2022 Annual Performance Report
Undergraduate Programs

Department/Program: Construction

Date submitted: October 19, 2022

Person(s) submitting report: John Cabage and CNST Department Faculty

This program:
___is taught entirely online
___utilizes distance education*
_X_does not have any online courses

*(Distance education is defined by the Higher Learning Commission here https://www.hlcommission.org/General/glossary.html).

STUDENT LEARNING (Questions 1 – 6)

1. Please copy and paste the table from your assessment plan here that provides student learning outcomes, measures, and targets. The program student learning outcomes should align with SIUE's Objectives for the Baccalaureate Degree.

SIUE's Objectives for the Baccalaureate Degree		Program Studies Learning Objective	Performance Indicator or Measure	When is the Measure Assessed?	Program Target
Analytics, Problem Solving, and Decision-Making Skills	Information Literacy	SLO #1 and 2	Senior Project	CNST 452 Senior Assignment	90%
	Qualitative Literacy	SLO #4 and 19	Exams	CNST 241, 451	90%
	Ability to Understand and Interpret Written and Oral Text	SLO #12, 16, 17	Exams	CNST 411	80%
	Ability to Recognize, Develop, Evaluate, and Defend or Attack Hypotheses	SLO #1, 2, 6, 7	Exams and Senior Project	CNST 403 and 452 Senior Assignment	90%
Oral and Written Communication Skills	Written Communications	SLO #1	Senior Project	CNST 210/211 and CNST 452	90%
	Oral Communications	SLO #2	Senior Project	CNST 210/211 and CNST 452	90%
Foundation in Liberal Arts and Sciences		SLO #1 and 2	Senior Project	CNST 452 Senior Assignment	90%
Value of Diversity		SLO #9	Senior Project	CNST 452 Senior Assignment	90%
Scientific Literacy		SLO #19 and 20	Exams	CNST 321 and 332	80%

Ethics	SLO #6	Projects	CNST 351 and 452 Senior Assignment	85%
Preparation in Academic Discipline	SLO #9	Senior Project	CNST 452 Senior Assignment	90%

a. . Has the program changed its assessment plan and process?

- □ *Yes*
- □ *No*

If yes, provide a summary of the changes and attach the program's revised assessment plan.

Note: The assessment plan will be updated when the surveying & geomatics major and construction program curriculum refresh are approved. The update is anticipated in the academic year ending Spring 2024.

2. Please provide data from your assessment measures illustrating trends over the past 2 years. Include summarized data for all program assessments. *This section should show results of student learning for each assessment included in the table above (data should be added for each learning objective and indicators)*[1]. You may attach tables summarizing the data and provide a brief narrative describing the specific findings*.

The Student Learning Outcomes Table is in Appendix A and the Assessment and Analysis Table is included in Appendix B. These tables are taken directly from the program assessment plan.

Appendix C includes the table labeled SLO's, CLO Assessment Tools, Targets and Data. The most pressing area of concern was with SLO 13 and SLO 14. These declined significantly. Whereas exam questions were used historically to monitor these SLOs, the pool of students taking the class was expanded. In the past only those getting the certified project manager certificate took the test and this year all students either took the AIC test or a comprehensive final which included questions relating to these SLOs. The broader pool points to the fact that we need to improve instruction in these areas.

This was also apparent with our employer survey. 80% of the respondents said our students were adequately prepared in SLO 13 & 14. These are the lowest categories amongst all the SLOs.

Further emphasis needs to be placed upon SLO 3, 4,6,12, 13, 14, and 19. The department restructured its academic offering this year and a new curriculum refresh is working through the approval process. It is at the Provost 2 level for approval and we anticipate rolling it our next year. The hope is that with a more concentrated construction management curriculum some of these SLOs will improve in the long term. Short term instruction emphasis will occur in the interim.

*If there are any student learning outcomes that suggest potential concerns, please list these in the Continuous Improvement Log (question 6) and describe how these will be monitored.

[1] Data should be aggregated. Do not include student identifiers.

3. Please complete the following table with overall results from the Senior Assignment:

Semester	Number of Students Completing the Senior Assignment	Number of students exceeding expectations	Number of students meeting expectations	Number of students NOT meeting expectations
Summer 2021	0	NA	NA	NA
Fall 2021	11	8	3	0
Spring 2022	16	13	3	0
Total for AY 21-22	27	21	6	0

Note: The senior assignment expectations includes more than just the gen expectations listed below in number 4. When we compare the table in number 3 to the industry employer survey, these results correlate well.

