

Inland Empire/Desert Regional Consortium

Copper Mountain College New Certificate of Achievement:

1. Computer Aided Drafting and Design (CADD) Technician Certificate of Achievement

First Read

A. Overview

1. Overview of program being proposed:

The proposed Copper Mountain College (CMC) Computer Aided Drafting and Design Technician Certificate of Achievement Curriculum is designed to meet the requirements and standards set forth by the current Autodesk® - AutoCAD® - Certified User Exam. This will give the student the necessary skills to provide a solid foundation in the fundamentals of CADD. This approach is intended to provide the student with the skills to allow them to take the exam and be certified by Autodesk if they choose too on their own (not a part of the class, dates are scheduled regularly around the country) but more importantly learn the skills necessary to gain an entry-level position within the many areas of the CADD industry. CADD would fall under the Drafting & Design Occupation Cluster which falls under the Engineering and Design Industry Cluster.

This course of study is intended to certify students in AutoCAD Drafting Software to be used in all areas of drafting, similar to being certified to use Microsoft Office Software to obtain any job such as a legal secretary, real estate secretary, medical secretary or any other career that requires the skills that that particular software training provides. Computer Aided Drafting skills can be used by Architects, Engineers, Landscapers, Fabricators, the growing 3-D Printing and Geographic Information Industries as well as many other fields.

Overall Program Student Learning Outcomes

Upon successful completion of this program students will be able to:

- Demonstrate the proper use of CADD Industry equipment.
- Operate and adjust input and output devices.
- Start and exit software programs.
- Demonstrate file management techniques.
- Perform drawing setup, understanding the AutoCAD workspace and user interface.
- Sketch with Auto-CAD.
- Utilize editing commands to increase productivity.
- Control coordinates and scales.
- Use layering techniques.
- Add text, hatching, and dimensions.
- Create multi-view drawings.
- Draw section views.
- Create and manage symbols libraries.
- Use plotting and printing, understand line types and their uses.
- Use basic drawing, editing, and viewing tools including rendering and 3-D walk throughs.
- Use advanced plotting and publishing options
- Create 3-D drawing and printing.
- Use GIS principals in drafting.

2. Labor Market information detail is included below.

B. Need

- a. Labor Market Information & Analysis (CTE only), (see below)

CADD Related Careers

- a. Drafters (Architectural, Engineering, Mechanical, Aerospace, Fabricating, Surveying, GIS, 3-D Printing)

Inland Empire Data

In the Inland Empire Area, the number of Architectural and Civil Drafters is expected to grow at an average rate compared with the total for all occupations. Jobs for Architectural and Civil Drafters are expected to increase by 18.0 percent, or 110 jobs between 2012 and 2022.

Estimated Employment and Projected Growth Architectural and Civil Drafters					
Geographic Area (Estimated Year-Projected Year)	Estimated Employment	Projected Employment	Numeric Change	Percent Change	Additional Openings Due to Net Replacements
California (2012-2022)	12,200	12,100	-100	-0.8	1,600
Inland Empire Area (2012-2022)	610	720	110	18.0	80

Source: EDD/LMID Projections of Employment by Occupation

The Inland Empire Area includes Riverside and San Bernardino counties.

[View Projected Growth for All Areas](#)

In California, an average of 160 job openings due to net replacement needs is expected per year for Architectural and Civil Drafters.

In the Inland Empire Area, an average of 11 new job openings per year is expected for Architectural and Civil Drafters, plus an additional 8 job openings due to net replacement needs, resulting in a total of 19 job openings.

Estimated Average Annual Job Openings Architectural and Civil Drafters			
Geographic Area (Estimated Year- Projected Year)	Jobs From Growth	Jobs Due to Net Replacements	Total Annual Job Openings
California (2012-2022)	0	160	160
Inland Empire Area (2012-2022)	11	8	19

Source: EDD/LMID Projections of Employment by Occupation

The Inland Empire Area includes Riverside and San Bernardino counties.

