



### High School Course of Study Approval Request Form

High School Site	Signature - Principal or Academic AP Designee	Signature - Teacher Leader (enter N/A if no Teacher Leader)	Comments:
American Canyon HS	Andrew Goff	N/A	
Napa HS	Ean Ainsworth	N/A	
Napa Valley Independent Studies	Susan Wilson	NA	
New Tech HS	Riley Johnson	Lisa Gottfried	
Valley Oak HS	Maria Cisneros	NA	
Vintage HS	Katelyn Estudillo	John Paul Castillo	

Course submitted by:	Gillie Miller	School Site:	NCOE CTE Office
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Executive Director, Secondary Education: \_\_\_\_\_

#### Review resources:

[Rubric for Evaluating Digital Content & Technology Tools in Relation to CCSS for ELA \(Grades 6-12\)](#)

[State Math criteria](#)

[Technology in Teaching Math](#)

[Other criteria and decision making tools](#)

Please review following high school course outline and sign above if you approve or write reason in comment area if you do not.

☐ New ☒ Revised

**COMPUTER (Short) TITLE:** P CTE Game Dsgn  
**COURSE (Long) TITLE:** P CTE Game Design and Special Effects  
**SERIES TITLE:** P CTE Game Dsgn & Spec Effects  
**COURSE NUMBER:** CTE552  
**GRADE LEVEL:** 10 - 12  
**LENGTH OF COURSE:** 1 year/10 credits (5 credits/semester)  
**GRAD REQUIREMENT:** Visual Performing Arts "V"  
**CSU/UC REQUIREMENT:** "P" (Visual and Performing Arts)  
**COLLEGE PREP:** Yes  
**VOCATIONAL ED:** Concentrator  
**CALPADS CODE:** 7210  
**PATHWAY CODE:** DVMA 111  
**NCLB :** Yes; Arts

## **COURSE OVERVIEW**

### **DESCRIPTION OF COURSE**

Students have the opportunity to explore the principles of game design and development, 3D rendering in Maya, Augmented and Virtual Reality, as well as the creation of Special Effects and Motion Graphics. This is a course for both video and non-video game players alike. Concentration is on game design principles that apply to ALL games across many genres and platforms. The course covers understanding genres and game design documents as a means for pre-production of Video games. Students will apply game design principles to 2D and 3D printing of board games. In addition they will explore technical skills needed to create compelling motion graphics and special effects including explosions, laser shots, 3D movie titles and more. Students will work with industry leaders to, students explore what specific skills are currently needed in today's interactive media marketplace. Prerequisite: DCS Level 1.

The Interactive Media Level 2 course focuses on creating functional and engaging creative interactive experiences from various points of view: design, usability, technique, and engagement. Students will explore and analyze the use of different types of media in education, industrial, entertainment, and events production. The course is project-based with six major projects created over the course of the year allowing the students to learn and apply the theory in the context of the project.

### **GOALS OF THE COURSE AND MAJOR COURSE OBJECTIVES**

Students will be able to:

Discuss and define game development terms and principles;

Relate key developments in the history and theory of game design;

Analyze the cultural impact of games;

Compare and contrast game genres;

Analyze and discuss player elements such as motivation, demographics; psychographics;

Evaluate game engines and game development applications;

Identify strengths and weaknesses of various game platforms and technologies;

Plan, develop, design and print a small tabletop game within a team environment;

Examine game industry process, careers, and organizations;

Exhibit an understanding of key elements of basic game design concepts and terminology.

Apply the basic processes of 3D rendering and animation.

Apply the technical skills required to create special effects and high level titles and graphics

Demonstrate the project management and time management skills needed to complete an Interactive Media project from beginning to end.

Demonstrate team collaboration skills, interpersonal communications and working with multiple teammates to complete a project.

Students will discuss the relevance of gaming, debate topics that explore future possibilities for gaming and the impact on society, review ethical issues that arise from applications and gaming and more. Students will analyze the evolution of computer-based multimedia (Unit 1) identifying current trends and the historical significance.

Students will analyze and respond to their own artworks and to those of others exploring the feelings and ideas expressed in two-dimensional and three-dimensional works of art created by artists of many cultures, places, and times. Students learn to make sound critical judgments about the quality and success of artworks from their own experiences in and perceptions about the visual arts. Students' responses are expressed through

discussion and in written form.

Students will demonstrate proficiency in game art and multimedia by effectively utilizing the elements of art including line, shape, color, value, texture, space and balance to set the mood and feel of the game. Students will create the illusion of 3D models in a 2D environment. Students will create, record, and edit audio for a game. These concepts will be evidenced in the students' game design.