4. Please complete the following table with Senior Assignment results related to the Objectives for the Baccalaureate degree. Please include data for all students completing the Senior Assignment in your program in AY 20-21 (e.g., Summer 2021– Spring 2022)

Objective		Number of students where this objective was measured*	Percentage of students exceeding expectations	Percentage of students meeting expectations	Percentage of students NOT meeting expectations
Analytics, Problem Solving, and Decision-Making Skills	**Information Literacy**	26	38.5%	46.1%	15.4%
	Qualitative Literacy	26	26.9%	34.6	38.5%
	Interpret Text	26	26.9%	30.8%	42.3%
	Defend/Attack Hypotheses	26	15.4%	30.8%	53.8%
Oral and Written Communication Skills	**Written Communication**	27	74.1%	25.9%	0
	Oral Communication	27	44.4%	55.6%	0
Foundation in Liberal Arts and Sciences		26	38.5%	46.2%	15.3%
Value of Diversity		27	100%	0%	0%
Scientific Literacy		26	19.2%	38.5%	42.3%
Ethics		26	38.5%	34.6%	26.95
Preparation in Academic Discipline		27	81.5%	14.8%	0%

*Please, provide exact headcount.

5. After reviewing the assessment results the department has decided to: (check one)
   - □ **Stay the course and continue to monitor;** we're satisfied that the program is preparing students to meet the benchmarks/ outcomes/goals.
   - □ **Monitor the results and investigate causes;** we may need to make changes but need more information to make that decision. Lis below what you plan to investigate.
   - □ **Make changes.** List changes below.

Comments:

While our department is satisfied that our students are overwhelmingly meeting the employment needs of industry, we are not meeting the demands for the number of construction professionals within the workplace. Additionally, changes in technology require future construction professionals to be academically trained to meet the productivity expectations of the financial stakeholders driving the industry.

We anticipate the new programs that the faculty are initiating, the surveying & geomatics major, construction curriculum refresh, surveying minor, construction management graduate program, etc. will allow us to better leverage our existing program and generate additional students for the Illinois workforce.

6. Please complete the **Continuous Improvement Log** regarding the program's continuous improvement activities. Write a brief summary of continuous improvement efforts undertaken by the program in last fiscal year.

Continuous Improvement Log

What have you identified in your assessment data or other information that you are looking into further?	**What specific data or evidence was used to identify the problem?**	**What is the source of the evidence or data?**	**What action(s) have been taken or solutions identified to promote improvement?**	**When did the action(s) occur?**	**What are the results of the change(s) or improvement(s)? Provide evidence demonstrating the outcome.** If there is not yet evidence to demonstrate change, what anticipated outcomes do you expect?
Items Identified Last Year					
Curriculum Refresh	Survey of other schools and comments from industry partners.	Internet website searches	The faculty developed a new curriculum package for construction management over the last academic year. This package addresses the issues of risk management, estimating enhancement, virtual design and technology curriculum enhancements identified by industry and faculty.	The package was submitted on June 29, 2022, and has been approved by the Dean of the School of Engineering. It has been submitted for review to the Provost 2 level, Zenia Augustine, at this time.	It is anticipated that these changes will be implemented beginning Fall 2023. These changes will be leveraged to encourage student recruitment and curriculum competitiveness.

What have you identified in your assessment data or other information that you are looking into further?	What specific data or evidence was used to identify the problem?	What is the source of the evidence or data?	What action(s) have been taken or solutions identified to promote improvement?	When did the action(s) occur?	What are the results of the change(s) or improvement(s)? Provide evidence demonstrating the outcome. If there is not yet evidence to demonstrate change, what anticipated outcomes do you expect?
Site Safety Plans (SLO 3)	Faculty Assessment Review	Assessment Data for 2019-20	A recommendation by faculty to include OSHA 10 training as a curriculum requirement	The OSHA 10 class is being offered to students free of charge by the Southern Illinois Builders Association this semester. Requirement recommendation to be pursued this academic year.	Improvement in SLO 3.
CNST 451 needs updating	Faculty Assessment Review	Assessment Data for 2019-20	The curriculum refresh includes an update for this course breaking it into two courses and placing a scheduling course between the two.	Package in review at Provost 2 level currently.	Improvement in SLO 4 & 12.
Items Identified This Year by Faculty					

