FAST NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCES PESHAWAR CAMPUS

AL2002 – Artificial Intelligence Lab (1 CH)	
Pre-Requisite: - **Instructor**: Ms. Hurmat Hidayat **Email**: hurmat.hidayat@nu.edu.pk **Office**: Khyber Lab II	
Course Introduction	
This course introduces strategies, methods and algorithms for solving problems that requires decision making on part of the computer. Further, different implementation techniques in automated reasoning, data and knowledge representation, search techniques, planning and learning techniques are practiced.	
Grading Policy	
Assessment Item	**Weightage**
Assignment/Quizzes	5%
Project	15%
Lab Tasks	40%
Final Term	40%
Text and Reference Books	
• Lab Manuals • Online Python documentation • Stuart Russell and Peter Norvig, Artificial Intelligence. A Modern Approach, 3rd edition, Prentice Hall, Inc., 2010.	
Administrative Instructions	
• Attendance as per institute's policy. • No retake of quizzes. • Late submission of assignment/quiz/project is not acceptable. • For course project, the team should consist of at most 3 students.	
Computer Usage/ Software Tools	

Weekly Breakdown	
Lab 01	• Introduction to Python (Fundamentals and OOP)
Lab 02	• Revision of Python concepts and relevant Libraries (Numpy, Pandas, Matplotlib, NetworkX)
Lab 03	• Types of Agents and Environments to Implement
Lab 04,05	• Supervised Learning: (KNN, Decision Tree)
Lab 06,07	• Neural Networks (ANN)
Lab 08	• Unsupervised Learning (K-means)
Lab 09	• Optimization Problems • Hill Climbing, Simulated Annealing
Lab 10	• Genetic Algorithm
Lab 11	• Uninformed search techniques – Formulation, identification and solution implementation using Breadth-First, Depth-First search approaches.
Lab 12, 13	• Informed search techniques – Formulation, identification and solution implementation using Greedy and A* search approach, Recursive Best First Search
Lab 14	• Constraint Search Problem
Lab 15	• Project Demos
Lab 16	• Final Lab Exam