Tennessee Tech University
Department of Computer Science
CSC-4240/5240: Artificial Intelligence

MWF, 10:10-11:05AM, BR 207, 3 Credit Hours, Fall 2017

Instructor Information

Instructor's Name: William (Bill) Eberle
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Office: Bruner Hall, Room 413
Office hours: Monday and Wednesday, 1:30-3:00

Course Information

Prerequisites
CSC 2400 and CSC 2710 (C or better)

Course Description
This class provides an introduction to the field of Artificial Intelligence. A number of AI ideas and techniques will be covered, as well as hands-on experience with several small projects and one group project. This class is intended to teach the philosophies and techniques of Artificial Intelligence, including intelligent agents, search, games, knowledge representation, logical reasoning, uncertainty reasoning, machine learning, and a brief introduction to computing using the LISP language. You are expected to have completed a course in Data Structures, and to be comfortable with algorithm design and programming.

Course Objectives
- ✓ To give students a broad knowledge base in the area of artificial intelligence.
- ✓ To teach students fundamental artificial intelligence algorithms.
- ✓ To give students improved problem-solving skills.
- ✓ To teach students to develop software applications using AI algorithms.

STUDENT LEARNING OUTCOMES

A student completing this course should, at a minimum, be able to:

- ✓ Discuss current applications of artificial intelligence.
- ✓ Discuss searching methods.
- ✓ Implement searching methods in a suitable programming language.
- ✓ Program and test a two-person game using minimax procedure and Alpha-Beta pruning.
- ✓ Describe a number of techniques for machine learning.

MAJOR TEACHING METHODS

Lecture, discussion, and assignments.

SPECIAL INSTRUCTIONAL PLATFORM/MATERIALS

The class syllabus, schedule, and other information will be available on the iLearn website as it is developed. You are responsible for checking the iLearn website regularly for information such as lecture notes and due date changes.

TOPICS TO BE COVERED:

1. INTELLIGENT AGENTS
2. SEARCH
3. GAMES
4. KNOWLEDGE REPRESENTATION
5. LOGICAL REASONING
6. UNCERTAINTY REASONING
7. MACHINE LEARNING
8. NATURAL LANGUAGE PROCESSING
9. FUTURE OF AI

TEXTS AND REFERENCES:

Required: Artificial Intelligence: A Modern Approach, by Russell and Norvig, third edition.

References:

Steele's Common Lisp book in HTML at the CMU AI Repository
 (http://www.cs.cmu.edu/Groups/AI/html/cltl/cltl2.html).

LISP Tutorial by Marc Schwarz
(http://www.ai.sri.com/~delacaze/alu-site/alu/table/learn.htm)

Grading and Evaluation Procedures:

Item	% of Final Grade
Homework	15%
Exam 1	15%
Exam 2	15%
Exam 3	15%
Programming Assignments	20%
Project	20%

GRADING SCALE

Letter Grade	Grade Range
A	90-100
B	80-89
C	70-79
D	60-69
F	59 and below

COURSE POLICIES

STUDENT ACADEMIC MISCONDUCT POLICY

Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct at Policy Central.

CLASS PARTICIPATION

The course is participatory with discussions on a variety of topics. As such, students are expected to attend and actively engage with the instructor and fellow students in the class.

ASSIGNMENTS AND RELATED POLICY

Material covered on the exams will be based on the assigned chapters, papers, and class lectures. All exams are mandatory. There are NO make-up exams after the scheduled times. If a student notifies the instructor IN ADVANCE, then an early make-up exam MAY be arranged at the discretion of the instructor. The instructor's decision is final. All exams may be kept by the instructor.

Class Plan by Weeks or Days:

Week	Dates	Chapter(s)	Topics	Assignments Due
1	08/28-09/01	1,2	Introduction to A.I. Intelligent Agents	Ethics Agreement
2	09/06-09/08		LISP Overview First Homework Assignment First Programming Assignment	
3	09/11-09/15	3	Solving Problems by Search	Homework #1
4	09/18-09/22	4	Beyond Classical Search	Program #1
5	09/25-09/29	5	Adversarial Searching (Games) Second Programming Assignment	
6	10/02-10/06	7	*Exam #1* Logical Agents Grad Project Options	
7	10/09-10/13	8, 9	First Order Logic Inference	
8	10/18-10/20	10,11	*** Fall Break *** Planning Second Homework Assignment	Program #2
9	10/23-10/27	12	Knowledge Representation	Homework #2
10	10/30-11/03	13	*Exam #2* Uncertainty Undergraduate Programming Assignment (Group)	
11	11/06-11/10	14, 15	Probabilistic Reasoning	
12	11/13-11/17	18, 21	Learning from Examples (selected topics) Third Homework Assignment	
13	11/20	22	Natural Language Processing *** Thanksgiving ***	
14	11/27-12/01	25, 26, 27	Philosophical Questions/Future of AI Grad Project Presentations	Homework #3 Grad Projects
15	12/04-12/08		*Exam #3* Undergrad Presentations/Competition	Program #3

DISABILITY ACCOMMODATION

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at Policy Central.