

CTE Program Narrative

NAME OF COLLEGE: Merced College

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DATE: 1-9-17

DIVISION: Industrial Technology

FACULTY: James Thornburgh

PROGRAM NAME: Associate in Science in CAD Drafting – Mechanical Design

REASON FOR APPROVAL REQUEST (Check One):

- New Program Proposal
- Program Revision Proposal (Substantial or TOP Code Changes)
- Locally Approved

TYPE OF DEGREE:

- Certificate of Achievement
- Associate of Arts
- Associate of Science
- Associate of Arts for Transfer
- Associate of Science for Transfer
- Other

TRANSFER APPLICABILITY: Yes No

ATTACHMENTS/INFORMATION REQUIRED:

Labor/Job Market Data and Analysis
Advisory Committee Meeting Minutes
List of Advisory Committee Members
Employer Survey, if applicable

1. Statement of Program Goals and Objectives

Identify the goals and objectives of the program. For CTE programs, the statement must include the main competencies students will have achieved that are required for a specific occupation. The statement must, at a minimum, clearly indicate the specific occupations or fields the program will prepare students to enter and the basic occupational competencies students will acquire.

If the program is selective, describe relevant entry criteria and the selection process for admission to the program. Specify all mandatory fees that students will incur for the program aside from the ordinary course enrollment fee.

The CAD Drafting – Mechanical Design A.S. degree is a Career Technical Education (CTE) degree intended to give students the needed knowledge and skills to enter the workforce.

Program Student Learning Outcomes

- A. Design mechanical assemblies
- B. Choose the best software package to accomplish stated goals.
- C. Create all the associated drawings, and documentation needed to manufacture the product.

2. Catalog Description

Enter exactly as it will appear in the catalog, including program outcomes. The description must also

- *Convey the certificate's goals(s) and objectives*
- *Provide an overview of the knowledge and skills that students who complete the requirements must demonstrate (student learning outcomes)*
- *List all prerequisite skills or enrollment limitations*
- *Mention any risks, such as occupations that are inherently competitive or low-salaried and/or occupational areas where inexperienced graduates are not generally hired.*
- *For CTE programs, the description must list the potential careers students may enter upon completion.*
- *Convey what the student may expect as an outcome*

If applicable, reference accrediting and/or licensing standards. If there is a widely recognized certification provided by a professional association, specify whether the program will fully prepare completers for the recognized professional certification.

The Associate in Science degree in CAD Drafting - Mechanical Design shows that a student is familiar with advanced 3D modeling tools, production methods, and product design concepts. An Associates in Science Degree in CAD Drafting - Mechanical Design is available for students who meet the graduation requirements and complete the 30-unit core and 3-4 units from the electives list, with a minimum grade of a "C" in each course in the degree, and maintain a 2.0 GPA.

Program Student Learning Outcomes

- A. Design mechanical assemblies
- B. Choose the best software package to accomplish stated goals.
- C. Create all the associated drawings, and documentation needed to manufacture

3. Program Requirements

The program requirements must be consistent with the catalog description. The number of units, specific course requirements and the sequence of the courses must be coherent, complete and appropriate. Display the program requirements in a table format that includes all courses required for completion of the program (core requirements and required or restricted electives), subtotal of core units, and total program units. For each course, indicate the course department number, course title, and unit value.

Display of Program Requirements

Requirements	Course ID	Name	Units	CSU-GE	IGETC	Sequence
Required Core (30 units)	DRFT 04A	Fundamentals of Computer-Aided Drafting	3			2
	DRFT 04B	Introduction to 3D	3			1
	DRFT 04C	Introduction to Parametric Modeling	3			1
	DRFT 04D	Advanced Parametric Modeling	3			2
	DRFT 05	Technical Graphics	3			2
	DRFT 06	Production Methods	3			1
	DRFT 10	Rendering and Animation	3			2
	DRFT 25	Descriptive Geometry	3			2
	DRFT 35	Capstone Design Project	3			2
	DRFT 44	Print Reading and Sketching	3			1
Restricted Electives (3 units)	CPSC-01 or CPSC-30 or INDT-38I	Introduction to Computer Information Systems or Computer Applications Industrial Technology Computer Applications and Literacy	4 or 3 or 3			1

	IGETC	CSU GE
Major Total:	33 or 34 units	33 or 34 units
GE Pattern IGETC OR CSU-GE	37	39
Electives (as needed) (CSU transferrable):	0	0
Double-Counted:	0	0
Total Degree (maximum):	70 or 71 units	72 or 73 units

Display of Proposed Sequence

First Semester	Units
DRFT 04A	3
DRFT 44	3
INDT-38I	3
Total	9

Second Semester	Units
DRFT 04B	3
DRFT 05	3
DRFT 10	3
Total	9

Third Semester	Units
DRFT 04C	3
DRFT 25	3
DRFT 06	3
Total	6

Fourth Semester	Units
DRFT 04D	3
DRFT 35	3
	3
Total	6

4. Master Planning (Background and Rationale)

Given the stated goals and objectives, address the role the proposed program will fulfill in the college’s mission and curriculum offerings. This discussion may include some history of the program proposal origins, a description of the program purpose, and/or the program’s relevancy for the region and college.

