Summer at Case Equinox 2008

Computer Game Programming Honors
Olin 412

Course Description
How often have you played a computer game knowing that you could have created a better one? This class begins with an examination of the history of video games and of game design. Various topics dealing with the programming and design of computer games are studied including game program structure, elementary graphics, animation, artificial intelligence, user interfaces, the simulation of motion, sound generation, and use. Individual and group projects are used to illustrate course concepts and techniques. At the conclusion of the course, students design and build their own game to present to an audience and are prepared for advanced programming and gaming design courses. This class begins with an examination of the history of video games and of game design.
Prerequisite: Geometry, Previous Computer Programming Experience using C, C++, or Java
Credit: 1 semester of high school credit

Outcomes
Students will:
- learn the basics of physics simulation, graphics, artificial intelligence, audio, 2D art, computer networking, and software engineering
- learn how to critically analyze games and their design.
- understand most of what goes on under the hood of an average Game Boy game.
- learn how to make basic games, and implement a few along the way

Students will be able to:
- apply their knowledge of physics simulation, graphics, artificial intelligence, audio, 2D art, computer networking, and software engineering in several projects.
- work in teams to construct and present a large final project at the end of the session.

Resources and Materials
- Introduction to Game Programming by Steve Rabin, published by Charles River Media

Student Evaluation and Grading Policies
A As this is an academic/enrichment course, a narrative evaluation will be written at the conclusion of the course. The evaluation will be based on participation in activities and discussion, as well as on independent assignments and assessments.

B. Breakdown of Final Grade
10% Class participation
20% Homework
10% Quizzes
15% Project 1
15% Project 2
30% Final Project

C. Grading ScaleGrading scale

A+ 97-100	**A** 93-96	**A-** 90-92
B+ 87-89	**B** 83-86	**B-** 80-82
C+ 77-79	**C** 73-76	**C-** 70-72
D+ 67-69	**D** 63-66	**D-** 60-62
F Below 60		

Schedule

Date	Topic	Activities	Assignment and/or Assessment	Instructional Strategies
6/30 - Monday	Welcome, introduction to VW Lab, introduction to Processing	Lab tour, setup of workstations, prog. tutorial, play video games	Basic prog. assignment, game design essays	Learn by doing, critical analysis
7/1 – Tuesday	Critical game studies, game design	Lecture, more game playing	Elts. of fun essays, potential quiz	Critical analysis
7/2 - Wednesday	Math primer, introduction to game architecture	Lecture, lots of programming	Prog. vector math library, potential quiz	Learn by doing
7/3 - Thursday	2D Physics	Lecture, lots of programming	Prog. particle simulation, potential quiz	Learn by doing
7/4 – Friday	2D Graphics, part 1	Lecture, lots of programming	Potential quiz, Weekend: Project 1	Learn by doing
7/7 – Monday	Artificial intelligence	Lecture, lots of programming	Prog. enemy AI, potential quiz	Learn by doing
7/8- Tuesday	Software engineering	Lecture, lots of programming	Prog. config and level system, potential quiz	Learn by doing
7/9- Wednesday	2D Art	Lecture, sprite hunting / creation	Prog. sprite and tile system, potential quiz	Learn by doing
7/10- Thursday	2D Graphics, part 2	Lecture, lots of programming	Prog. transformation system, potential quiz	Learn by doing
7/11- Friday	Sound and music	Guest lecture, more coding, fool around with sound equipment	Weekend: Project 2	Learn by doing
7/14 - Monday	Computer networking	Lecture, lots of programming	Prog. chat program, potential quiz	Learn by doing
7/15 - Tuesday	Final project lab	Work on final project	None	
7/16 - Wednesday	Final project lab	Work on final project	None	
7/17 - Thursday	Final project lab	Work on final project	None	
7/18 –Friday	Project presentations	Presentations	Final project due	