CAD DESIGNER – ARCHITECTURE/ENGINEERING/CONSTRUCTION

**JUSTIFICATION:**

This is an existing approved occupational skills certificate to be modified to a low-unit certificate of achievement for student certificate transcriptability for student’s academic purposes & success.

**Program Goals & Objectives**

Identify the goals and objectives of the program.

1.Demonstrate an ability to communicate effectively using technical, graphical, oral and written formats.   
2. Demonstrate appropriate mastery of industry technical graphic standards, Computer-Aided Design, Building Information Modeling strategies and techniques, and rapid prototyping and sustainable technologies in the design and representation of architectural, engineering and construction systems.  
3. Demonstrate appropriate mastery of industry technical graphical standards in the critical analysis of technical graphics and digital prototypes of architectural, engineering and construction systems or processes.  
4. Collaborate effectively in teams to produce comprehensive design technology solutions to architectural, engineering and construction systems and processes.

**Catalog Description**

The curriculum prepares students to be advanced users of three dimensional Computer-Aided Design - CAD and Building Information Modeling – BIM systems to solve building and construction design problems using the principles and standards of Sustainable Technology.  A CAD Designer supports design activities with knowledge of sustainable production processes and industry standards.  Job functions include interpreting building codes, LEED and current industry sustainability standards, formulas or data for building design, geometric problem solving, interpretation of designs for the development of blueprints, presentations of design reviews, and collaborating in design projects. This course of study prepares participants for successful completion of LEED accreditation at the Associates Level.

An Certificate is awarded upon completion of all required courses with a grade of C or better

**Program Requirements**

Required units in the program: 12

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Requirements** | **Dept. Name/#** | **Name** | **Units** | **Sequence**  **Option A** |
| Required Core (13 units) | DT 017  DT 118  DT 114  DT 030 | Building Design & Construction Technical Graphics  3-Dimensional Building Design & Representation  Building Information Modeling Design (BIM DESIGN)  Sustainable Technologies | 3  3  3  3 | Yr 1, Fall  Yr 1, Fall  Yr 1, Spring  Yr 1, Spring |

Required Core: 12 units

Proposed Sequence

Year 1, Fall = 6 units

Year 1, Spring = 6 units

Total Units: 12 units

**Master Planning**

The purpose of the program is to support students to gain the skills necessary to obtain entry level careers in CAD (computer-aided design) drafting, modeling and design in the building design & construction (and related industries).

This program aligns with the following goals of the Educational Master Plan:

* Increase the median earnings and/or the regional living wage for students who exit the college.
* Align all degrees and certificates with appropriate workforce demand.
* Increase work-based learning opportunities.
* Create and sustain a culture of viable career pathways for all students

**Enrollment and Completer Projections**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | 2019-2020 | | 2020-2021 | |
| CB01: Course Department Number | CB02: Course Title | Annual # Sections | Annual Enrollment Total | Annual # Sections | Annual  Enrollment Total |
| DT 017 | Building Design & Construction Technical Graphics | 2 | 44 | 2 | 39 |
| DT 118 | 3-Dimensional Building Design & Representation | 1 | 9 | 1 | 11 |
| DT 114 | Building Information Modeling Design | 1 | 9 | 1 | 9 |
| DT 030 | Sustainable Technologies | 1 | 13 | 2 | 34 |

The following certificate counts were awarded below, however this was during pandemic remote teaching environment and increase is expected in current hybrid teaching format.

|  |  |
| --- | --- |
| 2020-2021 | 2021-2022 |
| 1 student | 3 students |

Future years’ course enrollment and completions are projected to be in line with data provided from 2020-2021, with completions increasing around 5% per year.

* Projected Annual Program Completers: 5-10 per year

**Place of Program in Curriculum/Similar Programs**

Before completing this section, review the college’s existing program inventory in the CCC Curriculum Inventory, then address the following questions:

1. Do any active inventory records need to be made inactive or changed in connection with the approval of the proposed program? If yes, please specify. **YES, we need to make this a low-unit Certificate of Achievement (from an existing approved occupational skills certificate). C&I process needs to be updated for the changes.**
2. Does the program replace any existing program(s) on the college’s inventory? Provide relevant details if this program is related to the termination or scaling down of another program(s).  **No**
3. What related programs are offered by the college? **N/A**

**Similar Programs at Other Colleges in Service Area**

There are a number of colleges offering CAD drafting and/or Architectural Technology courses. The LMI data shows that there does not appear to be a supply gap for the occupations of interest. However, the supply is within the COE’s acceptable margin (25% over or under the number of annual openings) and is therefore considered “supply met” rather than a “supply gap.” additionally, entry-level wages exceed the self-sufficiency standard in both Los Angeles and Orange Counties, and the Bureau of Labor Statistics lists an associate degree as the typical entry-level education for the occupations in this report. Despite the number of colleges offering Architectural Technology programs, several colleges offer larger unit Architecture transfer programs whereas our program aims to prepare students for entry-level careers as CAD/BIM drafters within the building design industry (Architecture, Engineering, and Construction) and related fields. While reviewing the other certificate programs offered by area colleges, many programs did not include Sustainable Design/Technology courses. Employment/labor market trends show a large growth in the green building sector over the next five years. This program prepares students to apply for LEED (Leadership in Environmental and Energy Design) Green Associates exam, an industry credential that is highly regarded within the A/E/C discipline.

|  |  |
| --- | --- |
| Cerritos | Computer-Aided Drafting and Design |
| Citrus | Computer-Aided Design (CAD) – Architecture and Drafting |
| East LA | Architecture Drafting |
| El Camino | Computer-Aided Design Drafting |
| Glendale | Architectural Drafting and Design |
| LA Harbor | Architectural Technology |
| LA Pierce | Architectural Technology |
| LA Trade Tech | Architectural Technology |
| LA Valley | Architecture |
| Mt San Antonio | Architectural Technology Concentration |
| Rio Hondo | Architectural Design and Drawing Technician |