






## Digital Design and Engineering Academy

The Digital Design and Engineering Academy represent a high school reform movement that is focused on smaller learning communities with a career theme. Academy components include rigorous academics and career technical education, with a career focus, a committed team of teachers, and active business and post-secondary partnerships. Emphasis is also placed on student achievement and positive postsecondary outcomes. Academies have been carefully evaluated and shown to have positive impacts on school performance. The integration of a standards-based academic and career-technical curriculum is a key ingredient. Students will follow distinct career pathway choices as well as core classes that support those pathways. Career choices include, Engineering (The creative application of scientific principles to design or develop structures, machines, apparatus, or manufacturing processes), Video and Broadcasting Production, Graphic Design (Book and magazine Layouts, business logos and advertisement), Fashion and Room Design, Video Game Design, Web Design, Computer Generated Animation for the Entertainment Industry including 2D and 3D Animation, and Simulation software development (for Business, Military, Law, Science, and Medical Industries).

### Recommended sequence of career pathway choices

| Digital Design and Engineering Academy Career Pathways  |  |   |   |  |
|---|--|---|---|--|
| Graphic Design<br> | Engineering<br> | Animation/Simulation<br> | Game Design<br> | Video/Broadcasting Production<br> |
| Multimedia 1/<br>Yearbook 1/ Web Design 1   | Introduction to Engineering Design   | Multimedia 1  | Multimedia 1  | Multimedia 1   |
| Multimedia 2/<br>Yearbook 2/ Web Design 2   | Digital Electronics  | Multimedia 2  | Multimedia 2  | Intro to Video Production  |
| Web Design 3/<br>Yearbook 3   | Principles of Engineering  | AP Computer Science (Recommended)   | Video Game Design 1   | Video Production 1   |
| Yearbook 4/ Web Design 4  | Aerospace Engineering  | Video Game Design 1   | Video Game Design 2   | Video Production 2   |
| Video Game Design (For High End Graphics)   | AP Computer Science (Recommended)  | Video Game Design 2   |   |  |

## **MULTIMEDIA CONTEMPORARY DESIGN I**

**Open to Grades: 9-12**

**Meets UC/CSU Fine Arts requirement.**

**Prerequisite: Basic computer skills.**



This course will introduce students to digital design. Focus will be placed on introducing the student to art, design, and the technologies of this new media. Upon completion of this course, students should be able to create fashion, room and car illustrations for their portfolios. Animation in 2-D format and its application in current industries will be an integral part of the class. Introduction to 3-D format background and character development will be incorporated, as well. In addition, other forms of multimedia will be explored including film analysis and rudimentary shot techniques using video cameras and digital photography. This integrated curriculum forms a solid groundwork from which students may build upon in Multimedia Contemporary Design II and is the first sequence of classes in the Interactive Media Technology Pathway. This multimedia class has been structured to reflect the California Career Technical Education Standards, the California Challenge Standards for Visual Arts, and the National Education Technology Standards.

## **MULTIMEDIA CONTEMPORARY DESIGN II**

**Open to Grades: 10-12**

**Meets UC/CSU Elective requirements.**

**Prerequisites: Multimedia contemporary Design I or permission Mrs. Garmon**



This is the second year course for Multimedia Contemporary Design I. Learn advanced 2-D animation. Explore the world of 3-D computer animation, including time and space in the digital 3-D environment, animation concepts and techniques in 3-D computer space. Learn how to make the background and characters for the games you want to create. Build interactive programs for simulation, training, education, and entertainment. Create animated advertisement for the Internet. Learn to produce graphic designs for all types of industries including fashion, room design, and product design. We also learn the impact of photography and advance photography manipulation. This multimedia class has been structured to reflect the California Career Technical Education Standards, the California Challenge Standards for Visual Arts, and the National Education Technology Standards.