What have you identified in your assessment data or other information that you are looking into further?	What specific data or evidence was used to identify the problem?	What is the source of the evidence or data?	What action(s) have been taken or solutions identified to promote improvement?	When did the action(s) occur?	What are the results of the change(s) or improvement(s)? Provide evidence demonstrating the outcome. If there is not yet evidence to demonstrate change, what anticipated outcomes do you expect?
Risk Management to be better emphasized in curriculum (SLO 13)	Faculty Assessment Review	Employer survey and exam questions in CNST 452	Include more lectures about risk management in CNST 452 until the curriculum refresh is adopted in which Risk Management is a complete course	Fall 2021 and Spring 2022	Improvement in SLO 13
Construction project controls needs emphasis. (SLO 14)	Faculty Assessment Review	Exam questions in CNST 452	Currently, project controls is an elective. The plan is to encourage more students to enroll in this course and to introduce project controls topics in CNST 452	Fall 2021 and Spring 2022	Improvement in SLO 14
More emphasis on Project Delivery (SLO 12)	Faculty Assessment Review	Exam questions in CNST 452	Project delivery is addressed in multiple courses. Faculty will be stressing the importance of these topics through more assignments especially in CNST 451 and 403.	Fall 2021 and Spring 2022	Improvement in SLO 12

What have you identified in your assessment data or other information that you are looking into further?	What specific data or evidence was used to identify the problem?	What is the source of the evidence or data?	What action(s) have been taken or solutions identified to promote improvement?	When did the action(s) occur?	What are the results of the change(s) or improvement(s)? Provide evidence demonstrating the outcome. If there is not yet evidence to demonstrate change, what anticipated outcomes do you expect?
Structural Behavior needs more emphasis. (SLO 19)	Faculty Assessment Review	Exam questions in CNST 452	The curriculum refresh will address this issue. Until the refresh is adopted, tutoring or extra exercise sessions could help address this issue.	Fall 2021 and Spring 2022	Improvement in SLO 19
Coop and work-study experiences to be formalized.	Faculty Assessment Review	COVID limited this type of event	Work with Industry Advisory Board to make plans.	Fall 2021 and Spring 2022	None yet.
Study Abroad reinstated.	Faculty Assessment Review	COVID cancelled this type of event	Faculty to make plans to reinstate	Fall and Spring 2022	Expect a broader view of international concerns
Emphasis on student competitions.	Faculty Assessment Review	COVID limited this type of event	Students attending ACI competition	October 22 - 24	Heightened student engagement
Undergraduate research opportunities emphasized	Faculty Assessment Review	No URCA funding recently	URCA presentations in CNST 211, Faculty encouraged to apply	Fall 2022	None yet.

What have you identified in your assessment data or other information that you are looking into further?	What specific data or evidence was used to identify the problem?	What is the source of the evidence or data?	What action(s) have been taken or solutions identified to promote improvement?	When did the action(s) occur?	What are the results of the change(s) or improvement(s)? Provide evidence demonstrating the outcome. If there is not yet evidence to demonstrate change, what anticipated outcomes do you expect?
Roll out plan for new surveying major program	Dean' s Requirement	Request from Dean	Faculty retreat scheduled to develop plan	Scheduled for November 4th	None yet.
Roll out plan for construction management refresh	Dean's Requirement	Request from Dean	Faculty retreat scheduled to develop plan	Scheduled for November 4th	None yet.
Development of a Construction Management Graduate Program	Industry Advisory Board Recommendation	Request from Dean	Faculty retreat scheduled to develop plan	Scheduled for November 4th	None yet.
Development of a Surveying Minor	Request from Civil Engineering and Illinois Professional Land Surveyor's Association	Request from Civil Engineering	Paperwork to be prepared	Christmas Break 2022	None yet.

