This course is designed to study the principles of computer game development. Students will be introduced to the basic building blocks of computer games and learn about the various game engines. Concepts of graphics objects, rendering, shading, transformation, alpha blending, stenciling, texture, and materials will be discussed and practiced. ADVISORY: Computer Science G177 or G178

JUSTIFICATION FOR COURSE:

PREREQUISITES:

COREQUISITES:

ADVISORIES:

ASSIGNED DISCIPLINES:

Computer science

MATERIAL FEE: Yes [ ] No [X] Amount: $0.00

CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]

GRADING POLICY: Pass/No Pass [X] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]

OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]

TRANSFER STATUS: CSU Transferable[X] UC/CSU Transferable[ ] Not Transferable[ ]

BASIC SKILLS STATUS: Yes [ ] No [X] LEVELS BELOW TRANSFER: Not Applicable

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: C

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:

REQUIRED FOR DEGREE OR CERTIFICATE: No [ ] Yes [X]

Associate of Arts: Liberal Arts: Emphasis in Business and Technology(Associate in Arts)
Video Game Development(Associate in Arts)
Video Production(Certificate of Specialization)

GE AND TRANSFER REQUIREMENTS MET:

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:
1. compare and contrast the functionality in the existing gaming engines.
2. demonstrate knowledge of current and popular gaming engines for the Windows platform.
3. distinguish and apply the theory and principle of the mathematical algorithms utilized in 3D games.
4. apply theoretical knowledge with hands-on lab assignments for drawing primitive objects and applying lighting, textures blending, stenciling, shadowing, and transparency techniques.
5. understand and describe the world of 3D interactive game programming.
6. integrate sound and video into the fabric of a computer game design games that interact with user I/O devices such as joysticks.
7. use the internet and library resources to research topics and communicate via e-mail.

COURSE OBJECTIVES:
1. Understand and describe the world of 3D interactive game programming.
2. Compare and contrast the functionality in the existing gaming engines.
3. Demonstrate knowledge of current and popular gaming engines for the Windows platform.
4. Distinguish and apply the theory and principle of the mathematical algorithms utilized in 3D games.
5. Apply theoretical knowledge with hands-on lab assignments for drawing primitive objects and applying lighting, textures blending, stenciling, shadowing, and transparency techniques.
6. Integrate sound and video into the fabric of a computer game.
7. Design games that interact with user I/O devices such as joysticks.

COURSE CONTENT:

LECTURE CONTENT:
The following outline describes the course contents:

Visual Studio .Net and C#
3D Mathematics and Concepts
  Vectors
  Matrices
  Planes
  Rays
  Transformation

Direct3D Fundamentals
  Initialization
  Rendering Pipeline
  Drawing in Direct3D
  Color
  Lighting
  Texturing
  Blending
  Stenciling

Applied Direct3D
  Fonts
  Meshes
  Cameras
  Terrain Rendering
  Particle Systems
LABORATORY CONTENT:

The following outline describes the course contents:

Visual Studio .Net and C#

3D Mathematics and Concepts
  Vectors
  Matrices
  Planes
  Rays
  Transformation

Direct3D Fundamentals
  Initialization
  Rendering Pipeline
  Drawing in Direct3D
  Color
  Lighting
  Texturing
  Blending
  Stenciling

Applied Direct3D
  Fonts
  Meshes
  Cameras
  Terrain Rendering
  Particle Systems
  Picking

Shaders and Effects
  Shading Language
  Vertex Shaders
  Pixel Shaders

Sound Effects

Input Devices

METHODS OF INSTRUCTION:

A. Lecture:
B. Lab:
C. Independent Study:

INSTRUCTIONAL TECHNIQUES:
COURSE ASSIGNMENTS:

Reading Assignments

A. Required Readings such as:
Students will be assigned multiple chapters from the required textbook.
The availability of additional materials will be made known to students to encourage further study
into specific topics.
Students will be assigned to read a large amount of online material.
Various current (up-to-date) handouts will be made available to students on the subjects of 3D
games, game engines, and multimedia.

Out-of-class Assignments

D. Other Assignments:
An optional library research paper will promote further study and research in 3D interactive game
development or other related topics selected by the student and approved by the instructor.

Writing Assignments

B. Required Writing, Problem Solving, Skills Demonstration and/or proficiency:
Students will be required to complete the following assignments during the lab section of the course:
1 3D games engine research paper
4 Programming assignments
1 individual or group term-project

METHODS OF STUDENT EVALUATION:

Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Essay Examinations
Objective Examinations
Report
Projects (ind/group)
Problem Solving Exercises
Oral Presentations
Skills Demonstration

Demonstration of Critical Thinking:

C. Demonstration of critical thinking/problem solving:
Class assignments will be presented to the students in the form of problems requiring students to devise
solutions in the form of software development projects.
Also, students will be given various games engine technology architectures to study and analyze.

Required Writing, Problem Solving, Skills Demonstration:

B. Required Writing, Problem Solving, Skills Demonstration and/or proficiency:
Students will be required to complete the following assignments during the lab section of the course:
1 3D games engine research paper
4 Programming assignments
1 individual or group term-project

TEXTS, READINGS, AND RESOURCES:

TextBooks:

Other:
1. A syllabus and multiple reference materials will be distributed by the instructor.
LIBRARY:
   Adequate library resources include:
   Comments:
Attachments:
   Attached Files