Program Review - Overall Report

Instructional: Architecture Graphics

Data Review

2021 - 2024

Overall Trends

What overall trends do you see in success, retention, program of study, educational planning, and awards over the past 3 or more years?
The number of hispanic male are alost twice of female/non hispanic students.

Disaggregated Student Subgroups

Look at the disaggregated student subgroups in success, retention, program of study, educational planning, and awards for your area. Are there any equity gaps that you will address in the next 3 years?
Yes there is.

If there are any concerning trends over the past 3 or more years, or if equity gaps exist, what is your action plan to address them?
Develop new programs.

Make the Drafting / Architecture lab more functional

Add new equipments such as large scanner/plotter

Is there a resource request associated with this Data Review? (If yes, please complete a Resource Request, which you can access from the main menu to the left)
Yes

Assessment Review

2021 - 2024

Section 1: SLO Assessment Status (Based on Dashboard - Assessment Status)

Which Disciplines are included in this Assessment?
ARE

What percent of SLOs in the disciplines you identified above have been assessed?
53.8%

Which SLOs have not been assessed and why? Identify both the Course and the associated SLO(s).
SLOs were reported but not in the system.

Section 2: Mapping Status (Based on Dashboard - Mapping Status)

Are all SLOs mapped to at least one PLO?
Yes

If all SLOs are not mapped to at least one PLOs, please explain why.
The latest updates on the SLO is not reflected in the system

Are the appropriate SLOs mapped to GELOs? (If you have a course that is listed in any general education area, it should have at least one SLO mapped to at least one GELO)
Yes

If the appropriate SLOs are not mapped to GELOs, please explain why.
The latest updates on the SLO is not reflected in the system

Section 3: PLO Analysis (Based on Dashboard - Analysis: PLO Direct Assessment)

Which Programs are included in this Assessment?
ARE

Please identify the PLO(s) - and name the associated Program(s) - that achieved benchmarks.
Architectural Graphics

To what to you attribute this success?
Associate faculties and Architecture students.

Please identify the PLO(s) - and name the associated Program(s) - that did not achieve benchmarks.
Architectural Graphics to prepare students with skills needed in Design and Architectural Drafting.

If there are PLOs that did not achieve benchmarks, what do you plan on doing to improve benchmark attainment?
Program is updated with appropriate courses and developed in 2019-2020. It is not reflected in the system yet.

Assessment Review

Section 4: Alignment to Career and Transfer

Describe the process used in this area to ensure programs (PLOs) align with career and transfer needs.
Link graduates with appropriate apprenticeship programs offered by Architecture industry
Advisory committees with employers in the community and update the program with their inputs.

Describe the activities, projects, and opportunities this program offers to support experiential learning and alignment of programs to career and transfer (e.g. capstone projects, portfolios, service-learning opportunities).
Apprenticeship program, inviting professionals in the field for answering student's questions. Site survey/sketch projects in the community.

Without looking at your current PLOs, describe some program outcomes which would best help your students continue on the path towards their workforce and transfer goals (e.g. subject matter expertise, hands on experience, partnerships, etc.).
Gain current CAD/BIM skills

Review current PLOs. Do the outcomes listed above align with the current program outcomes?
Yes

EMP GOAL 1. Expand college access by increasing both headcount and full-time equivalent students (FTES).

GOALS AND ACTIVITIES

What are you doing now in support of this goal?
Proposing the program in Hybrid mode to make it more accissible.

Update equipments such as Plotter/Scanner/3D camera

What are your plans/goals (3-year) regarding this goal?
Offering HYB mode

Advertising the program through flyers and Norco's social media sites.

Offering prerequisites DFT/ENE-30 in Summer and Falls online.

EVIDENCE

Do you have assessment data or other evidence that relates to this goal?
In progress. The current enrollment has about 50% drop due to Panademic. Plan to keep enrolment higher in Fall 2021 by 20% increase.

RESOURCES

Is there a resource request associated with this EMP Goal? (If yes, please complete a Resource Request, which you can access from the main menu to the left)
Yes

Program Review Part 2

2021 - 2024

Curriculum

Are all your courses current (within four years)?
Yes

What percentage of your courses are out of date?
10% or less

If you have courses that are not current, are they in the curriculum process?
Yes

For out of date courses that are not already in progress of updating, what is your plan?
Develop new courses. Modify and update the certificates based on the industry need and ongoing changes in BIM and CAD technology.

