



INFORMATION FOR THE PUBLIC

Construction Technology & Management Programs

Ferris State University

July 2024

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Basic Program Information

Program's CIP Code: 52.20

	2023 - 2024	2022 - 2023	2021 - 2022	2020 - 2021	2019- 2020	2018- 2019
Total Students	271	281	270	271	282	290
AAS - BCTM (Building Construction Technology)	181	184	190	179	166	185
AAS - CETM/CETH (Civil Engineering Technology)	10	13	14	11	21	32
BS - CONM (Construction Management)	82	82	90	81	95	93
Certificates	0	2	2	0	0	0
Number of Degrees Conferred (Total)	88	104	111	115	108	99
CONM	39	66	43	48	58	59
BCTM (Associates)	47	32	64	64	42	30
CETM (Associates)	2	6	3	2	8	10
Certificates	0	0	1	1	0	0

Average Graduate Salary	\$77,300	\$66,500	\$64,500	\$63,000	\$60,000	\$60,000
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Placement % at graduation (within 4 months)	100%	100%	100%	66% (100%)	93% (100%)	89% (100%)
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Recent Employers of Our Students

[CTMG Employers](#)

Typical Types of Employers:	Job Titles At Hiring
Construction Management	Project Engineer Assistant Superintendent Assistant Project Manager Estimator Safety Coordinator VDC Engineer Testing Agent
General Contractors	
Construction Management and General Contracting	
Specialty Contractors	
Civil Contractors	
Residential	
Land Development	
Department of Transportation	
Road Commission	

STUDENT ORGANIZATIONS

Students have the opportunity to participate in many Registered Student Organizations (RSOs) on campus. 2 RSOs are dedicated to our program: Associated Construction Students and Sigma Lambda Chi. Additionally Women in Technology RSO serves the entire College of Engineering Technology. To learn more about these organizations, click below:

[Student Organizations](#)

PROGRAM PHILOSOPHY

The Program's teaching philosophy is in alignment with that of Ferris State University. Ferris State University was founded on the belief that all students should have the opportunity to obtain a college education that will allow them to pursue a career. In addition to providing solid technical training, our founder insisted that "no matter how technically trained they be, students should have a good working knowledge of English." (Today, these "English branches" that were offered would be considered "Liberal Arts") This has expanded to Ferris State University's belief that its students should have a well-rounded education to prepare them to be responsible citizens.

Our degree includes a solid technical education in construction topics, complemented by general education courses required of a Bachelor of Science degree program. Our teaching philosophy is that real world experience can help bring theory into practice for students. Our students "learn by doing." Thus the majority of our courses in the first two years of study have a lab component. This provides opportunity for students to practice what they learn in lecture. Lab activities are intended to mimic what occurs in industry in the real world. This strong technical knowledge is brought together in a student's second two years in the program where they learn how to manage that technical knowledge in the construction industry.

Ferris State University's focus is on teaching. Research is not a requirement, but dedication to teaching is paramount. Thus, a doctoral degree is not necessary for teaching in our Bachelor degree program, but real world experience that supplements a Master's degree is required. In our Program's case, all faculty have a minimum of 5 years full-time US construction industry experience.

PROGRAM MISSION

The mission of the Construction Technology and Management Program is to educate students in Building Construction Technology, Civil Engineering Technology – Highway focus, and Construction Management. This is accomplished through a broadly-based, world-class foundation of applicable technical and general education courses that remain relevant with input from an enthusiastic Industry Advisory Board which provides them with highly competitive skills and knowledge, construction-related employment opportunities at graduation, and the potential for advancement in their careers

The Program has two primary **Objectives** based on this mission:

- Serve the students.
- Serve the industry.

The Program is focused on three major themes- Transformative Educational Experience, Excellence and Opportunity, and Enrollment - to ensure it meets those objectives. Major actions include:

1. Maintain high-quality curriculum content by meeting discipline-appropriate accrediting association outcomes
2. Serve the employment criterion for the construction industry
3. Assist students in acquiring construction related summer employment and employment experiences
4. Develop professionalism in students
5. Ensure excellence in teaching through a well-staffed and most-qualified faculty
6. Provide experiential learning and teamwork applications

PROGRAM LEARNING OUTCOMES

The Program has one Learning Outcome: Meet all ACCE (American Council for Construction Education) Student Learning Outcomes (SLOs). Meeting the SLOs provides a consistency of what can be expected in a Bachelor of Science in Construction Management degree from an ACCE- accredited program so that students can compare different programs.

Per ACCE, a graduate shall be able to:

1. Create written communications appropriate to the construction discipline.
2. Create oral presentations appropriate to the construction discipline.
3. Create a construction project safety plan.
4. Create construction project cost estimates.
5. Create construction project schedules.
6. Analyze professional decisions based on ethical principles.
7. Analyze methods, materials, and equipment used to construct projects.
8. Apply electronic-based technology to manage the construction process.
9. Apply basic surveying techniques for construction layout and control.
10. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
11. Understand construction accounting and cost control.
12. Understand construction quality assurance and control.
13. Understand construction project control processes.
14. Understand the legal implications of contract, common, and regulatory law to manage a construction project.
15. Understand the basic principles of sustainable construction.
16. Understand the basic principles of structural behavior.
17. Understand the basic principles of HVAC, electrical and plumbing systems.

