

Beirut Arab University

Faculty of Science

Department of Mathematics and Computer Science

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## Course Syllabus – CMPS 453

**Course title:** Artificial Intelligence      **Credit hours:** 3      **Prerequisites:** CMPS 347

**Instructor:** Prf.. Ali El-Zaart (Office No.: B220)

**Course Objectives:** The course aims to introduce and covers different aspects of artificial intelligence. The course begins within a revision for the basic concepts of trees and graphs. After, the course continues to introduce the artificial intelligence such as : Intelligent Agents, Solving Problems by Searching, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Adversarial Search, Machine Learning, and Introduction to Computer Vision.

### Course Outcomes:

1. Student will be able to formulate problems using problem solving techniques in artificial intelligence.
2. Student will be able to understand and implement the Uninformed Search Strategies.
3. Student will be able to understand and implement informed the informed Search Strategies.
4. Student will be able to understand and implement the adversarial search.
5. Student will be able to learn some basic concepts of machine learning
6. Student will be able to learn some basic concepts of computer vision.
7. Student will be able to implement artificial intelligence techniques using different tools and techniques.

### Recommended Textbook:

Artificial Intelligence A Modern Approach, Third Edition, Prentice Hall, Stuart J. Russell and Peter Norvig.

### References:

1. Artificial Intelligence and Deep Learning with Python: Every Line of Code Explained For Readers New to AI and New to Python. Steven D'Ascoli.
2. Course Notes.

**Schedule:**

<b>Week No.</b>	<b>Topics</b>
1	Overview on the course-Syllabus
2	Revision on Trees : Binary and multi Trees
3	Introduction to graph graphs
4	Graph search (pre-order, post-order, in-order)
5	Introduction to AI and Intelligent agent
6	Solving Problems by Searching
7	Uninformed Search Strategies
8	Midterm Evaluation
9	Informed (Heuristic) Search Strategies. Best first search (Greedy searching)
10	A* algorithm
11	Adversarial Search : Games
12	Adversarial Search: Optimal Decisions in Games (Min-max algorithms)
13	Adversarial Search: Alpha-Beta Pruning
14	Presentations of students
15	Final Exam

**Student Assessment Methods, Schedule and Grading**

<b>Assess. No.</b>	<b>Type</b>	<b>To assess ABET outcomes</b>	<b>Start Week No.</b>	<b>Submission week No.</b>	<b>Weight of assess.</b>
1	Midterm Evaluation	1,2	8	8	30
2	Lab	6	14	14	20
3	Presentation	4	14	14	10
4	Final Exam	1,2	15	15	40
<b>Total</b>					<b>100%</b>

**Evaluation:**

The weight (tentative) in final grade to midterms, home works etc. is as follows:

Midterm Evaluation:	( 30 )
Labs	(20)
Presentation	(10)
Final exam:	(40 )

**University Attendance Policy:**

As set by BAU regulations and specified in the Student Manual, students who miss more than one-fifth of the sessions of any course in the first ten weeks of the semester will be asked to withdraw the course with a grade of “W” that will be not be credited and counted in the GPA.

**Policy on Incomplete Grades and Withdrawal:**

A grade of Incomplete (noted "I" on the transcript) may be assigned when a student completes and passes a majority of the work required for a course but, for reasons beyond the student's control, is unable to attend the final exam. Incomplete grades are contingent upon instructor approval, and instructors are under no obligation to grant them. In cases where an instructor agrees to assign an “I” grade, it is important to agree about what is required in order to finish the course and what percentage of the grade will be granted to the remaining work.

Students who miss more than one-fifth of the sessions of any course in the first ten weeks of the semester and did not withdraw the course will receive from the course coordinator a grade of automatic withdraw “AW” that will not be credited or counted in GPA.

**Policy on Cheating:**

The Mathematics and Computer Science Department will not condone cheating. When cheating is suspected, instructors will take reasonable action to establish whether it actually occurred. If it has, the instructor will apply appropriate disciplinary policy. The ordinary University penalty for cheating is failure of the course. Penalties less severe than the recommended penalty will be imposed when appropriate.