

**TO:** Dr. Brent Stephens, Superintendent  
**FROM:** Baje' Thiara, Associate Superintendent  
Wyn Skeels, CTE Program Supervisor  
**DATE:** 10/19/2019  
**SUBJECT:** Request for Course Approval - Advanced Computer-Aided Drafting & Design

Berkeley High School and the Career Technical Education Program are requesting approval of a new course, Advanced Computer-Aided Drafting & Design (CAD Design Studio)

### **Background Information**

Advanced Computer-Aided Drafting and Design is a project-based class for students to consider and solve problems of form, space, and function while understanding the environmental, social, and aesthetic impact of architectural design; develop critical thinking, planning, and spatial skills; employ the design process in their work; learn practical skills and gain general knowledge of residential construction techniques; and to present this information both verbally and graphically while utilizing the latest design software. The students will cultivate an awareness of and respond to design and architecture in a thoughtful, informed, responsible, and meaningful way. In addition, students will develop the technical skills of current industry methods, tools, and conventions as well as be exposed to career pathways related to the design/construction/architecture fields. They will have a well-rounded frame of reference with which to proceed to the next level of instruction and/or post-secondary goals.

#### **Students will**

- Demonstrate proficiency in using advanced CAD commands
- Design three-dimensional (3-D) drawings
- Demonstrate proficiency in using solid (3D) modeling software
- Demonstrate proficiency in engineering design fundamentals. Demonstrate proficiency in solid modeling fundamentals

A sample of some of the units are as follows:

#### **Architectural Styles**

This unit provides an understanding of the different styles of architecture as it relates to residential design throughout history. The curriculum will guide the student in understanding Classical, Mediterranean, Asian, European, Early American, Traditional, Modern and Contemporary structures. Exploring these styles by defining the characteristics and importance of each will give the student a reference point to later critically analyze their own and their peers' designs.

#### **Structural Elements**

This unit provides an understanding of the structural elements used in construction techniques from early structures to modern. Students explore and research ancient Greek and Roman structures as well as the properties of the materials used so as students understand how and why structures stand or fall. Students will understand how construction has evolved through to modern-day techniques and technological advancements. A thorough understanding of the forces which act on structures is necessary to see the way in which structures have evolved and how new materials and ideas are always making that process easier, more efficient, and cheaper.

#### **Residential Design Process**

The design process is employed to show students how an idea becomes a reality. Using previous knowledge, a study of how programming, development of possible solutions, creating preliminary conceptual plans, and

physical models is employed in order for students to understand the way houses are used by people. Using the text and supplemental materials as reference points, students explore early to modern designs and the influences on those designs by the greater societal events of each era. Considerations such as traffic flow, space planning, sustainable and universal (ADA) design concepts are introduced.

### **Models**

Model making will be used to reinforce the spatial skills, planning, blueprint reading, and vocabulary. Students will use hands-on techniques to explore the different structural elements and spatial relationships involved in designing space. They will also consider the aesthetic values of their designs, which are explained/discussed in class-these include symmetrical/asymmetrical balance, composition, proportion, scale, shape, and form. They will understand the material properties of paper, foam core, and matte board, as they take 2D drawings and build them into 3D creations.

BHS has received UCOP (“G”) approval as a College Preparatory Interdisciplinary Elective credit

### **POLICY/CODE:**

### **FISCAL IMPACT**

### **STAFF RECOMMENDATION**