

CSE 5913: Capstone Design: Computer Animation

Course Description

Capstone design project: conceptual and technical design and implementation of computer animation incorporating animation elements; teamwork, written and oral communication skills.

Prior Course Number: CSE 682

Transcript Abbreviation: Cpstn: Animation

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad, Graduate

Student Ranks: Senior, Masters, Doctoral

Course Offerings: Spring

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 4.0

Repeatable: No

Time Distribution: 1.0 hr Lec, 3.0 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 2501 or CSE 5501 or CSE 601) and (CSE 3901 or CSE 3902 or CSE 4901 or CSE 4902 or CSE 560) and (CSE 3541 or CSE 5541 or CSE 683)

Exclusions: Not open to students with credit for CSE 682

Cross-Listings:

Course Rationale: Existing course.

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: Doctoral Course

Programs

Abbreviation	Description
BS CSE	BS Computer Science and Engineering
MS CSE	MS Computer Science and Engineering
PhD CSE	PhD Computer Science and Engineering

Course Goals

Master synthesizing and applying prior knowledge to designing and implementing solutions to open-ended computational problems while considering multiple realistic constraints.

Be competent in evaluating design alternatives.

Be competent with software design and development practices and standards
Be familiar with researching and evaluating computing tools and practices for solving given problems.
Be competent with deadline driven projects in a team setting.
Be competent with issues of project management, such as teamwork, project scheduling, individual and group time management.
Be competent with presenting work to a group of peers.
Be familiar with presenting work to a range of audiences.
Be competent with techniques for effective written communication for a range of purposes (user guides, design documentation, storyboards etc.).
Be familiar with analyzing professional issues, including ethical, legal and security issues, related to computing projects.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Class software familiarization	6.0		4.0					
Technical group reports			3.0					
Animation group progress reports			12.0					
Group work days			18.0					
Project organization	2.0							
Post-processing: sound, compositing, editing	6.0		4.0					

Representative Assignments

Individual animation task of a solar system
Individual procedural software task of a bouncing ball
Individual procedural software task of a simple spring-mass-damper system
Technical group report on software approaches to some aspect of computer animation (e.g., modeling, lighting, rendering, animation, post-processing)
Group Animation Production Project incorporating procedural animation

Grades

Aspect	Percent
Assignments: individual animation tasks, technical group reports, individual scripting tasks	10%
Technology presentations	15%
Documentation	15%
Project animation	20%
Final presentation	40%

Representative Textbooks and Other Course Materials

Title	Author
<i>MEL Scripting for MAYA Animators</i>	Mark Wilkins, Chris Kazmier

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.
***	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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