ADMISSIONS PROCESS AND STANDARDS

The admission standards of the Program for new students are:

- High School 2.75 GPA on a 4 point scale (2.50 – 2.74 with college approval)
- Minimum composite score of ACT 18/SAT 950, math is an SAT math score of 580 or an ACT math score of 19

Transfer student admission requirements:

- 2.0 College GPA (on a 4.0 scale)
- Minimum 12 credits, including English and Mathematics
- Placement into MATH 120 Trigonometry

Students are accepted into either the AAS Civil Engineering Technology Management degree or the AAS Building Construction Technology Management degree initially.

Students desiring the program but lacking either the GPA or test scores are admitted to the College's Pre-Engineering program (ENTE) while they complete any necessary remedial courses and meet the entry requirements. Once they have achieved this, they may be admitted to the Program.

The program checksheet for the AAS BCTM and AAS CETH degrees which lists the entry requirements and course requirements are available here:

https://catalog.ferris.edu/preview_program.php?catoid=3&poid=1489&returnto=237

Additionally, for entry to the 300 and 400 level CONM courses (which complete the Bachelor degree), the Program requires that students have an overall GPA of 2.5 and have completed their Associate's degree (AAS BCTM, AAS CETH, or AAS ARCH). That includes all 100 and 200 level CONM and all BCTM/CETM/ARCH courses required of the respective AAS degrees, Physics, (2) English classes, and potentially a Trigonometry course (unless the student had already completed higher level math with an Advanced Placement test or had placed into higher level math with their ACT/SAT test scores).

The program checksheet for the BS CONM degree which lists the entry requirements and course requirements is available here:

https://catalog.ferris.edu/preview_program.php?catoid=3&poid=1526&returnto=237

Student Scholarships & Awards

SCHOLARSHIPS

Our students are eligible for many different scholarships offered at Ferris State University. The program manages several scholarships that are dedicated to students enrolled in our program:

- Alton "Andy" and Evelyn Brayton Memorial Scholarship Endowment
- American Society of Professional Estimators Chapter 70 Endowed Scholarship
- American Subcontractors Association of Michigan Endowed Scholarship
- Barton Malow Foundation Scholarship
- Builders Exchange of Grand Rapids & Western Michigan Endowed Scholarship
- Building Bulldogs Scholarship Endowment
- Construction Association of Michigan Don Purdie Memorial Annual Scholarship
- Construction Management Industry Endowment Scholarship
- Duane E. Bremer Endowed Scholarship
- Gerace Construction Endowed Scholarship
- Grand Rapids Chapter of the Construction Specifications Institute "Art Nelson Memorial" Endowed Scholarship
- David L. Hamilton Endowed Scholarship
- Harry Larson Memorial Endowed Scholarship
- Pinnacle Construction Group Endowed Scholarship
- Phillip V and Sylvia M Frederickson Scholarship Endowment
- Pulte Family Foundation Endowed Scholarship
- Rockford Construction Scholarship Endowment
- William "Bill" Scott Roh Superintendent Scholarship Endowment
- John Sebold Memorial Endowed Scholarship
- Robert G. Shilander Scholarship Endowment
- Taggart and Lisa Town Scholarship Endowment
- Wolgast Family Scholarship Endowment

Other outside scholarships that are not managed by the program, but actively seek our students include:

- AACE International Scholarship
- American Concrete Institute
- American Institute of Constructors
- Asphalt Pavement Association of Michigan
- Associated Builders and Contractors
- Associated General Contractors of America (multiple scholarships)
- Builders Foundation Scholarship
- CMAA
- Midwest Roofing Contractors Association
- MITA
- National Association of Women in Construction
- National Housing Endowment Scholarships
- Retail Contractors Association
- Washtenaw Contractors Association Annual Scholarship

[Student Scholarships](#)

AWARDS

Each Spring, the program hosts a luncheon to celebrate student awards, student involvement, and scholarships. Involvement with our different student groups is acknowledged as is participation on our different student competition teams. The Program also presents several awards including:

- Outstanding BCTM Student (2-year degree)
- Outstanding CETM Student (2-year degree)
- Outstanding CONM Student (4-year degree)
- AGC Award (Highest GPA, 4-year degree)
- ABC Award (exceptional student in the program)
- APAM Award (exceptional student, 4-year degree, civil engineering technology focus)
- MK Martin Award (student very involved in program and extra-curricular activities)
- Elzinga & Volkers – Construction Manager (exceptional student leader)
- Ellzinga & Volkers – Resource Manager (exceptional student, particularly in estimating)
- Elzinga & Volkers – Field Manager (exceptional student, particularly in on site activities)

Academic Quality Improvement Program

There are 3 components to our Academic Quality Improvement Plan:

[Strategic Plan](#)

[Assessment Plan](#)

[Assessment
Implementation Plan](#)

CONSTRUCTION TECHNOLOGY & MANAGEMENT STRATEGIC PLAN

Mission:

The mission of the Construction Technology and Management Program is to educate students in Building Construction Technology, Civil Engineering Technology – Highway focus, and Construction Management through a broadly based foundation of applicable technical and general education courses that will provide them with highly competitive skills and knowledge, construction related employment opportunities at graduation, and the potential for advancement in their careers.

