

Orange Unified School District
Video Game Design II
Year Course

GRADE LEVEL: 10-12

PREREQUISITES: Video Game Design 1

INTRODUCTION TO THE SUBJECT:

Video Game Design II is an advanced comprehensive, self-contained, fully-computer integrated one-year course with a final project or internship as a culminating activity. This course utilizes project-based learning to develop 2D and 3D PC, web, mobile device (i.e., cell phone), and DDR (Interactive Dance, Dance Revolution) games. In addition, students will demonstrate knowledge of artificial intelligence with robotics. Students will demonstrate their practical programming skills introduced in the Video Game Design 1, such as object-oriented programming using logical data structures, sequences, Boolean logic, loops, lists, arrays, functions, methods, and graphics. The class will provide a solid foundation of programming skills which will carry over into future college-level computer science courses

This course supports the California Business Education Career Path and Model Curriculum Standards for the Information Technology Industry sector, Programming and Systems Development Pathway.

COURSE OBJECTIVES:

BY THE END OF THE COURSE THE STUDENT WILL BE ABLE TO:

Demonstrate the steps of the software and game development cycle, including flowcharts and storyboards.

Research and analyze career knowledge and goals in the fields of computer science and game development.

Obtain employability skills such as time management, problem solving, critical thinking, and cooperative planning.

Synthesize the strategies necessary to define and analyze systems and software requirements. Demonstrate understanding and proficiency with technology and programming languages such as Java, Visual Basic, Dark Basic, and/or C++, etc.

Demonstrate the importance of effective interfaces in the interaction between humans and computer systems.

COURSE OVERVIEW AND APPROXIMATE UNIT TIME ALLOTMENTS:
FIRST SEMESTER

WEEKS

I. Careers in Computer Science and Game Development Industries	1
II. Software Development Cycle	1
III. Developing Advanced Video Games for Capstone Project	7
A. Includes algorithms, flowcharts, sequences (linear, branching, looping, Boolean logic, sound, animation, etc.	
B. Graphical User Interfaces (GUI) and Object-Orient Programming	
C. Includes user interfaces, command-driven and event-driven programming	
V. Testing advanced games for correctness, playability, and time and space efficiency	7
VI. Debugging advanced games	2

SECOND SEMESTER

WEEKS

I. Electronic Portfolios	
A. Complete a résumé and personal statement.	1
B. Create draft structure for electronic portfolio.	1
C. Single Player Game	5
1. Complete flowcharts	
2. Complete storyboards	
3. Create sprites, avatars and/or animations	
4. Complete, test, and debug video game	
D. Multi-Platform Single Player Game	6
1. Complete flowcharts	
2. Complete storyboards	
3. Create sprites, avatars and/or animations	
4. Complete, test, and debug video game	
E. Strategy Game	5
1. Flowcharts	
2. Storyboards	
3. Sprites, avatars and/or animations	
4. Test and debug	
II. Students will select one of the following options to complete the course.	
A. Participate in regional, national, and/or international high school video game competitions.	
B. Create advanced video games using different platforms.	
C. Obtain job skills by participating in work experience (paid), external/in-house internship (unpaid), or apprenticeship during a specific timeframe.	
Note: Before students can participate in Option C, they must complete a mandatory orientation.	

THE CALIFORNIA CONTENT STANDARDS

California Business Education Career Path and Model Curriculum Standards for the Information Technology Industry Sector and Programming and Systems Pathway are:

Information Technology Sector

- 1.0 Academics
Students understand the academic content required for entry into postsecondary education and employment in the Information Technology sector.
- 2.0 Communications
Students understand the principles of effective oral, written, and multimedia communication in a variety of formats and contexts.
- 3.0 Career Planning and Management
Students understand how to make effective decisions, use career information, and manage personal career plans.
- 4.0 Technology
Students know how to use contemporary and emerging technological resources in diverse and changing personal, community, and workplace environments.
- 5.0 Problem Solving and Critical Thinking
Students understand how to create alternative solutions by using critical and creative thinking skills, such as logical reasoning, analytical thinking, and problem-solving techniques.
- 6.0 Health and Safety
Students understand health and safety policies, procedures, regulations, and practices, including the use of equipment and handling of hazardous materials.
- 7.0 Responsibility and Flexibility
Students know the behaviors associated with the demonstration of responsibility and flexibility in personal, workplace, and community settings.
- 8.0 Ethics and Legal Responsibilities
Students understand professional, ethical, and legal behavior consistent with applicable laws, regulations, and organizational norms.
- 9.0 Leadership and Teamwork
Students understand effective leadership styles, key concepts of group dynamics, team and individual decision-making, the benefits of workforce diversity, and conflict resolution.
- 10.0 Technical Knowledge and Skills
Students understand the essential knowledge and skills common to all pathways in the Information Technology sector.
- 11.0 Demonstration and Application
Students demonstrate and apply the concepts contained in the foundation and pathway standards.

Programming and Systems Development Pathway

- D1.0 Students understand the strategies necessary to define and analyze systems and software requirements.
- D2.0 Students understand programming languages.
- D3.0 Students understand the creation and design of a software program.
- D4.0 Students understand the process of testing, debugging, and maintaining programs to meet specifications.
- D5.0 Students understand the importance of quality assurance tasks in producing effective and efficient products.

D6.0 Students understand the importance of effective interfaces in the interaction between humans and computer systems.