ONLINE ASSESSMENT – (Question 7) Complete this section if you have at least one online course in your program; if you only have traditional or hybrid courses, please move to Enrollment and Completion

7. Complete the table below for **all online courses** in your program offered during this academic year. If there is no similar traditional course to the online course, include 'NA' in the appropriate cells. **If there are substantial differences between online and traditional courses, please include comments and/or plans for resolution.**

Course number	Are the course objectives the same as the traditional format course? (Y, N, NA)	Of the students that enrolled, what percent completed the online course with a C or better?	Of the students that enrolled in the same course but in traditional format, what percent of students completed the traditional course with a C or better?	How do you ensure that this course is coherent, cohesive, and comparable in academic rigor to the traditional format course?	Were there any difficulties experienced in offering this course online?
CNST 403	Yes	73%	A new instructor taught this course. This will be assessed after Fall 2022.	The course was half online, half on campus. I kept the lectures that required more interactions to the physical classes, and lectures that were math heavy to online recorded classes.	Yes. A lot of students were at their jobs during the lectures and refused to turn on their cameras and interact, Therefore, they missed a lot of information and fell behind in the physical class the other day of the week. Even with recorded lectures, many students did not watch them. That led to them not grasping the material and held the entire class back. This led to very mixed evaluations at the end, where some students said they did not learn a lot because of the slow pace, and other students (those who were not interacting) said I was teaching too fast and was not responsive to their questions. I personally would not recommend this half/half approach again, either all on campus or all online would be better.

Course number	Are the course objectives the same as the traditional format course? (Y, N, NA)	Of the students that enrolled, what percent completed the online course with a C or better?	Of the students that enrolled in the same course but in traditional format, what percent of students completed the traditional course with a C or better?	How do you ensure that this course is coherent, cohesive, and comparable in academic rigor to the traditional format course?	Were there any difficulties experienced in offering this course online?
CNST 451	Yes	81%	A new instructor taught this course. This will be assessed after Fall 2022.	The course was half online, half on campus. I kept the lectures that required more interactions to the physical classes, and lectures that were math heavy to online recorded classes.	Yes. A lot of students were at their jobs during the lectures and refused to turn on their cameras and interact, Therefore, they missed a lot of information and fell behind in the physical class the other day of the week. Even with recorded lectures, many students did not watch them. That led to them not grasping the material and held the entire class back. This led to very mixed evaluations at the end, where some students said they did not learn a lot because of the slow pace, and other students (those who were not interacting) said I was teaching too fast and was not responsive to their questions. I personally would not recommend this half/half approach again, either all on campus or all online would be better.
CNST 442	Yes	93% in Summer 2021, 77% in Fall 2021, 67% in Fall 2020, 100% in Summer 2020	83% in Summer 2019, 92% in Fall 2019	(1) I used Zoom for both lectures and labs and provided the recordings to students who want to practice after class. (2) During the labs, I asked students to share their	Yes, especially during the regular spring or fall semesters since they will put other face to face courses as priority and usually don't have time to work on this course. A little better during the summer semester because they don't have other courses at the same time, and they usually work on the

Course number	Are the course objectives the same as the traditional format course? (Y, N, NA)	Of the students that enrolled, what percent completed the online course with a C or better?	Of the students that enrolled in the same course but in traditional format, what percent of students completed the traditional course with a C or better?	How do you ensure that this course is coherent, cohesive, and comparable in academic rigor to the traditional format course?	Were there any difficulties experienced in offering this course online?
				screen and make sure everyone was on the same page. (3) Students can access BIM software via V-Lab, and practice as much as they want. (4) Team project was broken down to several sub tasks, and the entire dependency and workflow was clearly explained to students, so they could work together very efficiently to finish the team project on time.	assignments, labs, and projects during the weekends. In general, if considering the online teaching approach, summer is fine, regular semesters not good.

7a. Where applicable, what strategies did you use to improve courses offered in online formats?

The online courses were offered because of COVID. The intention is to offer the courses as F2F in the future. The department is investigating using online coursework in the development of a construction management graduate program in the future.

ENROLLMENT AND COMPLETION – (Questions 8 – 11)

8. If applicable, please describe the Department's contributions to:
   - General Education
   - Other Programs
   - Other

The department contributes to other programs by allowing various instructors to teach courses within Civil, Mechanical, and Industrial Engineering. Our curriculum has interwoven the SIUE objective for analytics, communication, liberal arts, diversity, and ethics. Our coursework has an appropriate amount of rigor based upon the results of our employer's survey, but with technology and industrial emphasis shifts, the faculty has responded by creating the curriculum refresh which is in the approval process. This should enhance learning as it relates to the scholar-learner model.

Our program partners with the School of Business by folding into the curriculum a business minor. In the future, we will be rolling out a Surveying and Geomatics Major which combines surveying classes within the department and classes within geography to create a new degree for professional land surveyors and geospatial partners. This program is unique and the only one of its kind within 400 miles of the St Louis area.