The Program has two primary Objectives based on this mission:

- Serve the students
- Serve the industry

The Program is focused on the following to ensure it meets those objectives:

1. Maintain a high quality curriculum content by meeting its accrediting body's Student Learning Outcomes
2. Maintain accreditation of the BS Construction Management by the American Council for Construction Education
3. Serve the employment criterion for the construction industry
4. Assist students in acquiring construction related summer employment and employment experiences
5. Assist graduates in finding construction related employment upon graduation
6. Develop professionalism in the students through multiple opportunities
7. Ensure excellence in teaching through a well-staffed and well-qualified faculty
8. Provide experiential learning and teamwork application opportunities

These fall into three major themes within the Program's Strategic Plan: Transformative Educational Experience, Excellence and Opportunities, and Enrollment

Within these themes are goals, as defined on the next page, that can be measured.

Theme #1 Transformative Educational Experience

- Goal #1 Enhance the classroom experience with more “hands-on” labs
- Goal #2 Increase student participation in industry activities and team competitions
- Goal #3 Promote personal attention in the classroom and through advising
- Goal #4 Increase faculty and equipment resources to enhance classroom experiences
- Goal #5 Keep Program current with industry knowledge requirements

Theme #2 Excellence and Opportunities

- Goal #1 Incorporate ACCE Student Learning Outcomes throughout curriculum
- Goal #2 Maintain accreditation of Program
- Goal #3 Attract and retain highly qualified faculty
- Goal #4 Encourage faculty professional growth to remain current with industry and educational trends
- Goal #5 Hold students to high academic standards

Theme #3 Enrollment

- Goal #1 Maintain consistent enrollment between 270 and 300 students
- Goal #2 Increase enrollment of females
- Goal #3 Increase enrollment of minorities
- Goal #4 Increase Program support resources to keep supplemental costs affordable for students
- Goal #5 Increase scholarships available to younger students that are renewable

Theme #1 Transformative Educational Experience			
Goals	Potential Initiatives and Tactics	Quantitative Metrics	Other Types of Evidence
Enhance the classroom experience with more "hands-on" labs/activities	Revise curriculum to add more labs in the first two years of instruction - DONE	Curriculum revision	
Increase student participation in industry activities and team competition	<p>Hold an internal competition to make it easier for students to participate - MADE OUR SENIOR CAPSTONE COURSE A COMPETITION</p> <p>Procure additional funding to reduce costs for participation - CREATED AN ENDOWMENT</p>		Student feedback in survey
Promote personal attention in the classroom and through advising	Advisor training for faculty (Program Advisors) - ASSIGNED MENTORS FOR NEW FACULTY		Student feedback in survey
Increase faculty and equipment resources to enhance classroom experiences	<p>Implement a campaign to build an endowment to support classroom materials, equipment, site visits - DONE CAMPAIGN IS 75% COMPLETE</p> <p>Pursue grants from foundations</p>	<p>Identify potential donors</p> <p>Identify potential foundations for grants</p> <p>Track potential donor contact</p> <p>Track donations</p>	
Keep Program current with industry knowledge requirements	<p>IAB involvement with curriculum changes</p> <p>Review 2-3 courses at each IAB meeting for content</p> <p>INDUSTRY INSIGHTS DAY</p>		IAB Meeting minutes to confirm discussions

Theme #2 – Excellence and Opportunities			
Goals	Potential Initiatives and Tactics	Quantitative Metrics	Other Types of Evidence
Incorporate ACCE Student Learning Outcomes throughout curriculum	Review all courses for content, revise course learning outcomes, and incorporate ACCE Student Learning Outcomes - DONE	Approved course outlines to include ACCE SLOs clearly identified	
Maintain accreditation of Program	Complete self-study report Host on-site visit of evaluation team	Receive re-accreditation notification	
Attract and retain highly qualified faculty	Provide market-competitive starting salaries - A CHALLENGE Pursue faculty with applicable teaching experience Continue with faculty overloads until appropriate faculty candidate is identified Develop a mentorship plan for new faculty - DONE Provide opportunities for professional development	Comparison of salaries with similar programs Review of resumes or CVs of prospective faculty Student Assessment of Instruction (SAI) results	Encouragement of faculty to seek out professional development opportunities Seek opportunities with IAB members
Encourage faculty professional growth to remain current with industry and educational trends	Continue policy of qualified time off for professional growth Procure additional funding	Track opportunities pursued by faculty	
Hold students to high standards of performance	Increase incoming math requirement Maintain 2.5 GPA required for entry to 300/40 level CONM classes Regular review of assessment results in TracDat	Any changes to admission requirements to be indicated on Program check sheets	