The proposal must demonstrate a need for the program that meets the stated goals and objectives in the region the college proposes to serve with the certificate. A proposed new certificate must not cause undue competition with an existing program at another college.

If any expenditures for facilities, equipment or library and learning resources are planned, please explain the specific needs in this section.

If the program is to be offered in close cooperation with one or more specific employers, a discussion of the relationship must be provided.

The purpose of this A.S. degree program is to give students the option of pursuing an associate's degree by completing GE requirements and the coursework that has already been approved as a certificate. Many students, especially those who are the first in their family to attend college, wish to receive an A.S. degree instead of a certificate.

The creation of the A.S. CAD Drafting – Mechanical Design will not require additional staff, facilities, or funding above what is already needed for the existing programs.

5. Need for Program

a. Enrollment and Completer Projections

Address and justify the number of projected students or "annual completers" to be awarded the certificate each year after the program is fully established.

		Year 1		Year 2	
CB01: Course Department Number	CB02: Course Title	Annual # Sections	Annual Enrollment Total (Estimated)	Annual # Sections	Annual Enrollment Total
DRFT 04A	Fundamentals of Computer-Aided Drafting	3	50	3	50
DRFT 04B	Introduction to 3D	1	20	1	20
DRFT 04C	Introduction to Parametric Modeling	1	20	1	15
DRFT 04D	Advanced Parametric Modeling	1	20	1	15
DRFT 05	Technical Graphics	1	20	1	15
DRFT 06	Production Methods	1	20	1	15
DRFT 10	Rendering and Animation	1	20	1	15
DRFT 25	Descriptive Geometry	1	20	1	15
DRFT 35	Capstone Design Project	1	20	3	75
DRFT 44	Print Reading and Sketching	3	75	1	20
CPSC-01	Introduction to Computer Information Systems	6	163	6	163
CPSC-30	Computer Applications	29	892	29	892
INDT-38	Industrial Technology Computer Applications and Literacy	1	20	1	20

Many of the courses in the A.S. CAD Drafting – Mechanical Design program service many other programs. All of the courses in the A.S. CAD Drafting – Mechanical Design are used in the Certificate of Achievement CAD Drafting – Mechanical Design (#31496), and many are used in the A.A. and Certificate for CAD Draftsman – Mechanical (#03492 & #12414).

It is estimated that there will be between 15 and 20 annual completers.

b. Labor Market Information (LMI)

Summarize the Labor Market Information (LMI) and employment outlook (Including citation for the source of the data) for students exiting the program.

Enter table or chart as a separate attachment. Employer Survey (if applicable)

When strong LMI data is not available, an employer survey may be submitted. Provide a copy of the survey, including the number of those surveyed, number of responses, and a summary of the results. The survey must address the extent to which the proposed degree or certificate will be valued by employers.

See supporting documentation derived from COE attachment below.

6. Place of Program in Curriculum/Similar Programs

Review the college's existing program inventory, then address the following questions:

- *Do any active inventory records need to be made inactive or changed in connection with the approval or the proposed program? If yes, please specify.*
- *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).*
- *What related programs are offered by the college?*

The A.S. CAD Drafting – Mechanical Design will be the top level of achievement for students pursuing Mechanical Drafting Studies at Merced College. The Certificate of Achievement CAD Drafting – Mechanical Design is useful to students who wish to enter industry directly following their studies; however, for those wishing to transfer need a degree this would give them that option.

7. Similar Programs at Other Colleges in Service Area

List similar programs offered at other colleges within the Central/Mother Lode Region that may be adversely impacted. Enter 'none' if there are no similar programs.

American River College and Fresno City College offer degrees that are similar but different. The American River College Program combines both Mechanical and Architectural topics, and the Fresno City College program focuses on making students experts in how to use one program. The program at Merced College is designed to teach students how to use a variety of types of software programs, that each has a specific role to play in the design process in industry. The Merced College program also uses a variety of programs within each role, so that students learn to be adaptable.

Fresno City College Catalog Description
Computer Aided Drafting & Design

The field of drafting is one, which serves a wide and varied number of vocations, professions, and industries. The Computer Aided Drafting and Design program directs its courses and training along practical lines as demanded by industry so that students, upon completion of their training, are better qualified to obtain employment in CADD or related occupations.

American River College Catalog Description
Design Technology Degree

This degree and certificate emphasizes the knowledge and skills required for entry level success in the architectural, civil, and mechanical engineering professions. These include graphic standards and practices, technical analysis and communication, material sciences, and the design and critique processes. In addition, projects include environmental (sustainable) design, product economics, and legal considerations. Current computer technologies and various design software for three dimensional modeling and two dimensional drafting are used throughout the program. Graphic documentation and a portfolio of work are created for each course.

Supporting documentation required

Labor Market Information

In a separate attachment, provide current Labor Market Information showing that jobs are available for program completers within the local service area. Statewide or national LMI may be included as supplementary support but evidence of need in the specific college service area or region is also necessary.