Make the Lab ATEC109 multipurpose and also fix the safety issue of the ground outlets. It causes electroshock and also blocking adjusting the stations.

Do you have proposals in progress for all the DE courses you intend to file?
Yes

Do you require help to get your courses up to date?
Yes

Program Review Reflections

What would make program review meaningful and relevant for your unit?
Having students input and comment in.

Colaboration with Universities with Architecture programs to make a pathway for Designn/Architecture.

What questions do we need to ask to understand your program plans, goals, needs?
How can we expedite the program review/curriculumn approvals ?

What types of data do you need to support your program plans, goals, needs?
Students hired in the community.

Employers in the area.

Employer's need (Architecture)

Continue students.

Which universities our students did end up?

If there are any supporting documents you would like to attach, please attach them here.
Architectural Graphics Certificate - Updated.docx
Advisory Committee Minutes.docx

Resource Requests

2021 - 2024

What resources do we already have?
Laser Engraver

What resources do you need?
Scanner/Plotter A size. for large drawings.

Request related to EMP goal or Assessment?
EMP Goal 5,EMP Goal 2,EMP Goal 9

$ Amount Requested
6,000

Resource Type
ITEM: Equipment, Technology, Services, Software, Furniture

Potential Funding Source(s)
CTE: Perkins (VTEA)

The evidence to support this request can be found in:
Program Review: Part 1

This request for my area is Priority #:
2

2021 - 2024

What resources do we already have?
Ground Outlets

What resources do you need?
Ceiling flexible power Outlets due to Safety issues

Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 2,EMP Goal 3,EMP Goal 4,EMP Goal 5,EMP Goal 8

$ Amount Requested
150,000

Resource Type
BUDGET: Facilities Building, Remodel

Potential Funding Source(s)
CTE: Strong Workforce Project (SWP)

The evidence to support this request can be found in:
Program Review: Part 2

This request for my area is Priority #:
1

Resource Requests

2021 - 2024

What resources do we already have?
Revit program as a part of ARE-24

What resources do you need?
Matterport MC250 Pro2 Professional 3D Camera with extra battery tripod and case

Request related to EMP goal or Assessment?
EMP Goal 1

$ Amount Requested
6,000

Resource Type
ITEM: Equipment, Technology, Services, Software, Furniture

Potential Funding Source(s)
Instructional Equipment Allocation,CTE: Strong Workforce Project (SWP),CTE: Perkins (VTEA),GRANT: CTE Pathways for Foster Youth

The evidence to support this request can be found in:
Program Review: Part 1,Assessment Review,Data Review

This request for my area is Priority #:
1

Submission

2021 - 2024

All parts of my Program Review have been completed and it is ready for review
Yes

College: R___ M___ N_X_

TOPs Code: _0953.10_____

CIP (Classification of Instructional Programs) Code: _NCE787_____

ARCHITECTURAL GRAPHICS CERTIFICATE

Program Narrative
Item 1. Program Goals and Objectives

Architectural Graphics certificate program prepares individuals to apply basic Architectural drafting knowledge and skills to development of working drawings and electronic simulations in support of Architectural and Civil 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 Architectural projects.

Upon successful completion of this program, students should be able to:
1. Complete a set of residential working drawings, which may include first floor drawings, second floor drawings, foundation drawings, elevations, cross-sections, framing, electrical drawings, and structural detail.
2. Demonstrate an ability to apply and integrate computer technology into the design process to achieve a desired result.

Architectural and civil drafter jobs are expected to increase by 2% through 2022 in the Inland Empire/Desert Region. More than 500 total job openings, 102 annual job openings will be available over the five-year timeframe. ⍰ The entry-level hourly wage for architectural and civil drafters of $18.20 per hour 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 completers for the selected community college program (1 annual community college award), and the annual openings for architectural and civil drafters in the region (102 annual job openings). Attached find LMI (Labor Market Information) report.