## **COURSE CONTENT**

### **Unit 1: Evolution of Computer-based Multimedia**

Identify what has been done and when and why some of the advances took so long.

Analyze different game genres, themes, and perspectives.

Use necessary vocabulary in relation to genre, platform, and hardware.

Investigate the technology transfer to other industries including medical, training, and military simulations and in e-commerce.

#### **Sample Assignments or Projects**

Research: Students will create a powerpoint presentation showcasing one video game genre, provide examples of current games that fall within the genre and identify how that genre can be harnessed to change human behavior for the better, or change the world for the better. Particular attention will be paid to meaningful and new ways that gaming can improve other fields and industries such as education, medical, transportation, marketing. Powerpoint will make use of visual design best practices, making use of talking points, photos and images, proper composition of deck slides. Demonstration of professional oral communication skills are also expected.

#### **Anchor Standards**

1.0, 2.1, 2.2, 2.4, 2.5, 4.1, 4.2, 4.3, 4.5, 4.6, 5.1, 5.4, 7.4, 7.5, 7.8, 8.6, 10.2, 10.3

#### **Pathway Standards**

A1.1, A1.2, A2.1, A2.2, A2.4, A2.9, A7.2, A7.3, D2.2, D8.1-8.5, D8.7

### **Unit 2: Multimedia Industry (markets & careers)**

Compare and contrast occupations and careers within the game design and related technical fields.

Identify the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in careers for this sector.

Investigate the role and function of professional organizations.

#### **Sample Assignments or Projects**

Current events: Present 2-3 current event articles found online that pertain to 3D Modeling, Gaming, or Augmented/Virtual Reality. Students will summarize articles and present to the rest of the class and then make connections to other industry needs as well as consumer needs. What problem does this new information solve and how does it integrate into our lives?

#### **Anchor Standards**

1.0, 2.1, 2.2, 2.3, 2.5, 3.4, 3.5, 3.6, 4.1, 4.2, 4.3, 4.4, 5.1, 5.4, 7.4, 8.5

#### **Pathway Standards**

A3.1, A7.2, A7.3, A7.5, A8.1, A8.2, A8.3, A8.5, A8.6, A8.7, D1.2, D1.4, D7.6, D8.1-5, D9.1, D9.3, D9.4

### **Unit 3: Introduction to Game Design**

Identify the goal of the game.

Define game elements and the significance of goals and genres.

Create the player elements by identifying the target market, player motivation, and demographics.

#### **Sample Assignments or Projects**

Concept: Students will work in teams to define a game's purpose and elements and identify the target audience, and present findings to the class for discussion.

#### **Anchor Standards**

1.0, 2.1, 2.2, 2.5, 4.1, 4.2, 5.3, 5.4, 8.3, 8.6, 10.1, 10.2, 10.3

#### **Pathway Standards**

D1.1, D1.2, D1.3, D1.4, D2.1, D2.2, D8.1, D8.2, D8.3, D8.6

### **Unit 4: Introduction to 3D Software**

Explore the applications used to generate 3D assets for use in film, television, game development, and architecture.

Distinguish between 2D, 3D, and 2.5 games.

Use of perspective, mesh, and animation.

Distinguish between the three types of augmented reality and virtual reality.

Define a virtual workspace (scene) to implement and edit media of a particular project.

Compare and contrast features:

Fluid effects; Classic cloth; Fur; nHair; Maya Live; nCloth; nParticle; MatchMover; Composite; Camera Sequencer.

Identify operating systems requirements.

Identify hardware requirements.

Discuss the significance of the ability to customize the user interface and its impact on industry popularity.

#### **Sample Assignments or Projects**

Design: Students will design a player game piece and print on a 3D printer. Students will bring the piece into augmented reality/virtual reality.

Critique: Students will evaluate the quality of their product and constructively evaluate the products of their peers. Students will suggest possible solutions to problems.

#### **Anchor Standards**

1.0, 2.1, 2.2, 2.3, 2.5, 2.6, 4.1, 4.2, 5.1, 5.2, 5.3, 5.4, 6.2, 6.3, 6.4, 6.6, 7.4, 7.5, 8.1, 8.3, 8.4, 8.6, 9.2, 9.3, 9.7, 10.1, 10.2, 10.3

#### **Pathway Standards**

A1.2, A1.4, A1.7, A2.1, A2.5, A8.2, D4.4

### **Unit 5: Write a Game Design Document (GDD)**

Understand the anatomy of a Game Design Document

Utilize industry vocabulary and the role of GDD in acquiring funding from publishing, providing a game bible for all team members to consult, and creating a touchstone document to refer back to throughout the long development process.