In addition, we collaborate with liberal studies and the sustainable community's collaborative so that the students apply their learning towards improving equity in our Metro East community.

About 40% of the students in our classrooms are listed as other majors. Because of this the impact of our program relative to the economic and academic health of the university is underestimated.

9. Please complete the enrollment table and describe how the program is addressing these trends. The response should outline any curricular decisions or external factors that have led to changes in enrollment. If the change in enrollment potentially affects student learning, please describe the issues at stake. Use this link to find degrees granted and enrollment: http://www.siue.edu/inrs/factbook/annex.shtml

		FY 18	FY 19	FY 20	FY 21	FY 22
# degrees granted	From Fact Book	20	21	25	27	26
# of students enrolled (Fall)	In Major from Fact Book	58	58	59	48	50
	Pre ENGR	44	48	48	43	30
	CE				19	24
	CAS				22	28
	Total Taught in Program				121	132
Optimal enrollment				130	130	120

Description of enrollment and retention trends:

10. Describe what support the program might need to reach its optimal enrollment.

The Dean's office this year has affixed 120 students as the optimal enrollment as compared to the number of students in the major and the number of pre-engineering students earmarked for the program. Currently, we have a student count with this parameter of 80 students and the goal is to increase it by 50%.

The faculty of the department anticipate that with the inclusion of the Surveying & Geomatics Program, refresh of curriculum and associated marketing leveraging, development of a graduate program and surveying minor, we should be able to increase the head count towards the goal and beyond.

11. Please comment on graduation and retention rates. Describe whether the program has any concerns about retaining students in the program and discuss whether there are any potential barriers to completion that might need to be addressed. Please, include a discussion of any high impact practices with a specific lens on serving under-represented minority students.

There are currently 108 students earmarked for the construction management program as of FY 22. Four students were identified as not returning to finish their course work this year. They are listed as follows:

LITZENBURG, DYLAN G.	800684166	CNST	dlitzen@siue.edu	JR
LUGGE, JACK	800635006	CNST	jalugge@siue.edu	JR
PARROTT, SILAS R.	800698476	CNST	siparro@siue.edu	SO
ROSE, GAVIN M.	800712674	CNST	garose@siue.edu	SO

Attempts were made to contact each of these students by the department chair without success. Conversation did occur with Jack Lugge in the Spring. He was full-time employed by a union contractor and was finding it difficult to work a remote travelling union job and attend school.

Three other students who initially signed up for our CNST 120 class in Fall of 2022 and then left the class were identified by the department. These are as follows:

Downey, DeAndre L.	800543654	CAS	dedowne@siue.edu
AGIN, CONNOR B.	800745401	ENGR	cagin@siue.edu
GALASKE, PATRICK S.	800678184	ENGR	pgalask@siue.edu

DeAndre is currently listed as a student in CAS and is taking general education classes. Connor did not attend the university, and Patrick is listed as being in the School of Engineering. Based upon our available data our retainage from last year to this one is 95%.

The faculty actively reports students with academic deficiencies to Starfish and to the department chair. Both the department and academic advising counselling help students understand and follow the best pathway toward graduation. We have not identified any concerns at this point.

EXPERIENTIAL EDUCATION – (Question 12)

12. Experiential learning entails learning by doing, reflecting upon the learning, and feedback. Please complete the following table with information about any of the listed activities where students participate in experiences that allow for structured practice with real world problems or scenarios, they reflect on their practice, and they receive feedback. Please include activities only once in the table if they meet multiple categories. For example, if a practicum includes simulation, include the activity only under practicum or simulation, but not both. Please, report this data based on FY 22.