Theme #3 – Enrollment			
Goals	Potential Initiatives and Tactics	Quantitative Metrics	Other Types of Evidence
Maintain consistent enrollment between 270 and 300 students	Visits to career fairs at high schools - DONE Visits to career tech centers - DONE Attend Michigan Construction Career Days and other industry-sponsored events to recruit students - DONE	Fall and Spring 4 th Day counts	
Increase enrollment of females	Create new video featuring current female students to explain why they chose construction management Develop promotional materials that are focused toward females	Track number of female students applying and actually enrolling	
Increase enrollment of minorities	Increase visits to urban school districts for career presentation Develop relationships with focused groups Explore developing relationships with minority contractors and associations to help identify potential students	Track number of minority students applying and actually enrolling	
Increase Program support resources to keep supplemental costs affordable for students	Endowment campaign noted in Theme #1	Same as in Theme #1	

ASSESSMENT PLAN

The Program has two primary Objectives: Serve our students and serve the industry. Both are assessable. The Program has focused on eight items to ensure it meets those objectives.

1. Maintain a high-quality curriculum content by meeting its accrediting body's **Student Learning Outcomes**
2. Maintain accreditation of the BS Construction Management by the American Council for Construction Education
3. Serve the employment criterion for the construction industry
4. Assist students in acquiring construction related summer employment and employment experiences
5. Assist graduates in finding construction related employment upon graduation
6. Develop professionalism in the students through multiple opportunities
7. Ensure excellence in teaching through a well-staffed and well-qualified faculty
8. Provide experiential learning and teamwork application opportunities

The Program Learning Outcome is straightforward: Meet all ACCE Student Learning Outcomes:

- SLO #1 Create written communication appropriate to the construction discipline
- SLO #2 Create oral presentation appropriate to the construction industry
- SLO #3 Create a construction safety plan
- SLO #4 Create construction project cost estimates
- SLO #5 Create construction project schedules
- SLO #6 Analyze professional decisions based on ethical principles
- SLO #7 Analyze methods, materials, and equipment used to construct a project

- SLO #8 Apply electronic-based technology to manage the construction process
- SLO #9 Apply basic surveying techniques for construction layout and control
- SLO #10 Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process
- SLO #11 Understand construction accounting and cost control
- SLO #12 Understand construction quality assurance and control
- SLO #13 Understand construction project control processes
- SLO #14 Understand the legal implications of contract, common, and regulatory law to manage a construction project
- SLO #15 Understand the basic principles of sustainable construction
- SLO #16 Understand the basic principles of structural behavior
- SLO #17 Understand the basic principles of HVAC, electrical, and piping systems

The Program's assessment is conducted via 2 methodologies:

- Programmatic evaluation
- Curricular evaluation

Programmatic evaluation uses surveys and other historical data to create and adjust the program's goals to meet our mission. These are typically indirect measures of assessment.

- Annual student feedback session with the IAB. The comments are reviewed and every attempt is made to address them within the academic year.
- A senior survey is completed each semester in the capstone course. These results are reviewed after the spring semester each year. The results from these surveys are charted to see if any trends emerge from semester to semester.
- Formal IAB and alumni surveys are completed every three years with the two staggered by three years from each other.
 - The IAB surveys allow the Program to determine how well it is meeting industry's needs and specific student skill sets. .
 - The alumni surveys are issued to alumni that have been in industry for 3 or 6 years to assess what they learned through the Program. These results are also charted tracking how alumni opinions change between 3 and 6 years after graduation.
- Review in the fall of summer employment undertaken by students – type of work, type of company, etc.
- Employment of our graduates is evaluated each year with data from the senior survey including:
 - Average starting salary
 - Number of offers
 - Job acceptance
 - Job acceptance title/responsibilities
 - Type of firm the graduate will be joining

Curricular evaluation evaluates individual course learning outcomes. The Program uses the TracDat system to formally track progress of course outcomes being evaluated as a direct assessment.

Each semester faculty load their direct assessment data into TracDat. They review their own courses for the results and immediately address any assessment values below the minimum threshold established by the Program.

The faculty unit meets throughout each semester to review 5-6 classes in depth. This allows each class to be reviewed by the entire unit every three years. This keeps it in sequence with the Grand Rapids cohort of students which is also on a three-year cycle. For the first cycle, the classes are selected following the order of the Program's check sheets. Subsequent cycles will have the 5-6 classes selected randomly. The faculty review: course objectives, content, delivery method (lecture or lecture/lab), classroom needs, equipment needs, software needs, how the course meets any ACCE SLOs.

At the end of the academic year, the faculty meet to review the senior survey (indirect assessment) and the overall curriculum.