Understand the basics of budgeting both money and time for game development

Understand the roles of a game development team

#### **Sample Assignments or Projects**

2D Game: Students will write a multipage Game Design Document for a theoretical video game. Students will work in teams of 4 to develop and identify in the GDD, Target market, purpose of game, gaming platform, world building, character creation, elements used in game, color schemes and 2D sketches.

Presentation: Students will present product to the class.

Critique: Students will evaluate the quality of their product and constructively evaluate the products of their

peers. Students will suggest possible solutions to problems.

Functionality: Students will identify the parts of a GDD, the role the GDD plays in game development and the roles that people can play in the game development process.

Anchor Standards

1.0, 2.1-6, 3.2, 4.1-6, 5.1-4, 6.2, 6.5, 6.6, 7.1-7, 8.1, 8.3-7, 9.1-7, 10.1-3, 11.4

Pathway Standards

A1.1, A1.2, A1.3, A1.4, A1.7, A2.1, A2.1-7, A3.1, A4.2, A4.4, A4.6, A5.5, A5.6, A7.2, A7.3, A7.5, A8.1, A8.2, A8.5, D1.1, D1.2, D2.2, D4.1, D5.5, D6.2, D6.3

## **Unit 6: Purpose and Soul of a Game**

Analyze game play and its role in society and the economy.

Compare and contrast game play for stress relief versus addiction.

Examine ethical and legal practices and challenges in the industry.

Investigate the value of games and simulations.

Research intellectual property rights and copyright laws impacting the industry.

Sample Assignments or Projects

Design: Students design their own Pocket Strategy Board Game or Virtual Reality puzzle game.

Presentation: Students will present product to the class.

Critique: Students will evaluate the quality of their product and constructively evaluate the products of their peers. Students will suggest possible solutions to problems.

Functionality: Students will identify positive aspects of the playability and functionality of a game.

Anchor Standards

1.0, 2.1-6, 3.6, 4.1-6, 5.1-4, 6.2-6, 7.2, 7.3, 7.4, 7.5, 7.7, 7.8, 8.1-7, 10.1-3

Pathway Standards

A1.1, A1.2, A2.1, A2.2, A2.3, A2.4, A2.6, A8.1, A8.2, D4.4, D5.1, D5.2, D6.2, D6.7, D8.1-5, D8.7, D9.1, D9.2, D9.3, D10.3

## **Unit 7: Key Game Elements**

Evaluate the essential components that a game should have in a specific genre.

Compare and contrast game rules, player's role, and challenges players face in the game.

Quality of the rules.

Type of user interface.

Performance and gameplay.

Artistry in design.

Longevity in design and structure

Interactions between players.

Plot and backstory or quality content

Reward.

Sample Assignments or Projects

Key Game Elements: Students will create a professionally printed educational board game in conjunction with other content classes, local partners and industry experts.

Presentation: Students will present product to the class and hand product to a future level 4 class to market to educators across the country.

Critique: Students will evaluate the quality of their product and constructively evaluate the products of their peers. Students will suggest possible solutions to problems.

Functionality: Students will identify positive aspects of the playability and functionality of a game.

Create: Students will create prototypes for game testing, gather data from playtesting, create custom 3D printed board game pieces, all printed 2D pieces such as cards, board games, box design and rule sheet.

Anchor Standards

1.0, 2.1-6, 4.1-6, 5.1-4, 6.2-6, 7.1-8, 8.1-7, 9.1-7, 10.1-4, 11.1, 11.3, 11.4

Pathway Standards

A1.1-4, A1.7, A2.1-2.9, A5.5-7, A7.2, A7.3, A7.5, D4.1-4, D4.8, D5.1, D5.2, D5.5, D6.2, D6.3, D6.7, D10.1-3, D10.7-8

### **Unit 8: Special Effects: Create High Level Movie Title**

Rotoscoping and masking

Compositing and layering images

Intro to Mocha and other video masking tools

Create multiple layers in After Effects and Premiere

Sample Assignments or Projects

Special Effects: Students will create a professional movie title or title card for a real-world community partner, or create a light-saber battle video using rotoscoping and after effects techniques.

Anchor Standards

1.0, 10.1, 10.3, 10.4, 11.1

Pathway Standards

A1.1-4, A1.7, A2.1-9

### **Unit 9: Special Effects Techniques: Premiere and After Effects**

Rotoscoping and masking

Compositing and layering images

Animating in 3D space using x,y and z axes

Motion Graphics and representing data in visual form

Visual vs. Special Effects

Roles in the Film and animation industry

Best business and communication practices as service provider

Sample Assignments or Projects

Create a short film using special effects as it's main component with a story arc that introduces a conflict, shows rising action and resolution of action.

