RIVERSIDE COMMUNITY COLLEGE DISTRICT
PROGRAM OUTLINE of RECORD

Narrative

College: R___ M___ N_X

TOPs Code: 593.40_____
CIP Code: NCE863_____

3D MECHANICAL DRAFTING CERTIFICATE

Program Narrative

Item 1. Program Goals and Objectives

3D Mechanical Drafting certificate program prepares individuals to apply basic Mechanical drafting knowledge and skills to development of working drawings and electronic simulations in support of mechanical and industrial engineers and related professionals. The content includes the application of advanced computer software and hardware, Computer Assisted Drafting, Computer Assisted Design (CAD) and Building Information Modeling (BIM) to the creation of graphic representations and simulations in support of engineering projects.

Upon successful completion of this program, students should be able to:

1. Demonstrate an understanding of 3D mechanical modeling so as to be able to capture design intent in a 3D model.
2. Map out the most efficient path in 3D model creation.
3. Reverse engineer existing parts and recreate them as 3D computer models.

Employment for mechanical drafters is expected to increase by 2% between 2017 and 2022 in the Inland Empire/Desert Region. Just over 200 job openings will be available over the five-year timeframe. The entry-level wage for mechanical drafters is above the MIT Living Wage estimate of $12.30 per hour for a single adult living in the Inland Empire/Desert Region.
There appears to be an opportunity for program growth based on the average annual number of program completions for the selected community college programs (2 average annual community college awards), and the annual openings for mechanical drafters in the local region (42 annual job openings). Attached find LMI report.

Item 2. Catalog Description

PROGRAM PREREQUISITE:

None

SHORT DESCRIPTION of PROGRAM

This certificate includes courses intended to help students qualify for an entry level CAD operator/drafter or help someone, already in industry, to update their skills. Students can expect an entry level position as a CAD operator, mechanical drafter, engineering assistant and engineering technician.

Item 3. Program Requirements

Required Courses: 20 units

Course	Title	Units	Sequencing
DFT/ENE21	Drafting	3	Semester 1, Fall
DFT/ENE27	Technical Communications	3	Semester 1, Fall
DFT/ENE51	Blueprint Reading	2	Semester 1, Fall
DFT/ENE42	SolidWorks I	3	Semester 1, Fall
DFT/ENE30	Computer Aided Drafting	3	Semester 1, Fall
DFT/ENE42B	SolidWorks II	3	Semester 2, Spring
ENE52	Geometric Dimensioning & Tolerancing	3 (updated)	Semester 2, Spring

Plus, an additional 3-5 units from the following elective courses:

Course	Title	Units	Sequencing
MAT36	Trigonometry	4	Semester 2, Spring
MAN56	CNC Machine Set-Up and Operation	4	Semester 2, Spring
MAN35	Computer Aided Manufacturing-Mastercam	5	Semester 2, Spring
ENE41	Engineering Graphics	3	Semester 2, Spring

Total Program Units: 23-25 units

Associate of Science Degree

The Associate of Science Degree in 3D Mechanical Drafting will be awarded upon completion of the degree requirements, including general education and other graduation requirements as described in the college catalog

Item 4. Master Planning

Riverside Community College District is dedicated to the success of its students and to the development of the communities it serves. By facilitating its Colleges and learning centers to provide educational and student services, it meets the needs and expectations of its unique communities of learners. The District provides the Colleges with leadership in the areas of advocacy, resource stewardship, and planning.

Norco College inspires a diverse student body by an inclusive innovative approach to learning through its pathways to transfer, professional, career and technical education, certificates, and degrees. We are proud to be a pivotal hub for scholarship, arts and culture, dynamic technologies, and partnerships. Norco College encourages self-empowerment and is dedicated to transforming the lives of our students, employees, and community.

The goal of this program is to provide a diverse population of adult learners with the opportunity to build their understanding of Mechanical Drafting skills needed for drafting job performance, which is essential for setting up and operating a quality Mechanical drafting service business/shop.

Item 5. Enrollment and Completer Projections

The college expect to offer all courses in the certificate twice per year, and each class will be offered to 34 students. Students can complete the program within a year.

Item 6. Place of Program in Curriculum/Similar Programs

Current Norco College 3D Mechanical program includes only:

ENE-21 Drafting	3
ENE-42 SolidWorks I	3
ENE-42B SolidWorks II	3
	Total 9 units

The current 3D Mechanical Drafting certificate at Norco College is lacking the print reading and other essential related skills to preform the drafting job. It needs to be updated with the industry needs as proposed in Item 3 to prepare students with sufficient skills for the job market.

Item 7. Similar Programs at Other Colleges in Service Area

Chaffey College in San Bernardino County has a similar program.

Drafting Certificate & Degree Requirements
Drafting Technician: Mechanical AS Degree Requirements
To obtain an Associate's Degree, students must complete both the major requirements below and the graduation requirements listed on pages 35-36.

COURSE NUMBER	NAME	UNITS
DRAFT 20	Computer-Aided Drafting and Design	4
DRAFT 21	Mechanical Design I	3
DRAFT 41	Computer-Aided Drafting and Design: Mechanical	4
DRAFT 43	Advanced CAD Modeling and Applications	3
DRAFT 78	Advanced Design Applications	4
EGTECH 10	Introduction to Engineering Design	4
EGTECH 16	Computer Integrated Manufacturing - CNC Material Removal	3
Total units for the major		25
Required General Education courses:		
PHYS 5*	The Ideas of Physics	3
PHYS 6*	The Ideas of Physics Laboratory	1
* or any advanced course in Physics with a laboratory		

Item 8. Transfer Preparation Information (if applicable)
All the courses in this proposal are transferable as listed below.

Course	Title	Units	Transferable to
DFT/ENE21	Drafting	3	UC, CSU
DFT/ENE27	Technical Communications	3	CSU
DFT/ENE51	Blueprint Reading	2	CSU
DFT/ENE42	SolidWorks I	3	CSU
ENE52	Geometric Dimensioning & Tolerancing	3 (updated)	CSU
DFT/ENE30	Computer Aided Drafting	3	UC, CSU
DFT/ENE42B	SolidWorks II	3	CSU
ENE41	Engineering Graphics	3	CSU