



Course Syllabus

COM413: Game AI Concepts

COURSE DESCRIPTION

This course identifies the core types of AI behavior and their uses, such as pathfinding, fuzzy logic, cooperative behavior, decision trees, neural nets, adaptive and heuristics. It will illustrate how game AI creates challenges and a sense of satisfaction for the gamer. The student will create and implement AI agents through a variety of means.

GENERAL COURSE INFORMATION

Number of Units / Weeks	4/10
# Hours Lecture / # Hours Laboratory	30/20/60
Prerequisite(s)	COM293
Course Developer(s)	Scott Lindeneau, BA
Date Approved / Last Review	February 2011 / August 2014

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

- Discuss the history of Game AI development.
- Evaluate the appropriateness of a Game AI system.
- Develop several different Game AI systems.
- Maximize a user's appreciation of Game AI.
- Integrate a Game AI system into a game.

INSTRUCTIONAL METHODS EMPLOYED IN THIS COURSE

A number of instructional/learning methods are employed in this course, including the following:

- Lecture and reading assignments
- Hands-on exercises and labs
- Practical application of theory and skills in authentic AI projects
- Build on prior knowledge and experience of students to enhance richness of class activities
- Group work designed to foster group development and group integration.

INFORMATION RESOURCES FOR THIS COURSE



Textbook

Ahlquist, J & Novak J. Game Development Essentials: Game Artificial Intelligence. 1st edition, Canada: Thomson Delmar Learning, ISBN-13: 978-1-4180-3857-1



Other Materials

Microsoft Visual Studio

<http://www.microsoft.com/visualstudio/en-us/>

Retrieved April 7, 2010



Web Site Readings

AI Junkie: Genetic Algorithms & Neural Nets

<http://www.ai-junkie.com/>

(Retrieved February 18, 2010)

TBD

COURSE OUTLINE

Week	Topic	Chapter or Resource	Activity
1	History & AI Behaviors	Pgs. 1-37, 39-67	Reading: 65 pages, 6.5 Hours (Evaluated via Prj1 & Prj2) Project 1: Observe and Document 3 hours Evaluation: Graded, 5 pts
2	AI Complexity & Scope	Pgs. 69-86	Reading: 17 pages, 1.7 Hours (Evaluated via Prj2) Project 2: FSM 10 hours Evaluation: Graded, 10 pts
3	Customizing AI	Pgs. 97-131	Reading: 34 pages, 3.4 Hours (Evaluated via Hw1) HW 1: Scripting Languages 5 hours Evaluation: Graded, 5 pts
4	Expert Systems	Pgs. 86-97, 133-159	Reading: 37 pages, 3.7 Hours (Evaluated via Hw2) HW 2: AI Design 5 hours Evaluation: Graded, 5 pts
5	Genetic Algorithms	AI Junkie	Reading: 10 pages, 1 Hours (Evaluated via Prj3) Project 3: Genetic Algorithms 10 hours Evaluation: Graded, 10 pts
6	Pathfinding	Pgs. 161-189 Pgs. 191-214	Reading: 51 pages, 5.1 Hours (Evaluated via Hw3) HW 3: Basic Pathfinding 5 hours Evaluation: Graded, 5 pts
7	Advanced Pathfinding	Pgs. 191-214	Reading: 23 pages, 2.3 Hours (Evaluated via Prj4) Project 4: Advanced Pathfinding 10 hours Evaluation: Graded, 10 pts

8	User Perception of AI	Pgs. 213-237	Reading: 24 pages, 2.4 Hours(Evaluated via Hw4) HW 4: Design 5 hours Evaluation: Graded, 5 pts
9	AI Design	Pgs. 245-281	Reading: 36 pages, 3.6 Hours(Evaluated via Prj 5) Project 5: Design & Integrate 10 hours Evaluation: Graded, 10 pts
10	AI Integration	Pgs. 245-281 – Evaluated in final.	Final

Total hours of required reading: 29.7 hours
 Total hours Program sets 65 hours – 20 hours lab = 45 hours
 Total hours of out-of-class activities: 74.7 hours

Your Grades for this Course

Your final grade for this course will be based on an assessment by the Instructor of your performance on a number of course activities, which may include objective tests, classroom exercises, laboratory demonstrations, project papers, or other types of activities. The chart below indicates in what activities you will engage, how many possible points can be earned for each activity, and the percentage of your final grade that will be accounted for by each activity.

Students in this course should be graded following Coleman University assessment practices and policies. A point system is used in the University to indicate student performance on various required activities or projects. For this course, it is recommended that points be distributed as follows:

Coleman University Grade Assignment Policy:

Percent	Letter Grade	Grade Points
94-100	A	4
90-93	A-	3.67
87-89	B+	3.33
84-86	B	3
80-83	B-	2.67
77-79	C+	2.33
74-76	C	2
70-73	C-	1.67

67-69	D+	1.33
64-66	D	1
60-63	D-	0.67
N/A	INC	0
N/A	W	0
60 or above	CR	0
59 or below	NC	0
N/A	I	0
N/A	W	0
N/A	AU	0
N/A	TR	0
N/A	WV	0

Legend	
CR = Credit	NC = No Credit
I = Incomplete	W = Course Withdrawal
AU = Audit	TR = Transfer Credit
WV = Waiver	

Academic Accommodation / Adjustment Policy:

In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA), Coleman University offers accommodations to students with documented physical, psychological, and/or cognitive disabilities. Coleman University will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to offer equal educational opportunities to qualified disabled individuals.

To qualify for an academic accommodation under ADA, the student must provide adequate documentation of a disability. Students seeking academic accommodations should contact the campus ADA Coordinator at 858-966-3953 or via email at ada@coleman.edu. The ADA Coordinator will review the documentation provided and verify ADA coverage. Students covered under ADA must meet with the ADA Coordinator at the beginning of every term to determine the appropriate academic accommodations. Failing to meet with the ADA Coordinator at the beginning of every term may impact the availability of accommodations.

After the academic accommodations have been determined, the students' instructors will be notified by the ADA Coordinator. If any problems or concerns regarding the provision of accommodations occur, the student must inform the ADA Coordinator. If the student feels accommodation is not being made appropriately, the student may follow the published Student Grievance Procedures.