current trend in AI
	<ul style="list-style-type: none"> • Unit 14.2: Hands-On with an AI Tool 	
Week 15	Developing an AI Project <ul style="list-style-type: none"> • Unit 15.1: Planning an AI Project 	Research and present on AI applications in a specific industry
	<ul style="list-style-type: none"> • Unit 15.2: Implementing an AI Project 	
Week 16	Course Review and Final Assessment <ul style="list-style-type: none"> • Unit 16.1: Review of Key Concepts and Themes 	Develop a simple AI project using an AI tool (e.g., TensorFlow, PyTorch)
	<ul style="list-style-type: none"> • Unit 16.2: Comprehensive Final Exam 	

Textbooks and Reading Material

1. Textbooks.

- Artificial Intelligence: A Modern Approach by Stuart Russell and Peter Norvig

2. Suggested Readings

- Machine Learning by Tom M. Mitchell

Teaching Learning Strategies

1. **Lectures:** To introduce and explain key concepts and theories.
2. **Hands-on Labs:** To provide practical experience with robotics components and programming.
3. **Assignments and Projects:** To reinforce learning and encourage application of concepts in real-world scenarios.
4. **Group Discussions:** To facilitate peer learning and collaborative problem-solving.
5. **Guest Lectures:** To provide insights from industry experts and professionals

Assessment

Sr. No.	Elements	Weight age	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.