Per COE LMI Data

2008-2018 Occupational Employment Projections										
SOC Code	Occupational Title	Annual Average Employment		Employment Change		Average Annual Job Openings			2010-1st Quarter Wages	
		2008	2018	Number	Percent	New Jobs	Replacement Needs	Total Jobs	Median Hourly	Median Annual
Madera-Chowchilla Metropolitan Statistical Area										
17-3000	Drafters, Engineering, and Mapping Technicians	150	150	0	0	0	3	3	N/A	N/A
17-3011	Architectural and Civil Drafters	30	20	-10	-33	0	1	1	\$ 24.19	\$50,327
17-3031	Surveying and Mapping Technicians	70	70	0	0	0	1	1	\$ 25.79	\$53,650
Merced Metropolitan Statistical Area										

17-3000	Drafters, Engineering, and Mapping Technicians	160	180	20	12.5	2	3	5	N/A	N/A
17-3025	Environmental Engineering Technicians	30	40	10	33.3333	1	1	2	N/A	N/A
17-3031	Surveying and Mapping Technicians	30	30	0	0	0	1	1	\$ 26.97	\$56,104
Mother Lode Region										
17-3000	Drafters, Engineering, and Mapping Technicians	250	270	20	8.0	2	6	8	N/A	N/A
17-3011	Architectural and Civil Drafters	80	90	10	12.5	1	2	3	\$ 19.18	\$39,881
Fresno Metropolitan Statistical Area										
17-3000	Drafters, Engineering, and Mapping Technicians	1250	1270	20	1.6	5.8	24.9	30.7	N/A	N/A
17-3011	Architectural and Civil Drafters	340	310	-30	-8.8	0	7.3	7.3	\$ 21.84	\$45,443
17-3022	Civil Engineering Technicians	230	230	0	0	0.4	4.3	4	\$ 29.81	\$62,015
17-3029	Engineering Technicians, Except Drafters, All Other	120	120	0	0	0.5	2.3	2.8	\$ 30.83	\$64,133
17-3031	Surveying and Mapping Technicians	100	100	0	0	0.8	1.7	2.5	\$ 24.38	\$50,696
Modesto Metropolitan Statistical Area (2006-2016)										
17-3000	Drafters, Engineering, and Mapping Technicians	610	650	40	6.6	4	15	19	N/A	N/A
17-3011	Architectural and Civil Drafters	170	170	0	0	0	5	5	\$ 19.42	\$40,393
17-3022	Civil Engineering Technicians	90	100	10	11.1	1	2	3	\$ 29.21	\$60,739
17-3031	Surveying and Mapping Technicians	60	70	10	16.7	1	1	2	\$ 20.88	\$43,439

<a href="http://www.labormarketinfo.e
dd.ca.gov">http://www.labormarketinfo.e dd.ca.gov	3,77 0	3,8 70	100	60	20	82	100	\$ 24.77	\$51,5 29
							10. 03	per year	

List of Members of Advisory Committee

This list must include advisory committee member names, job titles, and affiliations.

Name		Affiliation
Tony	Deziga	Merced College
Tom	Post	Merced High School
James	Thornburgh	Merced College
Balaji	Sethuramasamyraja	CSU Fresno
Michael	Jenkins	CSU Fresno
Vince	Galas	Beyer High School
Manny	Mancebo	Buhach Colony High School
Gregory	Wakefield	Buhach Colony High School
Christopher	Lacey	Livingston High School
Roger	Young	John H Pitman High School
YangQuan	Chen	UC Merced
Gerardo	Diaz	UC Merced
Jon	Clark	Great Spaces USA
Amar	Balachandran	Kirby Manufacturing
David	Verstoppen	Wellmade Products

Recommendation of Advisory Committee (Meeting Minutes)

In a separate attachment, provide minutes of the advisory committee meetings at which the program was discussed and approved, with relevant areas highlighted, as well as a summary of the advisory committee recommendations.

MERCED COLLEGE

Drafting Advisory Committee Meeting

November 12, 2014

1. Introductions of new & returning members
 - a. Merced College Faculty
 - *James Thornburgh, Tom Post
 - b. Advisory Members
 - *John Clark (Great Spaces USA), Tom Post (Merced), Gerardo Diaz (UC Merced), Amar Balachandran (Kirby Manufacturing), Tony Deziga (TMD Drafting Services)
2. New Business
 - i. Reactivating INDT-38
 - Advisory members were strongly in favor of a Computer class that would focus on topics that would directly benefit Industrial students.
 - ii. Emporium & Block Scheduling models
 - Advisory members were strongly in favor of the Emporium schedule, they saw how it could lead to better student understanding, as well as allowing their employees better options for furthering their education.
 - iii. Motion to add AS Degrees to coincide with existing high level certificates (CAD Drafting-Mechanical Design & CAD Drafting – Architectural Design).
 1. MOTION (Thornburgh), Second (Post), Unanimous
3. Meeting Adjourned