CS341 Artificial Intelligence – Spring 2015
Course Syllabus

INSTRUCTOR:

John Bonomo
163 Hoyt Phone: 7287
Class Time: MWF 10:30-11:30

TEXT:

Artificial Intelligence: A Modern Approach, Russell and Norvig

POINT VALUES:

Exams:	Midterm-1 (Feb. 20)	13%
	Midterm-2 (Apr. 1)	13%
	Final (Monday, May 4, 8:00)	14%
		40%
Homeworks, Quizzes	5-8 assignments	30%
Programming Projects	2-3 projects	30%

OBJECTIVE:

The objective of this course is to survey some of the important areas of artificial intelligence. The *rational agent* approach will drive our study of this topic. This approach views the major goal of AI as the creation of rational agents which interact with their environment in a same manner that a rational human being would. Throughout the course we will examine the components of a rational agent and the various approaches which can be used to produce rational behavior. In addition, we will consider methods which allow agents to learn and improve their behavior.

GOALS:

– learn various search methods as problem-solving tools
– learn the basics of predicate and first-order logic and their use in creating logic agents
– learn various methods for agents to learn and improve how they behave
– learn the methods in which agents can plan sequence of actions

OUTCOMES:

– students will be able to explain the various types of search strategies used by rational agents.
– students will be able to create rational agents that can react to other adversarial agents.
– students will be able to create various types of rational agents which learn from experience.

All outcomes will be measured by specific questions on exams and by course projects.

COURSE OUTLINE: (tentative)

SUBJECT	READING	TIME	EXAMS
Overview and Intelligent Agents	Chaps 1, 2	1 week	
PROBLEM-SOLVING			
Solving Problems by Searching	Chaps 3, 4	2 weeks	EXAM 1
Adversarial Search/Game Playing	Chap 5	1 week	
Constraint Satisfaction Problems	Chap 6	1 week	
KNOWLEDGE AND REASONING			
Agents that Reason Logically	Chap 7	1 week	
First-Order Logic	Chap 8	2 weeks	EXAM 2
Inference in First-Order Logic	Chap 9	1 week	
LEARNING			
Concept and Decision Tree Learning	Chaps 18,19	1 week	
Artificial Neural Networks	Chap 18	1 week	
Genetic Algorithms	–	1 week	
Reinforcement Learning	Chap 21	1 week	FINAL
ACTING LOGICALLY			
Planning	Chaps 10, 11	2 weeks	

INSTRUCTOR INFORMATION AND POLICIES

INSTRUCTOR:

John Bonomo
Office: 163 Hoyt
Phone: 7287
Email: bonomojp@westminster.edu

OFFICE HOURS (Spring 15):

TTh	10:00-12:00
TTh	2:00-3:00

Feel free to stop by my office at times other than my office hours; if I am free, I will be more than happy to answer any questions; if not, we can arrange for a time to meet. REMEMBER: My door is ALWAYS "open", even if it happens to be closed.

Here are some reasons to come to my office:

1. You're confused about or need clarification on what was discussed in class.
2. To discuss the grading of an assignment.
3. You're lost as to how to start an assignment (after having thought about it for awhile)
4. You need help debugging a program.
5. After working on a homework problem, you're not sure how to solve it.
6. You're looking for additional projects/work to supplement what is covered in the course.

ATTENDANCE:

I do not take attendance in this class. Students are responsible for any material missed due to an absence. Quizzes given during a student's absence may not be taken later.

ACCESSIBILITY STATEMENT:

Westminster College actively strives for the full inclusion of all our students. Students with disabilities who require access solutions for environmental or curricular barriers should contact Faith Craig, Director of Disability Resources, located in 209 Thompson-Clark Hall. phone: 724-946-7192 e-mail: craigfa@westminster.edu

WRITTEN HOMEWORK:

All written homework must be done neatly, which means (among other things) the following:

1. It should be handed in on standard 8 1/2 by 11 paper (not ripped out of a notebook) and stapled.
2. Your solutions should appear in the order that the problems are listed on the homework.
3. There should be ample room on the page for each problem (ideally, one problem per page) and nothing should be crossed out.