Item 2. Catalog Description

PROGRAM PREREQUISITE:

None
SHORT DESCRIPTION of PROGRAM

The Architectural Graphics certificate prepares students with technical communication skills, and the knowledge and craft of two-dimensional drafting solutions for architecturally related industry applications. Students learn to present graphic solutions, provide design refinements, modifications, and delineations of working technical drawings using current Computer-Aided Drafting CAD methods and techniques with an understanding of industry standards. Certificate completers can secure drafting technician positions in areas related to architecture, environmental design, and to assist in the development of architectural construction documents for light frame structures, under the supervision of a professional.

Item 3. Program Requirements

Required Courses: __21 units__

Course	Title	Units	Sequencing
DFT/ENE21	Drafting	3	Semester 1, Fall
DFT/ENE27	Technical Communications	3	Semester 1, Fall
CON62	Blueprint Reading for Construction	3	Semester 1, Fall
ARE24	Architectural Drafting	3	Semester 1, Fall
ARE25	Advanced Architectural Drafting	3	Semester 2, Spring
DFT/ENE30	Computer Aided Drafting	3	Semester 2, Spring
ARE37	Architectural Design	3	Semester 2, Spring

Plus, an additional 6 units from the following elective courses:

Course	Title	Units	Sequencing
ARE35	History of Architecture-Beginnings through Gothic	3	Semester 1, Fall
ARE36	History of Architecture: Renaissance to Modern	3	Semester 2, Spring
CON60	Introduction to Construction	3	Semester 1, Fall
CON74	Construction Estimating	3	Semester 2, Spring

Total Program Units: __27 units__

Associate of Science Degree
The Associate of Science Degree in Architectural Graphics 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 Architectural Drafting skills needed for drafting job performance, which is essential for setting up and operating a quality Architectural drafting service business/office.

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 Architectural Graphics program includes only:

ENE/DFT21 Drafting	3
ARE24 Architectural Drafting	3
ENE/DFT30 Computer-Aided Drafting	3
	Total 9 units

The current Architectural Graphics certificate at Norco College is lacking the print reading and other essential related skills to perform the Architectural 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: Architectural 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 in Chaffey Catalog.

COURSE NUMBER	NAME	UNITS
ART 12	Fundamentals of Design in Three Dimensions	4
DRAFT 20	Computer-Aided Drafting and Design	4
DRAFT 21	Mechanical Design I	3
DRAFT 50	Architectural Design I	3
DRAFT 51	Architectural Design II	3
DRAFT 53	Architectural Applications of CAD	4
EGTECH 10	Introduction to Engineering Design	4
ID 12	History of Western Architecture and Interiors II	3
PHYS 5*	The Ideas of Physics	3
PHYS 6*	The Ideas of Physics Laboratory	1

Total units for the major	32
* or any advanced course in Physics with a laboratory	

Drafting Technician: Architectural Certificate Requirements

Item 8. Transfer Preparation Information (if applicable)

All the courses in this proposal are transferable as listed below.

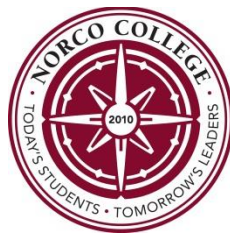| Course	Title	Units	Transferable to
DFT/ENE21	Drafting	3	UC, CSU
DFT/ENE27	Technical Communications	3	CSU
CON62	Blueprint Reading for Construction	3	CSU
ARE24	Architectural Drafting	3	CSU
ARE25	Advanced Architectural Drafting	3	CSU
DFT/ENE30	Computer Aided Drafting	3	UC, CSU
ARE37	Architectural Design	3	UC, CSU
CON60	Introduction to Construction	3	CSU
CON74	Construction Estimating	3	CSU

Advisory Committee Meeting 2020

Agenda

Online Zoom Session
April 30, 2020

Anticipated attendees: Farshid Mirzaei, Full Time Faculty Norco College
Ashlee Johnson, Full Time Faculty Norco College
Industry Advisers: Gary Miller, Miller Architecture
Gilbert Alcala, Alcala Architecture
Elena Cisneros, Roadsafe Traffic
George Balteria, Northeast Trees
Dave Koons, Architect
Tim Mast Jr., Cryoworks

12:30 pm – 12:45 pm	Welcome & Introductions
12:45 pm – 1:45 pm	Advisory Board Discussions *Industry subgroups & Norco College faculty* *Industry trends, program curriculum feedback & workforce preparedness* *Follow-up & next steps, internships & interest card*
1:45-1:50pm	Closing Remarks and Adjournment