### **WEB MANAGER I (Web Design I)**

**Open to Grades: 9-12**

**Prerequisites: Students with previous Web Design credits welcomed.**

Web Design investigates the concepts and techniques that are essential to planning, creating, testing, publishing, and maintaining Web sites. Challenging hands-on activities build Web research skills and design awareness, and encourage critical thinking about current Web design. Students will learn basic html structure and formatting, web page creation using Macromedia Dreamweaver, and image creation and alteration using Adobe Photoshop and Flash. This class explores digital image creation and manipulation as an important skill set that enables beautiful websites using graphic design, print design, and digital photography. This class has been structured to reflect the California Career Technical Education Standards, the California Challenge Standards for Visual Arts, and the National Education Technology Standards.



### **WEB MANAGERS 2, 3, 4 (Web Design 2, 3, and 4)**

**Open to Grades: 10-12**

**Prerequisites: Web Design I or permission of instructor**

These courses offer the essentials for a web design course that will appeal to students with technical or artistic talents. Artists learn how to use advanced visual design tools of Macromedia CS as well as Adobe software; programmers learn how to use different programming tools to build a site through server applications. Students will learn in a hands-on, interactive environment. Students will learn the advanced elements of a web site, how to view and alter the structure, how to make pages interact with databases, XML, multimedia tools and more. In addition, students will work on the school website as well as creating advanced websites for clients. Exploration of best practices/issues for web design and publishing and careers in web development and e-commerce are explored in depth. There is an exciting future in web design, don't miss out. This class has been structured to reflect the California Career Technical Education Standards, the California Challenge Standards for Visual Arts, and the National Education Technology Standards.

**VIDEO GAME DESIGN 1 and 2 (1 year course each,  
2 period class 5th and 6th periods)**

**Open to Grades: 10-12**

**This course is offered through the ROP program.**

**Prerequisite: Multimedia 1 or permission of Mrs. Garmon.**



Are you ready to take on a challenge that will always be interesting, push you to your intellectual limits, and still be fun? Video Game Design and Development is challenging, but the rewards are worth it. With our unparalleled comprehensive training program, you will master skills that open doors to the growing video game industry. Developing and managing the complex environments for games and related visualization applications is a challenging task, but with the right training and with professional guidance, the challenge becomes much less daunting. Using a comprehensive and analytical approach to game engine architectures, this program offers students the opportunity to learn how to effectively implement game ideas. A reasonable familiarity with computers and a background in high school level mathematics are all that is assumed. No prior game or graphics programming experience are necessary. The curriculum is divided into eight modules covering five major areas of study: programming languages, mathematics skills, 3D graphics pipeline programming, real-time game engine architectures, and artificial intelligence algorithms. The Video Game Design and Development program is an appropriate starting point for students who seek a professional career as a game developer or would like to learn how to create simulation programs for all industries. This class has been structured to reflect the California Career Technical Education Standards, the California Challenge Standards for Visual Arts, and the National Education Technology Standards.

**INTRO VIDEO PRODUCTION**

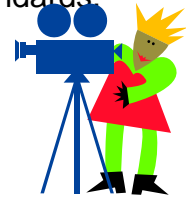
**Open to Grades: 9-12**

**Prerequisite: None**



This course is a basic introduction to video production, equipment and production methods to complete a program for broadcast on school broadcasting system. You will learn job descriptions, responsibilities, and the logistics of coordinating a

production including hiring crew. You will change roles throughout the class to gain experience in all aspects of video production while acquiring hands-on experience with the equipment. The focus of the course is to make you competent planning a production. You will learn how to take an idea and move it through production. You will set up an interview and document an event. You will learn how to budget and schedule a crew. You will learn basic equipment systems and practices, and gain fundamental, hands-on experience with camera, lighting, audio and editing systems. This class has been structured to reflect the California Career Technical Education Standards, the California Challenge Standards for Visual Arts, and the National Education Technology Standards.



