



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Computational Thinking in Context: Images, Animation, and Games

CSE 1211

Credit Hours:

3.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Lecture

Lab

Course Description:

Introduction to computational thinking, focusing on problem solving and programming concepts and skills needed to manipulate digital images and to create interactive graphics, animations, and games; creativity and imagination encouraged.

Course Goals / Objectives:

- Be competent with using basic constructs provided by high-level imperative programming languages: sequencing, selection, and iteration
 - Be familiar with algorithmic thinking
 - Be familiar with simple media manipulation algorithms and how to apply them to solve interesting media manipulation problems
 - Be familiar with using basic data structure interfaces such as arrays or lists in simple programs
 - Be familiar with procedural composition
 - Be familiar with many of the possibilities available for creative combination in programmed interactive animations
 - Be familiar with working in a window-based computing environment
 - Be familiar with using a modern interactive program development environment
 - Be exposed to the virtual machine model of modern computer systems
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Course Topics:

- Software installation, and basic concepts
 - Introduction to programming with media, images, colors, encodings
 - Loops, new definitions, simple image manipulations
 - Nested loops, conditionals, Boolean expressions, advanced image manipulations
 - Animation via sprite movement using iteration
 - Sequencing, iteration, and drawing
 - Selection and collision detection and polled input for user interaction
 - Managing sprite velocities
 - Discussion and evaluation of preliminary ideas
 - Discussion of problems encountered and possible solutions
 - Presentation and evaluation of final projects
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Designation:

Elective