Course No: B860

Orange Unified School District

Introduction to Video Game Design

Year Course

GRADE LEVEL: 9-12

PREREQUISITES: Fundamentals of Programming

INTRODUCTION TO THE SUBJ ECT:
Introduction to Video Game Design is a comprehensive, self-contained, fully-computer integrated one-year course, which 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 be introduced to artificial intelligence with robotics. Students will further develop their practical programming skills introduced in the Fundamentals of Programming course, such as command-driven and object-oriented programming with 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 computer science courses.

This career technical education 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:

Develop a knowledge and understanding of the language and concepts of game development.

Obtain 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.

Understand the strategies necessary to define and analyze systems and software requirements.

Understand and can proficiently use technology and programming languages such as DarkBasic, Python, Alice, etc.

Understand the creation and design of a software program, as well as the software development cycle.

Understand 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 games using Python	8
A) Programming with Logical Structures	
1. Algorithms	
2. Flowchart	
3. Sequences (linear, branching, looping)	
4. Boolean logic	
B) Graphical User Interfaces (GUI)	
1. User Interfaces	
2. Command-Driven and Event-Driven Programming	
IV. Developing and Testing Web and PC Games	8
A) Types, Variables, Input/Output	
B) Conditions, operators	
C) Algorithms	
D) Flowchart	
E) Sequences (linear, branching, looping)	
F) Boolean logic	
G) Software objects	
H) Graphics	
I) Sound, Animation, Program Development	
SECOND SEMESTER	
V. Developing and Testing PC, Web, DDR, and Mobile Games	13
A) Types, Variables, Input/Output	
B) Loops, conditions, operators	
C) Loops, strings, tuples	
D) Lists and dictionaries	
E) Functions	
F) Files and descriptions	
G) Software objects	
H) Object oriented programming	
I) GUI (Graphic User Interface)	
J) Graphics	
K) Sound, Animation, Program Development	
VI. Artificial Intelligence with robotics	4
VII. Careers in Software Development	1

DATE OF LAST CONTENT REVISION: 2/13/2008

DATE OF CURRENT CONTENT REVISION:

DATE OF BOARD APPROVAL: 7/24/2008

Addendum

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.