

CS 4091: Evolving Strategies for Game of the Amazons
Spring 2022
Course syllabus

Instructor	Rob LeGrand e-mail: rlegrand@angelo.edu webpage: www.cs.angelo.edu/~rlegrand/ office phone: 325-486-5422 office location: MCS 205I office hours: online MTWRF 2:00–4:00 and by appointment
Description	A specialized course providing research opportunities for superior students majoring in computer science. This offering is in the area of artificial intelligence—specifically, adversarial games and machine learning.
Grading	The assigned grade will reflect progress on the research project.
Student learning outcomes	Students will demonstrate proficiency in the selected topic. In the case of this offering, the task will be to <ul style="list-style-type: none">• write a program that allows artificial agents to play each other at the Game of the Amazons, an abstract strategy game, with varying board sizes and numbers of pieces per player.• build a generic artificial Amazons-playing agent that uses a minimax search with a depth limit.• build a heuristic evaluation function that takes the known state of the gameboard as input and uses its set of “genes” (weights of a neural network) to compute the estimated value of that state.• use a genetic-algorithm approach to evolve “organisms” (sets of genes) in an attempt to find a robustly excellent Amazons player.• summarize work done and results in a final paper and poster, to be presented at the Undergraduate Research Symposium in April.
Class format	Regular research meetings will be held to discuss approaches for and progress on the project.
Academic honesty	Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. By remaining enrolled in this course you agree not to commit academic misconduct as defined in section I.B.1 of the Student Handbook, available at www.angelo.edu/student-handbook .
Important university policies	<ul style="list-style-type: none">• You must contact Student Disability Services in order to request and to implement academic accommodations.• For ASU’s policy on absences due to religious holy days, see OP 10.19 at www.angelo.edu/opmanual.• I am obligated to report any knowledge of sexual misconduct to the Title IX office; see www.angelo.edu/services/title-ix.

Modifications

This syllabus, including grade evaluation and course schedule, is subject to modification. In particular, the COVID-19 pandemic may require significant changes in course delivery and content on potentially short notice.