Commercial and Industrial Designers
(SOC Code : 27-1021)
in San Bernardino County

Develop and design manufactured products, such as cars, home appliances, and children's toys. Combine artistic talent with research on product use, marketing, and materials to create the most functional and appealing product design.

Employers are usually looking for candidates with a Bachelor's degree .

San Bernardino County is part of the Riverside-San Bernardino-Ontario MSA, which includes Riverside and San Bernardino counties.

Occupational Wages

[Top]

Area	Year	Period	Hourly Mean	Hourly by Percentile		
				25th	Median	75th
Riverside-San Bernardino-Ontario MSA	2015	1st Qtr	\$30.28	\$21.06	\$24.63	\$36.30

Data for San Bernardino County are not available. Data for Riverside-San Bernardino-Ontario MSA has been substituted.

[View Wages for All Areas](#) [About Wages](#)

Occupational Projections of Employment (also called "Outlook" or "Demand")

[Top]

Area	Estimated Year-Projected Year	Employment		Employment Change		Annual Avg Openings
		Estimated	Projected	Number	Percent	
Riverside-San Bernardino-Ontario MSA	2012 - 2022	300	330	30	10.0	11

Data for San Bernardino County are not available. Data for Riverside-San Bernardino-Ontario MSA has been substituted.

Mechanical Drafters
(SOC Code : 17-3013)
in San Bernardino County

Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.

Employers are usually looking for candidates with Post secondary vocational training .

San Bernardino County is part of the Riverside-San Bernardino-Ontario MSA, which includes Riverside and San Bernardino counties.

Occupational Wages

[Top]

Area	Year	Period	Hourly Mean	Hourly by Percentile		
				25th	Median	75th
Riverside-San Bernardino-Ontario MSA	2015	1st Qtr	\$26.13	\$20.51	\$24.72	\$31.60

Data for San Bernardino County are not available. Data for Riverside-San Bernardino-Ontario MSA has been substituted.

[View Wages for All Areas](#) [About Wages](#)

Occupational Projections of Employment (also called "Outlook" or "Demand")

[Top]

Area	Estimated Year-Projected Year	Employment		Employment Change		Annual Avg Openings
		Estimated	Projected	Number	Percent	
Riverside-San Bernardino-Ontario MSA	2012 - 2022	330	320	-10	-3.0	4

Data for San Bernardino County are not available. Data for Riverside-San Bernardino-Ontario MSA has been substituted.

Surveying and Mapping Technicians
 (SOC Code : 17-3031)
 in San Bernardino County

Perform surveying and mapping duties, usually under the direction of a surveyor, cartographer, or photogrammetrist to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of topographical maps. Exclude "Surveyors" (17-1022), "Cartographers and Photogrammetrists" (17-1021), and "Geoscientists, Except Hydrologists and Geographers" (19-2042).

Employers usually expect an employee in this occupation to be able to do the job after Moderate-term on-the-job training (1-12 months) .

San Bernardino County is part of the Riverside-San Bernardino-Ontario MSA, which includes Riverside and San Bernardino counties.

Occupational Wages [Top]

Area	Year	Period	Hourly Mean	Hourly by Percentile		
				25th	Median	75th
Riverside-San Bernardino-Ontario MSA	2015	1st Qtr	\$28.02	\$22.91	\$27.29	\$33.00

Data for San Bernardino County are not available. Data for Riverside-San Bernardino-Ontario MSA has been substituted.

