



**GRADUATE SCHOOL OF ENGINEERING AND  
MANAGEMENT**

**Department of Electrical and Computer  
Engineering**

**CSCE 523 Artificial Intelligence**

**Course Syllabus**

**Winter 2019**

<b>Meeting Times</b>	MW 0800-0950
<b>Location</b>	646/216
<b>Instructor</b>	Peterson
<b>Office Location</b>	640/313B
<b>Office hours</b>	By Appointment
<b>Contact Information</b>	<a href="mailto:gilbert.peterson@afit.edu">gilbert.peterson@afit.edu</a>

**Course Description:**

This course presents the major principles and techniques of artificial intelligence. Specifically, in-depth studies of core issues such as knowledge representation and problem identification, formulation, and solving are pursued. Topics include knowledge-representation (models of logic, predicate calculus, production-rules, semantic networks, symbolic and subsymbolic representations), problem-solving (search, theorem-proving, reasoning), and knowledge-based systems (expert systems, natural language processing, vision, planning).

<b>Credits</b>	4
<b>Prerequisites</b>	CSCE 531, CSCE 586, or permission of the instructor

**Student Learning Objectives:**

1	Review and understand writings involving advanced AI topics [Quizzes]
2	Contribute positively to and lead discussions about AI topics [Class Participation]
3	Demonstrate how AI contributes to problem solving in complex environments [Assignments]
4	Identify, understand, and apply relevant advanced AI topics [Exam]

**Required Books and Resource Materials:**

Stuart J. Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 3d ed., Prentice Hall, 2010.

**Course Directories:**

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**Grading Scheme/Policy:****Assignments:**

Assignments	
Search	10
Search II and Knowledge Representation	15
Planning and Uncertainty	10
Uncertainty and Reinforcement Learning	15
Quizzes	15
Final	30
Class Participation	5
Total	100

**Grading:**

Numeric Grade (g)	Letter Grade
$93.3 \leq g$	A
$90.0 \leq g < 93.3$	A-
$86.6 \leq g < 90.0$	B+
$83.3 \leq g < 86.6$	B
$80.0 \leq g < 83.3$	B-
$76.6 \leq g < 80.0$	C+
$73.3 \leq g < 76.6$	C
$70.0 \leq g < 73.3$	C-
$66.6 \leq g < 70.0$	D
$g < 66.6$	F

**Policies:**

1. **Attendance:** Attendance at all class sessions and exams is mandatory for military and civilians assigned to AFIT as full-time students except for extenuating circumstances. Scheduled classes and exams are defined by the instructor and they are documented in the course schedule. Part-time students are expected to attend scheduled classes, and absences should be explained to the instructor. The student should provide advance notice, if possible. (References: Student Handbook, Graduate School Catalog)

2. **Academic Integrity:** All students must adhere to the highest standards of academic integrity. Students are prohibited from engaging in plagiarism, cheating, misrepresentation, or any other act constituting a lack of academic integrity. Failure on the part of any individual to practice academic integrity is not condoned and will not be tolerated. Individuals who violate this policy are subject to adverse administrative action including disenrollment from school and disciplinary action. Individuals subject to the Uniform Code of Military Justice may be prosecuted under it. Violations by government civilian employees may result in administrative disciplinary action without regard to otherwise applicable criminal or civil sanctions for violations of related laws. (References: Student Handbook, ENOI 36 – 107, *Academic Integrity*)
3. **Academic Grievance:** AFIT and the Graduate School of Engineering and Management affirm the right of each student to resolve grievances with the Institution. Students are guaranteed the right of fair hearing and appeal in all matters of judgment of academic performance. Procedures are detailed in ENOI 36 – 138, *Student Academic Performance Appeals*.
4. **Testing Policy:** The final examination will take place in class on the assigned Final Exam date and time. You will have the entire allotted block of time to complete your exam. The exam is cumulative and will be closed notes.
5. **Late Assignments and Make-Ups:** No late assignments will be accepted without prior coordination with the instructor.
6. **Graded Items:**

Assignments: The assignments will be available electronically in the course folder as they are assigned. All assignment submissions should be emailed to the instructor.

Quizzes: In-class quizzes will be given on the days in which readings have been assigned. Quizzes will cover topics from assigned readings, focusing on topics covered in previous lectures. Each quiz will be weighted equally in final quiz grade calculation. The lowest scoring quiz for each student will be dropped.

Class Participation: Your class participation grade is 5 percent of your final grade, and is evaluated based on your attendance and constructive participation in class discussions.

Final Exam: The final examination will take place in class on the assigned Final Exam date and time. You will have the entire allotted block of time to complete your exam. The exam is cumulative and will be closed book and closed notes.

**Syllabus Schedule:**

**CSCE 523 – Artificial Intelligence**  
**Winter 2019, MW 8:00 – 9:50am, Room 646/216**

<b>DOW</b>	<b>DOM</b>	<b>Class Activities</b>	<b>Assignments Due</b>	<b>Readings</b>
W	1/02	Introduction, Intelligent Agents		1, 2
M	1/07	Search		3
W	1/09	Search		4
M	1/14	Search		4, Kocsis
W	1/16	Constraint Satisfaction Problems	<b>Assignment 1</b>	5
M	1/21	<b>NO CLASS: Martin Luther King Day</b>		
W	1/23	Adversarial Search/ Game Tree Search		6
M	1/28	Adversarial Search/ Game Tree Search		7, 8
W	1/30	Representation and Reasoning: FOPC, Proof Techniques		8
M	2/04	Unification, Clausal Form, Resolution Strategies	<b>Assignment 2</b>	
W	2/06	Planning		10, 11
M	2/11	Planning		
W	2/13	Uncertainty Reasoning		13, 14(1-5,7)
M	2/18	<b>NO CLASS: Presidents' Day</b>		
W	2/20	Uncertainty Reasoning	<b>Assignment 3</b>	16, 17
M	2/25	Uncertainty Reasoning		21
W	2/27	Reinforcement Learning		Sutton
M	3/04	Reinforcement Learning		
W	3/06	Philosophical Questions Regarding AI, Review	<b>Assignment 4</b>	26,27
		<b>FINAL</b> (Chapters 1-9, 11-14.5,14.7,16-17,21, 26-27, Sutton)		

*The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.*