Every fall, the junior and senior students meet with the IAB for a feedback session. The results are shared in the IAB meeting. Faculty discuss any issues and possible resolutions at the preceding faculty meeting.

Every year, the Program completes a comprehensive review of the entire process and updated with plans for improvement. This incorporates a review of SLOs in classes being introductory,

2023-2024 Results

Our accrediting body, American Council for Construction Education (ACCE) has 20 Student Learning Outcomes (SLOs) required of graduates from accredited programs.

Each SLO must be assessed at least twice. One method can be direct (such as a homework assignment or a test) and one can be indirect (such as a survey of employers or students)

Direct assessment results are indicated, tracking the percentage of students achieving a specific threshold established for each SLO.

Indirect assessment results are summarized after the direct assessment results

The level of knowledge assessed within an SLO in a course taught in the construction management program is indicated via a letter:

- I = Introductory
- R = Reinforcement
- M = Mastery

The assessment results are reviewed annually by the Construction Technology & Management Program Faculty and revisions to the assessment plan for the SLOs are made accordingly.

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 1	Create written communication appropriate to the construction discipline	I	CONM 111 Construction Practices	Assignment	Complete a daily job journal after lab	Not in place at this time	96%	Criterion Met	Was a previous assignment, but not tied to an SLO	93% rated this 70% or better	Meets or exceeds industry expectations	Criterion Met
		I,R,M	CONM 116 Construction Graphics	Project	Create representations of a structure with the appropriate nomenclature and dimensions in two dimensions by hand	90%	75%	Criterion Met				
		I,R,M	CONM 117 Construction Building Information Technology	Tests - Internal or individual assignments	Manipulate or create word processing documents, spreadsheets, and presentation software	87%	92%	Criterion Met				
		I,R,M	CONM 117 Construction Building Information Technology	Assignment	Create a set of drawings from the 3D model created in class	78%	72%	Criterion Met				
		I	CONM 121 Materials Properties & Testing	Written Product (Lab Report)	Generate lab reports for appropriate tests conducted during labs	83%	98%	Criterion Met				
		M	CONM 424 Construction Safety & Risk Management	Assignment	Write a paper on a construction safety topic including how to implement its recommended safety measures. Create a handout to go with a PPT presentation	Not in place at this time	100%	Criterion Met	New assignment this year			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 2	Create oral presentation appropriate to the construction industry	R	CONM 312 Construction Scheduling	Oral Presentation	Present a construction schedule as a member of a team	Not in place at this time	100%	Criterion Met	Added for the 2023 - 2024 year	93% rated this 70% or better	Meets or exceeds industry expectations	Criterion Met
		R	CONM 321 Construction Estimating II	Oral Presentation	Present your company - background, work type, etc.	Not in place at this time	100%	Criterion Met	Added for the 2023 - 2024 year			
		M	CONM 424 Construction Safety & Risk Management	Oral Presentation	Present on a specific researched safety topic	Not in place at this time	100%	Criterion Met	Added for the 2023 - 2024 year			
		M	CONM 424 Construction Safety & Risk Management	Oral Presentation	Create and present a toolbox talk	73%	100%	Criterion Met				

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 3	Create a construction safety plan	I	CONM 111 Construction Practices	Assignment	Identify safety items in the Practices Lab	Not in place at this time	96%	Criterion Met	Added for the 2023 - 2024 year	100% rated this 70% or better	Meets or exceeds industry expectations. Most companies have executives or ES&H departments write these, but the FSU graduates are effective at implementing them	Criterion Met
		I	CONM 222 Construction Administration	Assignment	Complete the OSHA 30-Hour Construction Certification	Not in place at this time	93%	Criterion Met	Added for the 2023 - 2024 year			
		R	CONM 424 Construction Safety & Risk Management	Assignment	Complete 30 Hours of safety training beyond the OSHA 30-Hour Construction Certification	Not in place at this time	100%	Criterion Met	Added for the 2023 - 2024 year			
		I,R,M	CONM 424 Construction Safety & Risk Management	Assignment	Complete a Job Hazard Analysis for a specific work task	Not in use at this time	100%	Criterion Met	Not previously assessed against SLO 3			
		M	CONM 424 Construction Safety & Risk Management	Assignment	Develop a site specific safety plan	93%	96%	Criterion Met				