Advisory Meeting Notes

1. Introductions- **Faculty introduced themselves and Advisory Committee members introduced themselves. Advisory Committee Members in attendance: Tim Mast Jr., Elena Cisneros, George Balteria, Dave Koons, and Gilbert Alcala**

2. Advisory members to review Programs-Ashlee and Farshid presented the curriculum and stated desire to revise curriculum for 1 or more of the programs and needed advisory feedback.

   a. **Feedback and approval for Drafting Technology curriculum**.-
   DFT/ELE 27 Technical Communications Course (3 units) is optional and faculty presented option of making it mandatory.
   Gary Miller recommended foundations of sketching/drafting and software.
   MAT-36 Trigonometry discussed if it is needed to meet industry standards.
   Dave Koons agreed Trigonometry should be removed from mandatory curriculum and make it optional or remove altogether and add it to Mechanical Drafting Program instead. ARE-24 and 25 with Revit updates to possibly add to curriculum. Drafting should be very foundational and feeding into the Architectural and Engineering programs and set transfer students up for success. (Classes Tech Communication DFT/ENE 27, 28, 22 to stay) Recommendation: Removal or optional Class MAN 56, Blueprint Reading DFT/ENE 51 better to offer it as an option between print trading for Construction or machining. That is like more focus to your type of work or pre reading for construction and architecture.
   That way the student has got those two options, because before that they were just forced on drafting technology to machining only, but if we offer it with the both options It can serve both construction and Machining/Mechanical Drafting.

   b. **Feedback and approval for 3D Mechanical Drafting Program-** Tim Mast Jr. Recommended Hand Sketching/Drafting Curriculum to put as first course/class to take in program. Add AutoCAD and Engineering Technology to the Drafting Certificate. Dave Koons and Tim Mast Jr. both stated a high demand from manufacturers for "Shop Drawings" that can be in their offices and do the shop drawings that go back to the architect. (Structural Shop Drawings Jobs like certificate/degrees at Mt. Sac) Steel Structures and metals construction. (Add Classes: DFT/ENE 27 Technical Communication)

   c. **Feedback and approval for Architectural Graphics curriculum**-Gary Miller recommended need for students to know how to do drafting, of floor plans as example, as well as operating the software. Miller emphasized that students learn not just how to operate software but understand what the objects mean that they are drawing and that

they learn drafting conventions such as dimensioning, what information belongs on which sheets. Drafters from tech programs draw a technical picture but with little or no information. Tim Mast Jr. emphasized basics of industry terminology and definitions as well as office protocol as part of Technical Communication class. Dave Koons recommended Blueprint Reading or Document Reading Class needed. (Add : DFT/ENE-51 Blueprint reading, Technical Comm DFT/ENE 27, ARE-25) Suggestion from Dave Koons and Ashlee Johnson on a Basic Project Management Class.

a. **Industry standards** - Industry is utilizing REVIT in addition to or instead of AutoCAD. Recommendation to advertise our ARE-24 and 25 classes that teach REVIT so we meet 10 + student enrollment. Entry level positions are being asked to do Specifications, so training in Specifications is important.

b. **State/industry certifications** – Suggest to give options to students in all certificates if they want to pursue higher degree later on to be able to transfer their courses. AA as an option.

c. **Suggestions:** Elena Cisneros recommended emphasis on Civil Engineering Classes in Drafting Technology or Architecture curriculum to add as Optional Classes to obtain certificate. Discussions over the importance that students understand the 2 pathways of certificate and/or associate degree and transfer capacity and that all the industry professions agreed students in this field may want to go back to school to get more education, so classes will hopefully all be made transferable.

3. **Faculty to review curriculum changes and any hardware/software upgrades.**
   a. **What else should we consider to remain current with equipment, hardware, and software used in industry?** Industry is utilizing REVIT in addition to or instead of AutoCAD. Recommendation to advertise our ARE-24 and 25 classes that teach REVIT so we meet 10 + student enrollment. Virtual Reality Flybys training, software, and technical drafting, RHINO. Miller's opinion: there is greater demand for REVIT skills than Autocad.

