CSE 3902 (Approved): Project: Design, Development, and Documentation of Interactive Systems

Course Description

Intensive group project involving design, development, and documentation of an interactive software system, a 2D interactive game; communication skills emphasized; builds programming maturity.

Transcript Abbreviation: Proj: Interact Sys
Grading Plan: Letter Grade
Course Deliveries: Classroom
Course Levels: Undergrad
Student Ranks: Junior
Course Offerings: Autumn, Spring
Flex Scheduled Course: Never
Course Frequency: Every Year
Course Length: 14 Week
Credits: 4.0
Repeatable: No
Time Distribution: 3.0 hr Lec, 1.0 hr Lab
Expected out-of-class hours per week: 8.0
Graded Component: Lecture
Credit by Examination: No
Admission Condition: No
Off Campus: Never
Campus Locations: Columbus
Prerequisites and Co-requisites: (CSE 2231 or CSE 321) and (CSE 2321 or Math 366) and (CSE 2421 or ((CSE 360 or ECE 2560 or ECE 265) and (CSE 2451 or CSE 459.21 or CSE 459.22)) and Gen Ed Writing Level 2
Exclusions:
Cross-Listings:

The course is required for this unit's degrees, majors, and/or minors: No
The course is a GEC: No
The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.0901
Subsidy Level: Baccalaureate Course

Programs

Abbreviation	Description
BS CSE	BS Computer Science and Engineering

Course Goals

Be competent with 2D graphics objects and rendering.
Be competent with event based programming.
Be familiar with elements of game engines such as AI, animation, memory management, and user control.
Be familiar with game content creation and editing tools.
Be competent with writing, organizational, and presentation skills.
Be competent with analyzing the intended audience for a written document and writing an audience profile.

Be familiar with making engineering decisions involving tradeoffs (e.g., space-time tradeoffs in choosing a table implementation).	
Be familiar with defining the purpose (persuade, inform, etc.) of a written document and select the appropriate rhetorical devices.	
Be familiar with writing several pieces of documentation that have different purposes and to use appropriate organization to tie them together.	
Be familiar with group project organization techniques including conducting group meetings, recording minutes, and tracking project progress.	
Be familiar with using one structured approach to large software design to carry out a large group project.	

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Computer graphics and games overview	1.0							
Event based programming	1.0							
2D rendering pipeline	4.0							
Image processing	4.0							
Introduction to 3D graphics	4.0							
Student project team meetings	14.0		7.0					
Student project team design reviews, presentations, etc.	14.0		7.0					

Representative Assignments

Game design document
Minimal game engine with documentation and revised game design document
Expanded game engine with updated documentation and game asset creation tools
Polished game engine with full documentation

Grades

Aspect	Percent
Project Milestone 1	15%
Project Milestone 2	15%
Project Milestone 3	15%
Midterm	25%
Final	30%

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
**	a	An ability to apply knowledge of mathematics, science, and engineering.
	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
***	c	An ability to design a system, component, or process to meet desired needs.
***	d	An ability to function on multi-disciplinary teams.
**	e	An ability to identify, formulate, and solve engineering problems.
*	f	An understanding of professional and ethical responsibility.
**	g	An ability to communicate effectively.
	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.

Course Contribution		College Outcome
*	i	A recognition of the need for, and an ability to engage in life-long learning.
	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

BS CSE Program Outcomes

Course Contribution		Program Outcome
**	a	an ability to apply knowledge of computing, mathematics including discrete mathematics as well as probability and statistics, science, and engineering;
	b	an ability to design and conduct experiments, as well as to analyze and interpret data;
***	c	an ability to design, implement, and evaluate a software or a software/hardware system, component, or process to meet desired needs within realistic constraints such as memory, runtime efficiency, as well as appropriate constraints related to economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability considerations;
***	d	an ability to function on multi-disciplinary teams;
**	e	an ability to identify, formulate, and solve engineering problems;
*	f	an understanding of professional, ethical, legal, security and social issues and responsibilities;
**	g	an ability to communicate effectively with a range of audiences;
	h	an ability to analyze the local and global impact of computing on individuals, organizations, and society;
*	i	a recognition of the need for, and an ability to engage in life-long learning and continuing professional development;
	j	a knowledge of contemporary issues;
***	k	an ability to use the techniques, skills, and modern engineering tools necessary for practice as a CSE professional;
**	l	an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
**	m	an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;
**	n	an ability to apply design and development principles in the construction of software systems of varying complexity.

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