Anchor Standards

1.0, 2.1-6, 3.4, 3.6, 10.1, 10.3

Pathway Standards

A1.1-4, A1.7, A2.1-9

### **Unit 10: Visual Culture and Impact of Special Effects**

Export files in a variety of formats to fit needs of distribution

Identify techniques utilized in current media examples

Mimic current industry techniques in various video formats (for web, TV and movies)

Upload and manage digital video assets from the camera

Sample Assignments or Projects

Students will create a light show to be projected on local buildings during a holiday light show. The animations

will incorporate both video and after effects techniques and will be exported to appropriate formats for use in 3D mapping, projectors and other showcase formats. Students will work with local 3D mapping and event lighting industry experts to collaborate on final product.

#### Anchor Standards

1.0, 4.1-6, 10.1

#### Pathway Standards

A1.1-4, A1.7, A2.1-9, A5.5-7, A8.1-7

### **Unit 11: Seeking Employment**

Describe how to find employment

Know the main strategies for self-promotion in the hiring process, such as completing job applications, resume, interviewing skills, and preparing a portfolio.

Write and use word processing software to create a resume, cover letters, thank you letters, and job applications.

Participate in mock job interviews.

Develop a career plan that is designed to reflect career interests, pathways, and postsecondary options.

Conduct a self—assessment and explain how professional qualifications affect career choices.

Update digital portfolio

#### Sample Assignments or Projects

Students will meet various individuals in the Game Design and Visual Effects industry through video conference calls, in-person meetings. Students will contribute feedback on development of applications for local tech companies in the Bay Area such as Adobe and Autodesk. They also explore local opportunities to attend local college certification program which aligns with jobs in the industry and skills learned in class. Job titles for each area of game design are emphasized as we cover each part of the game development process through in-front instruction, video and guest speakers.

#### Anchor Standards

1.0, 2.1-6, 3.1-9, 11.1-11.5

#### Pathway Standards

A1.1-4, A4.4, A5.6, A8.1, A8.3

### **INSTRUCTIONAL STRATEGIES**

Lecture and Demonstrations

Multimedia Sources

Project-Based Learning

Work-Based Learning

### **METHODS OF ASSESSING STUDENT PROGRESS**

Written Quizzes/Exams demonstrating a working knowledge of industry terms, operational commands, and modeling and animation elements and principles.

Student Presentations and project-based assignments will be presented, completed and graded according to rubrics provided to students prior to beginning projects.

Students will maintain an electronic portfolio of their work.

### **INSTRUCTIONAL MATERIALS / TEXTBOOKS**

## **TEXTBOOK 1:**

In lieu of a core textbook, the following supplemental resources are used.

## **SUPPLEMENTAL INSTRUCTIONAL MATERIALS**

Instructional Videos

Online Tutorials

Simplymaya.com

lynda.com

projectspark.org

khanacademy.org

code.org

## **STANDARDS SUMMARY**

Arts, Media, and Entertainment Knowledge and Performance Anchor Standards

1.0, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3., 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 5.1, 5.2, 5.3, 5.4, 6.2, 6.3, 6.4, 6.5, 6.6, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 10.1, 10.2, 10.3, 10.4, 11.1, 11.2, 11.3, 11.4, 11.5

Design, Visual, and Media Arts Pathway Standards

A1.1, A1.2, A1.3, A1.4, A1.6, A2.1, A2.5, A2.6, A2.9, A3.1, A5.2, A5.4, A5.6, A5.7, A7.2, A7.5, A8.1, A8.2, A8.3, A8.4, A8.7

Game Design and Integration Pathway Standards

D1.1, D1.2, D1.3, D1.4, D2.1, D2.2, D2.4, D2.5, D4.4, D8.1, D8.2, D8.3, D8.6, D9.2, D10.3

Common Core and Academic Standards

LS 11-12.1-6, RSL 11-12.1-10, RSIT 11-12.1.1-7, RHSS 11-12.1-9, RLST 11-12.1-10, WS: 11-12.10, 11-12.1-.10, A-SSE 1, A-CED 1.1-4, F-IF 1-6, F-LE 1-3, G-CO 1-4, G-GMD 4-5, G-MG 1-3, G-SRT 5, 10, 11, S-ID 1-6, S-MD 5, SEP 1-8, CC 1, PS 1, 1.A, 2.C, 3.C, 4.C, LS 1.A, 1.C, 1.D, 2.A, 4.A, 4.B, 4.D, ETS 1.A, 1.B, 1.C, 2.A, 2.B, AD 12.8, 12.8.2, 12.10, PE 12.1, 12.2, 12.3, 12.4, 12.6, US 11.5, 11.5.2, 11.5.5, 11.5.6, 11.8, 11.11, 11.11.3, WH 10.3, 10.6, 10.8.5, 10.11