Activity	**List the course or courses where this activity occurred if applicable - does not have to be part of a course* and the term**	**Brief description of the activity**	**Number of students that participated**	**Number of hours spent on the activity per student.**	**Note if this is required or an elective in the program (R or E)**
Case Studies	CNST 451L	Estimating the cost of an airport building addition	20	20	R
	CNST 451L Spring 2022	Full construction cost estimate for a residential duplex house	7	15	R
		Full construction cost estimate for a High School Classroom Building Addition	7	30	R
	CNST 495 Summer 2022	Weekly case studies of LEED sustainable or green buildings	9	20	E
Client-based projects	CNST 452	Proposals for the revitalization of the Katherine Dunham Residences in East St Louis.	11	40	R

Activity	List the course or courses where this activity occurred if applicable - does not have to be part of a course* and the term	Brief description of the activity	Number of students that participated	Number of hours spent on the activity per student.	Note if this is required or an elective in the program (R or E)
		Feasibility study for the building of a walkway and visitor center for the Katherine Dunham Museum.	4	40	R
		Site plan and recommendation for the economic development of property near the Katherine Dunham complex.	5	40	R
		Design and presentation of a theatrical stage as part of the Katherine Dunham Museum.	4	40	R
Clinical experiences	None				
Competition/Exhibition	Engineering Atrium	Capstone Project Exhibition associated with engineering showcase.	17	4	R
Co-ops	None				
Fellowships	None				
Field Trips	Construction Club	Contegra Tilt-up Project Center Grove, Edwardsville	18	3	E

Activity	List the course or courses where this activity occurred if applicable - does not have to be part of a course* and the term	Brief description of the activity	Number of students that participated	Number of hours spent on the activity per student.	Note if this is required or an elective in the program (R or E)
	Construction Club	Boeing Drone Manufacturing Plant Construction Site, Paric Construction, Mid-America Airport	15	3	E
	Construction Club	Neuroscience Center Washington University Construction Site, McCarthy Building Company, St Louis, Mo.	15	4	E
Field Work	CNST 495 (Spring 2022)	Field drone flight	24	6	E
	CNST 452	Pfund Construction Project Hwy 157, Edwardsville	11	2.5	R
	CNST 452	Katherine Dunham jobsite walkthrough tours	17	3	R
Internships for Credit	CNST/SURV 470	Internship	36	300	R
Laboratory Work	CNST 210	ASTM Testing Labs	25	2	R
	CNST 211	ASTM Testing Labs			

Activity	List the course or courses where this activity occurred if applicable - does not have to be part of a course* and the term	Brief description of the activity	Number of students that participated	Number of hours spent on the activity per student.	Note if this is required or an elective in the program (R or E)
	CNST 301	ASTM testing labs to determine unit weight, specific gravity, gradation, Atterberg limits, permeability, and compaction properties of a soil sample. 5 activities total.	19	20	R
	CNST 353 (Spring 2022)	Computer Labs in AutoCAD, Excel, Bluebeam, Procore	24	40	R
	CNST 495 (Spring 2022)	Computer Labs for Photogrammetry, Point clouds, and mapping	12	40	E
	CNST 451L	15 Estimation Labs geared towards solving estimating problems and learning software tools	27	27	R
Learning Communities	CNST 452	Proposals for the revitalization of the Katherine Dunham Residences in East St Louis.	11	40	R

Activity	List the course or courses where this activity occurred if applicable - does not have to be part of a course* and the term	Brief description of the activity	Number of students that participated	Number of hours spent on the activity per student.	Note if this is required or an elective in the program (R or E)
		Feasibility study for the building of a walkway and visitor center for the Katherine Dunham Museum.	4	40	R
		Site plan and recommendation for the economic development of property near the Katherine Dunham complex.	5	40	R
		Design and presentation of a theatrical stage as part of the Katherine Dunham Museum.	4	40	R
Performances	None				
Practicums	None				
Service Learning/Community Service	CNST 452	Proposals for the revitalization of the Katherine Dunham Residences in East St Louis.	11	40	R

Activity	List the course or courses where this activity occurred if applicable - does not have to be part of a course* and the term	Brief description of the activity	Number of students that participated	Number of hours spent on the activity per student.	Note if this is required or an elective in the program (R or E)
		Feasibility study for the building of a walkway and visitor center for the Katherine Dunham Museum.	4	40	R
		Site plan and recommendation for the economic development of property near the Katherine Dunham complex.	5	40	R
		Design and presentation of a theatrical stage as part of the Katherine Dunham Museum.	4	40	R
Simulations	CNST 495	Develop working BIM models and run coordination simulations.	5	45	E
	CNST 403	Develop scheduling simulations to monitor project progress	32	25	R