4. **Review employment procedures:**
   a. **How do advisory members typically recruit employees?** Online job boards, some advisories reach out to local colleges to post their jobs on College Job Board.
   b. **Is there an internship process, if not how can we develop one?** Partnership with CSI could provide avenue for internships. NCARB has internship program to get one ready for license exam and meet state requirements. https://www.ncarb.org/gain-axp-experience (Course content FM). Miller suggested teaching the 32 CSI number system. Might only take one or two hours to introduce this numbering system. Many documents use this system in their annotation on drawings now. Likely to become much more prevalent.

c. **What qualifications do they typically ask for?** Typically Certificate or Associate Degree is a minimum qualification. 4 year degrees are encouraged.

d. **Are there any recommendations for students to increases employability?-.** A recommendation from Gary Miller on a Pre-Architecture Program at Norco College. Recommendation from Dave Koons on industry partnerships, guest speakers in the classrooms for students, participation in Career Days. Advisory feedback that there is a High demand for Mechanical Drafting Students and pay rate high. Suggestion of Intro to Specs Specifications or Outline Specs course by Dave Koons, industry partner. He volunteered to do lectures and it is a high in demand job skill for Drafting

5. **What could we do to improve real world, on-the-job, work experience that students receive during their program?** Dave Koons suggested faculty provide in class guest speakers of industry professionals, tours of industry partner's offices and job sites. Gil Alcala recommends field trips to understand 3 D versus 2D training to conceptualize the drawing and interpret real word, on-site drafting. George Balteria recommended field trips and cross-overs with the Construction Technology and bringing in real word drawings from projects straight from the city or straight from the company.

Summary of certificate for updates:

Drafting Technology Certificate:

Required Courses: __14-15__ units

Course	Title	Units
DFT/ENE21	Drafting	3
DFT/ENE27	Technical Communications	3
DFT/ENE30	Computer Aided Drafting	3
DFT/ENE51 OR CON 62	Blueprint Reading	2-3
ENE41	Engineering Graphics	3

(ENE 41 is capstone project based, equivalent to ENE 22 plus ENE 28 to transfer to CSU)

Plus, an additional 6-8 units from the following elective courses:

Course	Title	Units
DFT/MAT 60	Math for Engineering Technology	3
	OR	
OR		OR
	Trigonometry	
MAT 36		4
CON60	Introduction to Construction	3
ARE37	Architectural Design	3
DFT/ENE42	SolidWorks I	3
MAN 56	CNC Machine Set-up and Operation	4

Total Program Units: 20 -23   units

3D Mechanical Drafting Certificate:

Required Courses: 20   units

Course	Title	Units
DFT/ENE21	Drafting	3
DFT/ENE27	Technical Communications	3
DFT/ENE51	Blueprint Reading	2
DFT/ENE42	SolidWorks I	3

Course	Title	Units
ENE52	Geometric Dimensioning & Tolerancing	3 (updated)
DFT/ENE30	Computer Aided Drafting	3
DFT/ENE42B	SolidWorks II	3

Elective Courses: __3-5__ units

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

Total Program Units: __23-25__ units

ARCHITECTURAL GRAPHICS CERTIFICATE:

Required Courses: __21__ units

Course	Title	Units
DFT/ENE21	Drafting	3

Course	Title	Units
DFT/ENE27	Technical Communications	3
CON62	Blueprint Reading for Construction	3
ARE24	Architectural Drafting	3
ARE25	Advanced Architectural Drafting	3
DFT/ENE30	Computer Aided Drafting	3
ARE37	Architectural Design	3

Plus, an additional 6 units from the following elective courses:

Course	Title	Units
ARE35	History of Architecture-Beginnings through Gothic	3
ARE36	History of Architecture: Renaissance to Modern	3
CON60	Introduction to Construction	3
CON74	Construction Estimating	3

Total Program Units: __27__ **units**

Reference to Norco College course catalog

On an E-vote sent out on 5/1/2020, the committee voted on the updates above and replied for approval:

Farshid Mirzaei	YES
Ashlee Johnson	YES
Gary Miller, Miller	YES
Gilbert Alcala, Alcala	YES
Elena Cisneros	YES
George Balteria	YES
Dave Koons, Architect	YES
Tim Mast Jr.	YES