Course Name: **Introduction to Artificial Intelligence**		
Course Code: COMP 360	**Course Type (major)**	**Course Credits: 3 (2+1)**
Class Timings: 9:00-11:00	**Section: C**	**Student Meeting Hours/ Office Hours:** TR 8:30-9:00 TR 3:00-5:30
Instructor Name: Maria Tamoor		

A Note from the Instructor:

- All lectures and related material will be uploaded on Moodle and Google drive weekly.
- Assignments / home works will be uploaded on Moodle and students will submit them using same.
- All emails regarding the course should be sent through official FCC student email account and should have subject line starting as "COMP360-A "

Instructor Contact Details
Email: mariatamoor@fccollege.edu.pk
Whatsapp group: will be announced
Guidelines for contacting instructor: you can appointment for some other day via email

Course Description:
An introductory course of AI techniques for students who have not previously had an exposure to this subject
Pre-requisites if any: Data Structures, Stats
(Exposure to calculus, linear algebra and probability a plus)

Main Mode of Instruction: in person, Moodle and Zoom
Technology Requirements *Check moodle on daily basis, internet is required to access material*
Considerations for Students with Limited Internet/Technology Access: you need to inform in prior about limited access to internet to instructor**.**

Course Objectives or Student Learning Outcomes (SLOs)

1. Apply the basic principles, models, and algorithms of AI to recognize, model, and solve problems in the analysis and design of information systems.
2. Analyze the structures and algorithms of a selection of techniques related to searching, reasoning, machine learning, and language processing.
3. Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models

Textbook: S. Russell and P. Norvig, Artificial Intelligence: A Modern Approach, Prentice Hall, 3rd edition.

- **eBook link: https://cs.calvin.edu/courses/cs/344/kvlinden/resources/AIMA-3rd-edition.pdf**

Reference books:

1. Artificial Intelligence for Humans, Volume 1: Fundamental Algorithms eBook link: http://matt-versaggi.com/mit_open_courseware/Artificial_Intelligence_for_Humans/aifh_vol1_fundamental_20131209.pdf
2. Machine Learning, Tom Mitchell, McGraw-Hill, eBook link: https://www.cin.ufpe.br/~cavmj/Machine%20-%20Learning%20-%20Tom%20Mitchell.pdf
3. Machine Learning: The New AI (MIT Press Essential Knowledge series) by Alpaydin

Course Content, Learning Material & Activities Schedule

WEEK	TOPICS	READING	Labs/Assignments/Homeworks
1	Introduction and applications of AI Intelligent Agents, Behavior, Environment	Ch. 1 - 2	**Lab:** Implement BFS, DFS, UCS **Assignment 1:** Implement A* search methods **Homework 1:** A* and UCS questions
2	Problem solving by searching Uninformed search strategy	Ch. 3.1 – 3.4	
3	Informed search strategy, Optimal Search: A* Local search algorithms and optimization	Ch. 3.5 – 3.7 Ch. 4.1-4.3	
4	Adversarial search	Ch. 5.1-5.3	
5	Logic: Syntax and Semantics Propositional Logic First Order Logic Programming for AI: Prolog	Ch. 6.1 – 6.2 Ch. 7.1-7.4	**Lab:** Do programming in PROLOG **Assignment 2:** Make family tree in PROLOG **Homework 2:** Bayesian Network Questions
6	Probability in AI, Dependence Bayes Rule, Conditional Independence, Independence	Ch. 8.1-8.5	
7	Uncertain knowledge and reasoning Bayesian Network, D Separation	Ch. 12.1-12.7	
8	**Midterm Exam**		
9	Learning: Supervised and Unsupervised Naïve Bayes classifier, KNN	Ch.13.1-13.7	**Lab:** Implement Naïve Bayes Classifier Implement Rregression **Homework 3:** NaiveBayes and decision trees questions
10	Classification (linear, Decision Trees), Regression		
11	Clustering HAG		**Lab:** Implement K mean Clustering **Assignment 3:** Implement HAG
12	K means clustering		
13	Artificial neural network		**Lab:** Implement Neural network **Project Submission**
14	Case based reasoning/Rule based Reasoning		
15	Evolutionary Algorithms: Genetic Algorithms (optional)		
PROJECT: PICK ONECLASSFICATION DATASET AND APPLY NAÏVE BAYES, DECISION TREES AND NEURAL NETWORK. COMPARE RESULTS USING DIFFERENT GRAPHS AND TABLES			

'Out-of-class' Study Required:
Following are the best practices to succeed in this course:

- View video lectures before class time
- Check moodle and your course Whatsapp group regularly
- Atleast spend 3 hours at home for reading from book also.
- Do all assignments and homeworks yourself

The breakup is as follows:

Assignments:	10 %
Quizzes:	10 %
Midterm exam:	25 %
Final term exam:	30 %
Project	15 %
Labs	10 %
TOTAL	**100%**

Missed Assignments/ Make-Ups/ Extra Credit

- Late assignments will be accepted with 50% deduction
- No retake of quiz or exam unless approved.

Grade Determination & Course Assessment as per FCC Policy:
Relative grading will be done so giving your solved assignments and homeworks to your friends can have negative impact on your grade

Changes to the Syllabus:
This syllabus was designed to convey course information and requirements as accurately as possible. It is important to note however that it **may** be subject to change during the course depending on the needs of the class and other situational factors. Such changes would be for your benefit and you will be notified of them as soon as possible.

Student Support Services

Student Counseling Services.Students can contact the Campus Counseling Center at 0331-444-1518 or email ccc@fccollege.edu.pk.
Writing Center
Mercy Health Center

Other Useful FCCU Policy Documents:

Sexual Harassment Policy
Anti-Corruption Policy
Academic integrity
Plagiarism Policy
Academic Calendar