Activity	List the course or courses where this activity occurred if applicable - does not have to be part of a course* and the term	Brief description of the activity	Number of students that participated	Number of hours spent on the activity per student.	Note if this is required or an elective in the program (R or E)
	CNST 442 (Fall 2021)	Work on a student dorm BIM building model by running clash detection and estimations.	13	40	E
Student Teaching	None				
Study Abroad	None				
Supervised Training	None				
Undergraduate Research	None				
Volunteer Experiences	Constructor's Club	Work with Habitat for Humanity	10	4	E
Writing Intensive Courses	None				

**This may include department/school/student organization activities as well.*

Appendix A - Student Learning Outcomes Table

Learning Outcomes
Students Will:
1. Create written communications appropriate to the construction discipline.
2. Create oral presentations appropriate to the construction discipline.
3. Create a construction safety plan.
4. Create construction project cost estimates.
5. Create construction project schedules.
6. Analyze professional decisions based upon ethical principles.
7. Analyze construction documents for planning and management of construction processes.
8. Analyze methods, materials, and equipment used for construction projects.
9. Apply construction management skills as a member of a multi-disciplinary team.
10. Apply electronic-based technology to manage the construction process.
11. Apply basic surveying techniques for construction layout and control.
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
13. Understand construction risk management.
14. Understand construction accounting and cost control.
15. Understand construction quality assurance and control.
16. Understand construction control processes.
17. Understand the legal implications of contracts, common, and regulatory law to manage a construction project.
18. Understand the principle of sustainable construction.
19. Understand the basic principles of structural behavior.
20. Understand the basic principles of mechanical, electrical and piping systems.

Appendix B - Assessment and Analysis Table

Outcome	***Outcome will be assessed by:***
1. Create written communications appropriate to the construction discipline.	Written reports submitted in CNST 211 and senior project documentation in CNST 452.
2. Create oral presentations appropriate to the construction discipline.	Project presentation in CNST 210 and senior project presentation in CNST 452.
3. Create a construction safety plan.	Assignment in CNST 470.
4. Create construction project cost estimates.	Assignment in CNST 451.
5. Create construction project schedules.	Assignment in CNST 403.
6. Analyze professional decisions based upon ethical principles.	Assignment in CNST 351.
7. Analyze construction documents for planning and management of construction processes.	Assignment in CNST 341.
8. Analyze methods, materials, and equipment used for construction projects.	Assignments in CNST 210 and 301.
9. Apply construction management skills as a member of a multi-disciplinary team.	Senior assignment in CNST 452.
10. Apply electronic-based technology to manage the construction process.	Exam in CNST 353.
11. Apply basic surveying techniques for construction layout and control.	Performance in SURV 264.
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.	Performance in CNST 452.
13. Understand construction risk management.	Performance in CNST 452.
14. Understand construction accounting and cost control.	Performance in CNST 452.
15. Understand construction quality assurance and control.	Assignments in CNST 210 and 301.
16. Understand construction control processes.	Exam in CNST 403.
17. Understand the legal implications of contracts, common, and regulatory law to manage a construction project.	Exam in CNST 411.
18. Understand the principle of sustainable construction.	Assignment in CNST 210.
19. Understand the basic principles of structural behavior.	Performance in CNST 351.
20. Understand the basic principles of mechanical, electrical and piping systems.	Exams in CNST 321 and 332.
All learning outcomes.	Capstone course, senior exam, AIC Exam, exit interviews, employer survey, and alumni survey.

Appendix C - SLO/CLO Assessment Tools

#	ACCE Student Learning Outcomes	Course CLO			Data (Percentage Exceeding Threshold)								
		Course	CLO Assessment Tool	Threshold (%)	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Comments
1	Create written communications appropriate to the construction discipline.	CNST 211	Project Report	80	100	---	79	---	100	---			
		CNST 351	Project Report	80	100	---	100	---	61	---			
		CNST 452	Senior Project Report	90	100	100	73	100	100	100			
2	Create Oral Presentations appropriate to the construction discipline.	CNST 210	Project Report	80	100	---	91	---	---	88			
		CNST 351	Project Report	80	100	---	91	---	96	---			
		CNST 452	Senior Project Report	95	100	100	100	100	100	100			
3	Create a construction project safety plan.	CNST 452	Senior Project Report	95	100	100	100	100	64	---			Measured Spring 2022 by Exam Questions and project reports. The new curriculum refresh will emphasize safety in the workplace to a larger degree. When the program assessment plan is updated testing and project reporting will be used to evaluate this SLO.