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 4	Create construction project cost estimates	I,R	CONM 211 Construction Estimating I	Test - Internal	Complete various quantity takeoffs	87.80%	78%	Criterion Met		73% rated this 70% or better	Meets or exceeds industry expectations	Criterion Met, however, to address the low performance when obtaining estimating data from industry sources, several copies of estimating guides will be made available on reserve in the FLITE library for easy student access
		I,R	CONM 211 Construction Estimating I	Assignment	Obtain estimating data from industry sources	82.90%	62%	Criterion Not Met	Most students are no longer purchasing RS Means due to its high cost			
		I,R	CONM 211 Construction Estimating I	Test - Internal	Complete a bid proposal	77.80%	91%	Criterion Met				
		I,R	CONM 321 Construction Estimating II	Assignment	Create a benchmark study for a project	Not in place at this time	100%	Criterion Met	Added for the 2023 - 2024 year			
		R	CONM 321 Construction Estimating II	Assignment	Create an Excel-based estimating template and conceptual estimate	Not in place at this time	83%	Criterion Met	Added for the 2023 - 2024 year			
		R	CONM 324 Advanced Construction Computer Techniques and Tech	Assignment	Create an estimate using Excel	89%	82%	Criterion Met				
		I,R	CONM 324 Advanced Construction Computer Techniques and Tech	Assignment	Utilize construction specific software to perform take-offs of earthwork related activities.	87.50%	93%	Criterion Met				
		I,R	CONM 324 Advanced Construction Computer Techniques and Tech	Assignment	Utilize construction specific software to perform take-offs of building components	98%	100%	Criterion Met				
		M	CONM 499 Construction Project Management	Written Product	Prepare a project estimate which will be compared with the team members to create a team schedule submission. Individual submission	Not in place at this time	80%	Criterion Met	Assessed individually, effective 2023 - 2024			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 5	Create construction project schedules	I	CONM 222 Construction Administration	Assignment	Identify different scheduling methods, define scheduling terms, estimate the duration of given activities	77.10%	81%	Criterion Met		60% rated this 70% or higher	Meets or exceeds industry expectations	Criterion Met, but ranked low on the senior survey in terms of understanding. Review of course content for a potential curriculum revision to occur in August.
		I,R,M	CONM 312 Construction Scheduling	Assignment	Develop an activity list and activity durations from project drawings	81%	76%	Criterion Met				
		I,R,M	CONM 312 Construction Scheduling	Assignment and Lab Observation	Create a project schedule manually and electronically	88%	76%	Criterion Met				
		M	CONM 499 Construction Project Management	Written Product	Prepare a project schedule which will be compared with the team members to create a team schedule submission. Individual submission	Not in place at this time	86%	Criterion Met	Assessed individually, effective 2023 - 2024			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 6	Analyze professional decisions based on ethical principles	I	CONM 211 Construction Estimating I	Test - Internal	Discuss ethical issues in bidding scenarios	97%	79%	Criterion Met		87% rated this 70% or higher	Meets or exceeds industry expectations	Criterion Met
		I	CONM 311 Foundations & Temporary Structures	Assignment	Explain a case study situation and analyze the lessons to be learned	Not in place at this time	100%	Criterion Met	Not previously assessed against SLO 6			
		R	CONM 424 Safety & Management	Test - Internal	Explain how safety incentives may or may not be an effective means of achieving a zero-accident jobsite	80%	75%	Criterion Met	Evaluation methods changed from assignment to a test question			
		R	CONM 424 Safety & Management	Test - Internal	Analyze safety scenarios for making ethical decisions	Not in use at this time	100%	Criterion Met	Not previously assessed against SLO 6			
		R	CONM 499 Construction Project Management	Assignment	Analyze construction industry ethical situations.	100%	88%	Criterion Met	Evaluation method changed from questions during student presentation to a written assignment			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 7	Analyze methods, materials, and equipment used to construct a project	I	CONM 111 Construction Practices	Assignment	Determine the materials and equipment required to complete a concrete project	Not in place at this time	97%	Criterion Met	Not previously assessed against SLO 7	100% rated this 70% or better	Meets or exceeds industry expectations	Criterion Met
		I	CONM 112 Plans and Specifications	Test - Internal	Analyze drawings and specifications for building components, systems, and construction requirements	87%	84%	Criterion Met				
		I,R	CONM 222 Construction Administration	Test - Internal; Assignment	Produce basic construction documentation	100%	98%	Criterion Met				
		I,R	CONM 222 Construction Administration	Assignment	Determine the cost of a Change Order	100%	98%	Criterion Met				
		I,R	CONM 222 Construction Administration	Assignment	Discuss the requirements of delivering a construction project based on time, cost, or quality (PROCORE Quality certificate)	100%	96%	Criterion Met				
		I	CONM 312 Construction Scheduling	Test - Internal	Perform a resource allocation on a schedule	81%	65%*	Criterion Met	*This was added as a test question instead of an assignment. More time may be allocated to this exercise in lab to increase understanding			
		M	CONM 499 Construction Project Management	Assignment	Create a site management plan	Not in place at this time	91%	Criterion Met	Added for the 2023 - 2024 year			
		M	CONM 499 Construction Project Management	Assignment	Complete a submittal log for a project	Not in place at this time	95%	Criterion Met	Assessed individually, effective 2023 - 2024			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 8	Apply electronic-based technology to manage the construction process	I,R,M	CONM 117 Construction Building Information Technology	Project	Building study project that uses plans and specifications from CONM 112 and includes sitework, architecture, and structural components	78%	78%	Criterion Met		100% rated this 70% or better	Meets or exceeds industry expectations. Graduates are especially competent with BIM/3D modeling	Criterion Met
		I	CONM 211 Construction Estimating I	Assignment	Create a construction estimate using computer software. **	90.90%	100%	Criterion Met				
		I,R	CONM 312 Construction Scheduling	Assignment	Create a project schedule using a scheduling software program **	88%	76%	Criterion Met				
		I	CONM 324 Advanced Construction Computer Techniques and Technology	Assignment	Link and embed information across various MS Office programs	95%	88%	Criterion Met				
		I,R	CONM 324 Advanced Construction Computer Techniques and Technology	Assignment	Utilize construction specific software to perform take-offs of earthwork related activities. **	87.50%	93%	Criterion Met				
		I,R	CONM 324 Advanced Construction Computer Techniques and Technology	Assignment	Utilize construction specific software to perform take-offs of building components **	98%	100%	Criterion Met				