Failure to meet these standards may result in points taken off the homework. The ideal way to meet these requirements is to solve all the problems on scratch paper and then rewrite them on appropriate paper.

EXTRA CREDIT: I do not assign any extra credit assignments in my classes.

GRADE CUTOFFS:

GRADE	RANGE
A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
etc	

ASSIGNMENT AND GRADING POLICIES:

1. All programs which are to be sent to me electronically are due **30 MINUTES** before class time on the due date. You should expect me to copy all files from the public, common directory to my private directories before class starts.

   All other assignments are to be handed in at the **BEGINNING** of class on the day that they are due.

2. Lateness penalties:

   – 10% off per day, first 2 days (Sun and Mon count as separate days for any assignment that can be e-mailed or electronically copied; otherwise they count as one day)
   – 100% off after that

   IMPORTANT EXCEPTION: All due dates which fall on the class day before an exam are absolute – there will be no late assignments accepted for them.

3. I will take up to 5% off any assignment which is sloppy enough that it makes it difficult to read.

4. Program Grading Criteria:

ERROR TYPE	DESCRIPTION	POINTS OFF	COMMENTS
Obvious	Errors which the simplest of tests would detect	3–5 pts	Max for any one error is 10% of assignment
Subtle	Errors which only extensive testing would detect	2–3 pts	
Efficiency	Problem or sub-problem solved in a grossly inefficient way	2–5 pts	
Cosmetic	Bad output format, prompts, documentation, indentation, etc	1-2 pts	Max for all errors of this type is 10% of assignment
Compile Time	Program does not compile	25% off	Program will also be graded with respect to other criteria.

   NOTE: Just because a program works correctly does NOT guarantee that it will receive a perfect score – other factors such as readability, documentation, user-friendliness and efficiency are also important.

ACADEMIC INTEGRITY:

From the Westminster College Undergraduate Catalog:

> Central to the purpose and pursuit of any academic community is academic integrity. All members of the Westminster Community, including students, faculty, staff and administrators, are expected to maintain the highest standard of honesty and integrity, in keeping with the philosophy and mission of the College.

All students are expected to adhere to these guidelines, and to have read and understand the list of violations found (among other places) in the course catalog – this list covers the areas of Cheating, Misconduct, Plagiarism and Providing False Information. The following guidelines may help in determine what is considered acceptable in this class.

Individual Assignments : Unless explicitly stated, students are encouraged to group together to discuss assignments. We expect all students involved in the group to contribute to the discussions. However, all work handed in must be written in the individual students own words. Clearly, copying a solution from another text or another student verbatim or with small changes is not "writing in your own words." Not nearly as obvious a problem is the following: if you find that the only way you can type in a program or write a homework solution or lab report or proof is to have someone sitting next to you doing the same work, you are probably not "writing in your own words." You should be able, after discussing an assignment with others, to go off and produce the solution on your own.

Group Assignments : All of the participants should do their full share of the work. You should discuss problems together and reach conclusions together. It is a form of dishonesty for a student who has not attended class, read the assignment, or thought about the problem on their own to try to use the ideas developed by the group or claim credit for work to which one has not contributed. It is also a form of dishonesty to encourage or allow such practices on the part of others. Each group should work on their own, not discussing their work with other groups.

Using Tutors or help from someone not enrolled in the course : We acknowledge that often tutors are used to help students with assignments. For your long term benefit, we strongly encourage you not to leave the tutor with a completed assignment. We suggest that you seek help when necessary and produce (or reproduce) the assignment on your own.

Written Assignments : All written assignments for this course will be submitted to `turnitin.com`, an on-line plagarism detection system. In the case of suspected academic dishonesty, all originality reports generated by `turnitin.com` will be presented and discussed with students prior to any actions taken.

PENALTIES FOR ACADEMIC DISHONESTY:

All incidents of academic dishonesty will be reported to the Academic Dean in accordance with the Westminster's Academic Integrity Policy. In addition, the following actions will occur:

First Offense : a zero will be given on the assignment, quiz or exam in which the dishonesty took place

Second Offense : the student will receive an F for the course.