Aror University of Art, Architecture, Design & Heritage Sukkur.

BS (AI & Multimedia Gaming)
Fall-2025

Faculty of Emerging Sciences and Technology

Course Title:	Artificial Intelligence
Course Code:	CSC-205
Credit Hours:	(2+1)
Course Instructor:	Engr. Muhammad Younis
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Description:

Explore the core principles of Artificial Intelligence in this in-depth course tailored for BS (AI and MMG) students. Delve into essential topics like machine learning, neural networks, natural language processing, and Generative AI. Through practical projects and real-world case studies, you'll acquire hands-on experience in designing and developing AI systems. The course balances theoretical knowledge with practical skills, equipping you for advanced studies and careers in the fast-evolving field of AI

Aims and Objectives:

• To gain an understanding of the core concepts in Artificial Intelligence.
• To understand and Implement Machine Learning Models
• To understand Deep Learning and Implement DL Models
• To gain the basic understanding of Natural Language Processing
• To explore the field of Generative AI and its applications

Assessment:

S. No	**Assessment Activities**	Percentage	Total Activities
1.	Sessional: Quizzes/ Assignments (Quizzes & Assignments)	30%	5
2.	Mid Term Exam	30%	1
3.	Final Exam	40%	1

Course Learning Outcomes (CLOs):

CLO No.	**Course Learning Outcome**	Domain	Level	Assessment Tool
CLO-1	Understand key concepts in the field of artificial intelligence.	C	2	Class Participation, Quizzes, Mid Exams., Assignments
CLO-2	Understand the fundamental constructs of Python programming language.	C	2	Class Activity, Quiz, Assignments
CLO-3	Implement artificial intelligence techniques and case studies.	C	3	Worksheets, Project

Domains:
C=Cognitive, A=Affective, P=Psychomotor
Levels:
Cognitive = {1: Remembering, 2: Understanding, 3: Applying, 4: Analyzing, 5: Evaluating,
5: Creating}
Affective = {1: Receiving, 2: Responding, 3: Valuing, 4: Organizing, 5: Characterizing}
Psychomotor= {1: Imitation, 2: Manipulation, 3: Precision, 4: Articulation, 5: Naturalization}

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Course Outlines:

Weeks	LEC#	SUBTOPICS	REFERENCE
Week No: 01	Lec: 01	**Introduction:** o What is AI? o The foundations of AI o Information, Knowledge and Wisdom	Chapter#01/ Lecture Slides
	Lec: 02	**Introduction:** o The History of AI o State of the Art AI o Strong AI vs Weak AI vs Evolutionary AI	Chapter#01/ Lecture Slides
Week No: 02	Lec :03	**Intelligent Agents:** o Agents and Environment o Perception o Reasoning o Action o Learning o Applications of Intelligent Agents	Chapter#02/ Lecture Slides
	Lec: 04	**Intelligent Agents:** o Good Behavior: The concept of Rationality o Rationality vs. Intelligence o Bounded Rationality o The Nature of Environments o The Structure of Agents	Chapter#02/ Lecture Slides
Week No: 03	Lec: 05	**Knowledge Representation and Reasoning:** o Introduction o Propositional Logic o First Order Logic o PL vs FL	Chapter#07, Chapter#08/Lecture Slides
	Lec: 06	**Inference in FL:** o Forward Chaining o Backward Chaining o Forward vs Backward Chaining	Chapter#09/ Lecture Slides
Week No: 04	Lec: 07	**Fuzzy Logic:** o Introduction to fuzzy logic o Characteristics of fuzzy logic o Fuzzy Sets o Membership function in fuzzy logic	Lecture Slides

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	Lec: 08	**Learning from Examples:** o Machine Learning o Forms of Learning o Traditional Programming vs ML o The Machine Learning Process	**Chapter#18/ Lecture Slides**
Week No:05	**Lec: 09**	**Introduction to The Supervised Learning Algorithms** o Linear Regression o Logistic Regression o Decision Tree	**Chapter#18/Lecture Slides**
	Lec: 10	**Introduction to The Supervised Learning Algorithms** o Random Forest o Support Vector Machine o K-Nearest Neighbors	**Chapter#18/Lecture Slides**
Week No:06	**Lec: 11**	**Introduction to The Unsupervised Learning Algorithms** o K-Means Clustering o Hierarchical Clustering	**Chapter#18/Lecture Slides**
	Lec: 12	**Classification using Decision Tree:** o Philosophy of Decision Tree	**Chapter#18/Lecture Slides**
Week No:07	**Lec: 13**	**Classification using Decision Tree:** Decision Tree Algorithms	**Chapter#18/Lecture Slides**
	Lec: 14	**Performance Metrics in Classification:** o Confusion Matrix o Precision, Recall, F1 Score	**Chapter#18/Lecture Slides**
Week No: 08	**Lec: 15**	**Classification Using Support Vector Machine:** o SVM Algorithm	**Chapter#04**
	Lec: 16	**Classification Using Support Vector Machine:** o Linear vs Non-Linear SVM o Kernel Trick in SVM o Solving Problems	**Chapter#04**

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MID TERM EXAMINTATION			
Week No: 10	**Lec: 17**	**Classification Using KNN Algorithm:** o Philosophy of KNN Algorithm o How to choose value of K? Solving Problems using KNN Algorithm	**Lecture Slides/Teacher Handouts**
	Lec: 18	**Regression:** o Philosophy of Regression o Linear Regression	**Lecture Slides/Teacher Handouts**
Week No: 11	**Lec: 19**	**Regression:** o Multivariate Regression	**Lecture Slides/Teacher Handouts**
	Lec: 20	**Clustering:** o K means Clustering Algorithm	**Lecture Slides/Teacher Handouts**
Week No: 11	**Lec: 21**	**Natural Language Processing:** o Introduction o Regex for NLP	**Lecture Slides/Teacher Handouts**
	Lec: 22	**Natural Language Processing** o Three Category of Techniques for NLP o NLP Pipeline	**Lecture Slides/Teacher Handouts**
Week No: 12	**Lec: 23**	**Natural Language Processing:** o Spacy vs NLTK o Tokenization in Spacy o Label and one Hot Encoding o	**Lecture Slides/Teacher Handouts**
	Lec: 24	**Natural Language Processing:** o Bag of Words o What are some other Models?	**Lecture Slides/Teacher Handouts**
Week No:13	**Lec: 25**	**Analyze Text Data:** o TF-IDF o N-Grams	**Lecture Slides/Teacher Handouts**

	Lec: 26	**Deep Learning:** ○ How deep learning is different from Machine Learning? ○ Introduction to Artificial Neural Network	**Lecture Slides/Teacher Handouts**
Week No: 14	**Lec: 27**	○ Forward Propagation vs Backward Propagation ○ Types of Activation Function	**Lecture Slides/Teacher Handouts**
	Lec: 28	**Deep Learning:** ○ Introduction to CNN ○ CNN Architecture	**Lecture Slides/Teacher Handouts**
Week No:15	**Lec: 29**	**Digit Classification using CNN**	**Lecture Slides/Teacher Handouts**
	Lec: 30	**RNN and Its types:** ○ LSTM ○ GRU	**Lecture Slides/Teacher Handouts**
Week No: 16	**Lec: 31,32**	**Recent Trends in AI (Case Study of AI systems)**	**Lecture Slides/Teacher Handouts**

Text Book:

1. Artificial Intelligence A Modren Approach, Fourth Edition, Stuart J. Russell and Peter Norvig
2. Deep Learning with Python, François Chollet