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 9	Apply basic surveying techniques for construction layout and control	I	CONM 111 Construction Practices	Test - Internal	Read the rod and calculate elevations from the rod readings	84%	77%	Criterion Met		73% rated this 70% or better	Meets or exceeds industry expectations. Most of the Program's employers do not conduct actual surveys, but they understand how to work with surveyors and understand interior layouts better than most	Criterion Met. While ranked lower in understanding by the senior students, it appears that their knowledge is adequate for industry.
		I	CONM 122 Construction Surveying & Layout	Written Product (Lab Report)	Lab reports, calculations, and field notes for vertical and horizontal control points	95%	88%	Criterion Met				
		I	CONM 122 Construction Surveying & Layout	Written Product (Lab Report)	Lab reports, calculations, and field notes for construction layout	91%	85%	Criterion Met				
		R	CONM 225 Field Engineering	Written Product (Lab Report)	Establish and calculate horizontal and vertical control points for construction layout	89%	95%	Criterion Met				
		R	CONM 225 Field Engineering	Written Product (Lab Report)	Calculate and perform construction layout	92%	100%	Criterion Met				

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 10	Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process	I	CONM 222 Construction Administration	Assignment and Test - Internal	Complete an organization chart for a CM using a specific type of contract; identify the trade worker with the worker description provided by BLS	82.90%	88%	Criterion Met		93% rated this 70% or better	Meets or exceeds industry expectations	Criterion Met
		I	CONM 222 Construction Administration	Tests - External	Complete 2 PROCORE certificates in either Project Management, Superintending, Field Productivity, Preconstruction or Estimating	77%	97%	Criterion Met				
		R	CONM 499 Construction Project Management	Tests - Internal	Identify roles, responsibilities, and relationships of project delivery methods	Not in place at this time	73%	Criterion Met	Added for the 2023 - 2024 year			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 11	Understand construction accounting and cost control	I	CONM 222 Construction Administration	Assignment	Determine the cost of a Change Order	100%	98%	Criterion Met		86% rated this 70% or better	Meets or exceeds industry expectations	Criterion Met
		I	CONM 312 Construction Scheduling	Tests - Internal	Calculate activity values and cost load the corresponding schedule	93%	71%	Criterion Met				
		I	CONM 321 Construction Estimating II	Assignment	Calculate specific overhead costs and balance/unbalance the bid	95%	100%	Criterion Met				
		I	CONM 321 Construction Estimating II	Assignment	Develop a cash flow projection table	Not in place at this time	100%	Criterion Met	Added for the 2023 - 2024 year			
		R	CONM 499 Construction Project Management	Assignment	Develop a cash flow projection table	Not in place at this time	82%	Criterion Met	Added for the 2023 - 2024 year			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 12	Understand construction quality assurance and control	I	CONM 121 Materials Properties & Testing	Written Product	Generate lab reports for appropriate material property tests conducted during labs	86%	98%*	Criterion Met	*Assessment method changed	53% rated this 70% or better	Meets or exceeds industry expectations for all responses except 1.	While the earlier courses addressed individual portions of quality control, the new curriculum in the capstone course now addresses quality control. Based upon the senior survey, the time spent and in-class lab exercise will be expanded to enhance student comprehension of QA/QC
		I	CONM 212 Soils and Foundations	Lab Assignment	Complete a standard proctor compaction test on a soil sample	88%	98%	Criterion Met				
		I	CONM 222 Construction Administration	Assignment	Discuss the requirements of delivering a construction project based on time, cost, or quality (PROCORE Quality certificate)	100%	96%	Criterion Met				
		I,R	CONM 499 Construction Project Management	Written Product	Complete section of a project QA/QC plan as part of the student team project. Individual submission	N/A	82%	Criterion Met	Content was added to course 2023 - 2024 academic year			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 13	Understand construction project control processes	I	CONM 222 Construction Administration	Assignment	Determine the cost of and write a Change Order	100%	98%	Criterion Met		87% rated this 70% or better	Meets or exceeds industry expectations	Criterion Met
		I	CONM 222 Construction Administration	Tests - External	Complete 2 PROCORE certificates in either Project Management, Superintending, Field Productivity, Preconstruction or Estimating **	Not in use at this time	97%	Criterion Met	Not previously assessed against SLO 13			
		I,R	CONM 312 Construction Scheduling	Tests - Internal	Identify work breakdown schedule characteristics	Not in place at this time	88%	Criterion Met	Not previously assessed against SLO 13			
		I	CONM 312 Construction Scheduling	Tests - Internal	Calculate activity values and cost load the corresponding schedule	93%	71%	Criterion Met				
		R	CONM 499 Construction Project Management	Tests - Internal	Use Earned Value Management to determine schedule variance and cost variance	Not in place at this time	100%	Criterion Met	Added for the 2023 - 2024 year			
		R	CONM 499 Construction Project Management	Assignment	Complete a site management plan **	Not in place at this time	91%	Criterion Met	Added for the 2023 - 2024 year			
		R	CONM 499 Construction Project Management	Assignment	Complete a submittal log	Not in place at this time	95%	Criterion Met	Assessed individually, effective 2023 - 2024			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 14	Understand the legal implications of contract, common, and regulatory law to manage a construction project	I	CONM 222 Construction Administration	Tests - Internal	Identify contractual terms used in the industry	Not in use at this time	86%	Criterion Met	Not previously assessed against SLO 14	73% rated this 70% or better	Meets or exceeds industry expectations. For one company, this SLO does not apply.	Criterion Met, however, senior survey indicates a level of student discomfort with the knowledge required of this SLO. A survey will be sent to recent graduates to understand their concerns.
		I,R	CONM 412 Construction Contracts	Exams	Explain different legal terminology and typical scenarios in construction	78%	94%	Criterion Met				
		I	CONM 424 Construction Safety & Risk Management	Quiz	Understand OSHA's legal role on construction projects	Not in use at this time	100%	Criterion Met	Not previously assessed against SLO 14			
		I	CONM 424 Construction Safety & Risk Management	Assignment	Understand the role played by an OSHA inspector on a construction project	Not in use at this time	100%	Criterion Met	Not previously assessed against SLO 14			