**VIDEO PRODUCTION 1 and 2 (1 year course, 2 period class 5th and 6th periods)**

**Open to Grades: 10-12**

**This course is offered through the ROP program.**

**Prerequisite: Intro Video Production or permission of Mr. Montagut.**

**This course satisfies Senior Seminar requirements.**

Are you interested in working in the television or film industry? Or maybe you want to go to film school or set up your own digital editing business. Then we have the course for you. The course teaches you how to operate video and television equipment. You will also learn advance techniques on operating sound equipment, choose lighting for different locations and edit productions for distribution. Become an expert at pre-production, production and post production and get ready for an exciting career. This course will be handling the school FYI, school news broadcasts into each class room. This class has been structured to reflect the California Career Technical Education Standards, the California Challenge Standards for Visual Arts, and the National Education Technology Standards.

**AP COMPUTER SCIENCE A**

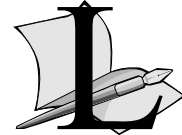
**Open to Grades: 10-12**

**Meets UC/CSU requirements.**

**Prerequisite: None**

The AP Computer Science course is an introductory course in computer science. This course should be considered as integral to the Engineering and Video Game Design Academy pathways. Because the development of computer programs to solve problems is a skill fundamental to the study of computer science, a large part of the course is built around the development of computer

programs or parts of programs that correctly solve a given problem. The course also emphasizes the design issues that make programs understandable, adaptable, and when appropriate, reusable. Students build their own application software using C++ and Java. In addition, an understanding of the basic hardware and software components of computer systems and the responsible use of these systems are integral parts of the course.



### **YEARBOOK 1 and 2**

**Open to Grades: 9-12**

**Prerequisite: Must submit an application, be ready for an interview and get permission from Mrs. Baxter.**

Yearbook members are responsible for accurately covering the major school events and functions. They must also create a publication that the student body can cherish for a lifetime. This course is an elective that requires a commitment. Students are requested to attend after school meetings during the course of the year. The course involves layout design, writing, and editing, computer/graphic design using InDesign and PhotoShop CS2. The course emphasizes responsible work habits while allowing the young journalist the opportunity to learn and grow through this hands-on process. Students learn more than yearbook fundamentals. They learn: time management, become self-starters, delegate responsibility, demonstrate knowledge, share resources, and motivate co-workers. Students are expected to sell advertising and participate in fundraising.

## **PROJECT LEAD THE WAY ENGINEERING PROGRAM**

### **INTRODUCTION TO ENGINEERING DESIGN**

**Open to Grades 9-12**

**Prerequisites: Requires concurrent enrollment in college preparatory math course (Algebra 1, Geometry, Algebra 2, or higher)**

Using 3-D computer modeling software, students learn the design process, and they solve design problems as they develop, analyze, and create product models.

## **DIGITAL ELECTRONICS**

**Open to Grades 9-12**

**UC /CSU Elective Credit pending approval**

**Requires Project Lead The Way application**

**Pre-Req: Intro. To Engineering Design or instructor approval and successful completion of Algebra1.**

Digital Electronics is one of the foundation courses in the Project Lead The Way, Engineering Program. Students use computer simulation to learn about the logic of electronics as they design, test, and actually construct circuits and devices.

## **PRINCIPLES OF ENGINEERING**

**Open to Grades 10-12**

**Prerequisites: Requires concurrent enrollment in college preparatory math course (Algebra 1, Geometry, Algebra 2, or higher)**

Students explore technology systems and engineering processes to find out how math, science, and technology help people.

## **AEROSPACE ENGINEERING**

**Open to Grades: 11-12**

**Prerequisites: Successful completion of at least 1 Engineering course and/or instructor approval.**

Students new to the Engineering program must submit an application through hands-on engineering projects developed with NASA. Students learn about aerodynamics, astronautics, space-life sciences, and systems engineering (which includes the study of intelligent vehicles like the Mars rovers Spirit and Opportunity).