[View Wages for All Areas](#) [About Wages](#)

Occupational Projections of Employment (also called "Outlook" or "Demand") [Top]

Area	Estimated Year-Projected Year	Employment		Employment Change		Annual Avg Openings
		Estimated	Projected	Number	Percent	
Riverside-San Bernardino-Ontario MSA	2012 - 2022	310	380	70	22.6	13

Data for San Bernardino County are not available. Data for Riverside-San Bernardino-Ontario MSA has been substituted.

c. Explanation of Employer Relationship (CTE only)

Employers in the Morongo Basin and around the Country have regularly employed students that have gone through the CAD program at Yucca Valley High School over the past 23 years and support a higher level program to employ CMC students. The employers that were surveyed are either potential employers of CMC graduates or have already employed graduates from the Program at Yucca Valley High School.

d. List of Supporting Members for a Proposed Advisory Committee (CTE only)

- Clint Stoker, Stoker Design - Yucca Valley
- Mark Ban, Hi-Desert Water District – Assistant General Manager - Yucca Valley
- Ron Wortham, Hi-Desert Water District - GIS Technician/Project Assistant - Yucca Valley
- Alejandro Vasconcelos, Edison - Designer – Yucca Valley
- Brian Kelly, Nv5 Incorporated – Junior Surveyor – Palm Desert
- Marina West, Bighorn Desert View Water Agency – General Manager, Landers
- Keith Faul, Joshua Basin Water District – Engineer & GIS Coordinator – Joshua Tree
- Vickie Bridenstein, Self Employed Civil Engineer – Yucca Valley

e. Recommendations of Advisory Committee (CTE only)

*This is not **required** for first read if it is not yet available

As stated by CTE advisory members, they all agreed that offering this certificate is beneficial to the student and to the employers and agree to be on said Advisory Committee.

3. Are there other similar programs within Region 9 which may be adversely impacted?

Due to the geographical distance between CMC and the nearest college that offers the broader based CADD Technician Certificate, there is no adverse impact expected. There are two similar programs, both colleges are approximately a one and one half (1 ½) hour drive, one in Riverside and one in Victorville. College of the Desert, over one hour away, has a CAD program geared toward architecture and is not anticipated to be adversely impacted.

4. Alignment with secondary programs in the region to develop pathways and the CTE pipeline. List where applicable, otherwise indicate 'NONE'.

<p>a. List the secondary and ROP feeder districts in the college's service area. District</p> <p>The Morongo Unified School District (MUSD) does have CADD programs in their CTE offerings.</p>	<p>Feeder classes/programs currently being offered</p> <ol style="list-style-type: none"> 1. Computer Aided Drafting (CAD) 2. 3-D Modeling in CAD 3. Geographic Information Systems (GIS) 4. 3-D Animation
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b. What is the plan for coordination with feeder districts to build the CTE pipeline for this program? There will be articulation with MUSD. The College and MUSD have a MOU in place describing their dedication to working together for the benefits of high school students wanting to continue into college. Other programs at the College have articulation agreements in place.

5. Is there a coordination of pathways with secondary and transfer post-secondary programs in the area?

There is not a specific pathway in place however CMC and the Morongo Unified School District have been working together to articulate programs and the existing Programs at YVHS would be a perfect fit for this collaboration.

6. Other information the college wishes to share.

There is a need in this area in the CADD field which is much broader than Architecture and Engineering alone. The local 29 Palms Marine Base has civilian drafter and GIS opportunities and many former Marines stay in the area after leaving the military. Local water districts, towns and the National Park all used CADD and GIS in their offices. Our proposed CADD certificate would have a broad scope to fit most any industry. The high school instructor works several summer side jobs in this field and regularly turns down work due to lack of time. The skills learned in this class would also give the students the foundational skills to enter not only the CADD field but also the growing GIS and 3-D Printing industries.

**COPPER MOUNTAIN COLLEGE Computer Aided Drafting and Design (CADD) Technician
Certificate of Achievement - PROPOSED**

DEPARTMENT	NO.	TITLE	UNITS
Required Courses:			
CIS	090	Introduction to CADD Fundamentals	4
CIS	091	Intermediate CADD	4
CIS	092	Advanced CADD, Rendering & Animation	4
CIS	093	3-D CADD and 3-D Printing	4
Prerequisite Course:			
CIS	070A	Computer Business Applications	3
		REQUIRED COURSES	16
		PREREQUISITE	3
		CERTIFICATE TOTAL	19
		Advisor: Steenberg	