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				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 15	Understand the basic principles of sustainable construction	I	CONM 225 Field Engineering	Test - Internal	Complete Certified Stormwater Operator exam	92%	97%	Criterion Met		87% rated this 70% or better	Meets or exceeds industry expectations	Criterion Met
		I	CONM 499 Construction Project Management	Test - Internal	Identify and recognize sustainable practices in construction	Not in place at this time	100%	Criterion Met	Added for the 2023 - 2024 year			

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 16	Understand the basic principles of structural behavior	I	CONM 212 Soils and Foundations	Lab Assignments	Complete lab tests on soils to determine their liquid limit, plastic limit	74%	99%	Criterion Met		100% rated this 70% or better	Meets or exceeds industry expectations. For one company, this SLO does not apply.	Criterion Met
		I	CONM 212 Soils and Foundations	Lab Assignments	Complete a proctor compaction test on a soils sample*	88%	96%	Criterion Met				
		I	CONM 221 Statics & Structures	Assignments	Apply structural analysis and design methods for different structural members	80%	99%	Criterion Met	Assessment method changed from tests to assignments			
		R	CONM 311 Foundations & Temporary Structures	Assignment	Calculate load, shear, and moment diagrams	88%	87%	Criterion Met				
		R	CONM 311 Foundations & Temporary Structures	Assignment	Calculate form size, tie spacing, and support structure spacing from lateral pressures	96%	92%	Criterion Met				

SLO #	STUDENT LEARNING OUTCOME	Learning Level	COURSE #	Direct Assessment						Indirect Assessment		OVERALL PROGRAM CONCLUSION & RECOMMENDATION
				METHOD	ASSESSMENT (** denotes assessment used for multiple SLOs)	2022 - 2023 Results X% achieving a 70% or better	2023 - 2024 Results X% achieving a 70% or better	Course Result Criterion Analysis	Comments	SENIOR SURVEY	INDUSTRY SURVEY	
SLO 17	Understand the basic principles of HVAC, electrical, and plumbing systems	I	CONM 112 Plans and Specifications	Lab Assignment	Identify different components of construction electrical systems	89%	92%	Criterion Met		93% rated this 70% or better	Meets or exceeds industry expectations. For one company, this SLO does not apply.	Criterion Met. This SLO is enhanced by two BCTM courses taken by students in the AAS BCTM degree which supports the Program Objectives. The BCTM courses are not taken by those students in the AAS CETH (civil technology degree) as they are not applicable for road and bridge construction
		I	CONM 112 Plans and Specifications	Lab Assignment	Identify different components of construction mechanical systems	90%	92%	Criterion Met				
		I	CONM 321 Conceptual Estimating II	Assignment	Complete a conceptual estimate for HVAC and Plumbing systems	Not in place at this time	96%	Criterion Met	Added for the 2023 - 2024 year			
		I	CONM 321 Conceptual Estimating II	Assignment	Complete a conceptual estimate for fire protection and electrical systems	Not in place at this time	91%	Criterion Met	Added for the 2023 - 2024 year			