#	ACCE Student Learning Outcomes	Course CLO			Data (Percentage Exceeding Threshold)								
		Course	CLO Assessment Tool	Threshold (%)	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Comments
4	Create a construction project cost estimate	CNST 451	Class Project	85	83	100	75	100	100	100			About 90% of our surveyed employers state that our students entered the workplace with appropriate estimating skills. The curriculum refresh adds a second core estimating class to further improve this SLO.
5	Create construction project schedules.	CNST 403	Class Project	70	100	60	72	100	80	---			
6	Analyze professional decisions based upon ethical principles.	CNST 351	Project Presentations	70	100	---	91	---	61*	---			For CNST 452 the Fall 2021 scores were measured using AIC Exam. Students Scored 71.4% versus National Average of 71.6%. In Spring 2022 the students were measured using a faculty-created exam. Students scored 75% on questions within this category. Beginning Fall 2022 additional case studies examining ethics in construction were added to improve performance in this area. The new risk management course offered as part of the curriculum refresh will further emphasize this outcome. *COVID-related
		CNST 452	Assignment	85	100	80	100	100	71.4	75			

#	ACCE Student Learning Outcomes	Course CLO			Data (Percentage Exceeding Threshold)								
		Course	CLO Assessment Tool	Threshold (%)	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Comments
7	Analyze construction documents for planning and management of construction processes.	CNST 341	Exam Questions	80	67	94	93	82	87.5	100			
		CNST 403	Class Project	70	100	60	61	---	91	---			
8	Analyze methods, materials, and equipment used to construct projects.	CNST 211	Exam Questions	80	---	62	86	---	93.3	---			*Offered online due to COVID. Class better taught as F2F.
		CNST 351	Exam Questions	70	100	---	97	---	54*	---			
		CNST 301	Exam Questions	70	---	88	---	81	---	70			
9	Apply (understand) construction management skills as a member of a multidisciplinary team.	CNST 452	Senior Project Report	95	100	100	73	100	100	100			
10	Apply electronic - based technology to manage the construction process.	CNST 353	Exam Questions	80	---	87.5	---	97	---	92			

#	ACCE Student Learning Outcomes	Course CLO			Data (Percentage Exceeding Threshold)								
		Course	CLO Assessment Tool	Threshold (%)	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Comments
11	Apply basic surveying techniques for construction layout and control.	SURV 264	Assignment	70	100	100	93	---	88	84			
12	Understand different methods of project delivery and roles and responsibilities	CNST 452	Exam Questions	80	100	100	100	100	75	61			In Fall 2022, we introduced case studies prepared by the Associated General Contractors to emphasize this SLO.
13	Understand construction risk management.	CNST 451	Exam Questions	70	---	---	---	100	*	*			* Not Measured. This requirement will be removed from this class with the updated assessment plan necessitated by the curriculum refresh. This SLO was measured by exam questions and identified as a problem area by our industry partners.
		CNST 452	Exam Questions	80	100	100	100	100	15	15			
14	Understand construction accounting and cost control.	CNST 452	Exam Questions	80	100	100	80	81.8	14	14			The refresh will divide estimating into two classes to further emphasize these concepts.
15	Understand construction quality assurance and quality control.	CNST 210	Exam Questions	80	---	78	---	100	---	100			
		CNST 301	Exam Questions	70	---	88	---	81	---	80			

#	ACCE Student Learning Outcomes	Course CLO			Data (Percentage Exceeding Threshold)								
		Course	CLO Assessment Tool	Threshold (%)	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Comments
16	Understand construction project control processes.	CNST 403	Exam Questions	70	63	100	89	---	91	---			
17	Understand legal implications of contract, common, and regulatory law to manage a construction project.	CNST 411	Exam Questions	80	---	---	---	---	---	*			* Not Measured
18	Understand the basic principles of sustainable construction	CNST 210	Exam Questions	70	---	100	---	85	---	71			
19	Understand the basic principles of structural behavior.	CNST 241	Exam Questions	70	33	52	40	62	50	46			Most of the poor performing students did not attend regularly and did not submit assignments. We think that this is related to COVID complications related to masking and online instruction.
		CNST 351	Exam Questions	70	100	---	97	---	58	---			
20	Understand the basic principles of mechanical, electrical, and piping systems.	CNST 321	Exam Questions	80	---	73	---	---	---	87.5			
		CNST 332	Exam Questions	80	---	---	---	---	100	---			