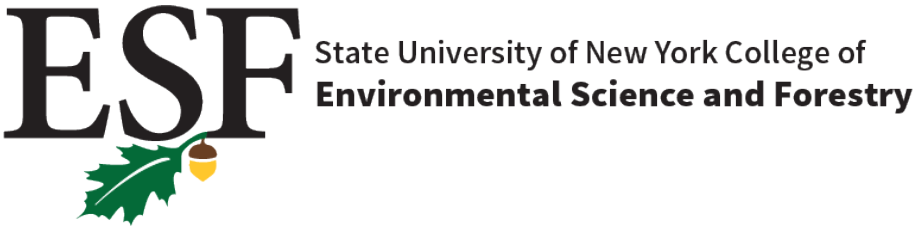

Department of Sustainable Resources Management

Construction Management Undergraduate Program

Quality Improvement Plan

2021-2024

Developed by the Construction Management Faculty in 2020-2021

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1.0 Strategic Plan for the Construction Management Program

The Strategic Plan for the Construction Management Program is a document that embodies the plan of the Program members to provide effective structure, leadership and decision-making for program success for the 2021-2024 time period. The plan is reviewed on an annual basis with the Industry Advisory Board and with the Program faculty. It provides the overarching structure for Program development, assessment, and improvement.

1.1 Mission Statement of the Program

The Construction Management Program Mission

The mission of the Construction Management program at SUNY-ESF is to provide leadership, knowledge, and skills for managing the construction of the designed environment, while stewarding the natural environment, through teaching, research, and service.

1.2 Values

The SUNY ESF Construction Management faculty recognize the needs for providing value-based leadership for program development and education. We as a faculty have worked to define and communicate a value-based education for our students. As an example of this, the following document was developed for our student orientation, and a copy of these "rules" reflecting our values hangs in the main Construction Management classroom (Baker 154)

SUNY-ESF Construction Management Family Rules

When you joined CM at ESF, you joined a family. We want you to know the rules!

1. **Be on time.**

It shows respect for your fellow students and your instructors.

2. **Bring a positive attitude.**

We spend more time at ESF than we do outside ESF. These people will become your friends and family. Make it pleasant, don't be a downer.

3. **Take pride in what you do.**

You are part of a team that is studying cool stuff. You represent ESF to the people you talk to and the firms you work for. You represent ESF when you are walking across campus. When you take pride in your work you make ESF look good in all those places, all thanks to you.

4. **Treat things, people, and the planet with respect.**

Your workplace, yourself, your classmates, your staff and instructors, your campus, and your earth are all deserving of your respect.

5. **We are about teamwork. Show up. Be dependable for your team. Try to solve problems, try not to create them.**

Don't call in sick unless you're wiped out. Our program is depending on you. If you must be out, communicate it to the team and make sure it's easy for your classmates to pick up where you left off.

6. **Pick up after yourself.**

Seriously. We have other people that we share our spaces with, and your classmates don't want to deal with your mess. Keep your area clean in the class, the lab, and across campus. A clean/organized workspace is an efficient workspace.

7. **Seek excellence, commit yourself to quality & safety**.

Do what needs to be done to do the job right. Commit to doing the right job the first time, not over and over and over.

8. **Don't ask for more than you give.**

Be engaged and ready to contribute. Your teammates are counting on you. Don't be afraid to ask your classmates for help. If you are struggling ask for help, don't wait until it is too late.

9. **Work with integrity.**

Always.

10. **Have fun.**

Strategic Plan –

- Increase enrollment at 7% per annum to 85 students in the program by 2024 (and 100 students by 2027).
- 100% of End-of-Course surveys above the ESF average. (2022-2024)
- Increase the number of leadership opportunities for our students by 2024
- Increase the number of problem-based/applied learning experiences for our students by 2024.
- Provide research leadership with each faculty leading a grant supporting at least one grad student each year by 2024.
- Provide research leadership with each faculty producing a peer-reviewed publication each year (2022-2024)
- Provide service leadership with each faculty producing an industry or popular-press publication or research project each year (2022-2024)
- Start a fund-raising campaign to reach 50K dollars by 2024.

This review will occur during the next review cycle. This is the first iteration of the Strategic Plan.

2.0 Assessment Plan for Construction Management BS degree

2.1 Mission Statement of the Degree Program – This mission statement is a subset of the overall mission of the Program specific to the Construction Management BS degree.

The mission of the Construction Management program at SUNY-ESF is to provide leadership, knowledge, and skills for managing the construction of the designed environment, while stewarding the natural environment, through high-quality educational experiences for a diverse student body.

2.2 Degree Program Objectives – For the Degree Program to be successful in meeting its mission, five program goals, and objectives and metrics for each of those goals, were defined. These form the structure for annual review undertaken by the program faculty, and by the Industry Advisory Board members.

CM Program Goals	Objectives	Metric
1. Provide program access for individuals from all backgrounds, including under-represented groups through community engagement, scholarships, and distance education.	1.1 Access for International students	1.1.1 At least 5% of students in our program are international students on a 5-year rolling average
	1.2 Access for online students	1.2.1 Offer 1 CME course each semester in a hybrid modality
	1.3 Access for under-represented students	1.3.1 Maintain 15% female students (5-year average)
		1.3.2 Maintain 15% under-represented ethnicity students (5-year average)
	1.4 Access for local community	1.4.1 Maintain at least 5% of students in the program from City of Syracuse (5-year average)
2.Maintain close alliance with the industry to provide direction and support for curriculum development and student employment.	2.1 Curriculum development	2.1.1 Alumni (past 5 years) survey 80% satisfied or very satisfied with curriculum (courses, course content, topical level, etc.)
		2.1.2 Employer survey 80% satisfied or very satisfied with skills of alums from past 5 years
	2.2 Student employment	2.2.1 At least 66% of graduating students employed before graduation, 100% after one year.

3.Provide opportunities for all students to develop leadership skills and take on responsibility as part of a team, both in and outside the classroom.	3.1 In classroom	3.1.1 At least 75% of construction courses include "significant" student group work.
	3.2 Outside classroom	3.2.1 Leadership skills – 85% of interns receive "Always" rating for all skills, (including interpersonal skills, reliability, problem solving, enthusiasm, and ability to listen, and resourceful)
4.Provide an understanding of the relation between the built and natural environments, and the need to consider multiple impacts in decision-making.	4.1 Outside class	4.1.1 At least 50% of CM students participate in the NYS Green Building Conference.
	4.2 In class	4.2.1 Maintain a 100% pass rate for students taking the LEED GA exam, and provide partial financial support for students to take the exam.
		4.2.2 ESF CM students lead an interdisciplinary team for Solar Decathlon competition every other year
5.Provide students with technical competence in construction management, including through high quality learning experience, recognized credentials, applied learning opportunities, community engagement, and program accreditation.	5.1 High quality learning	5.1.1 Maintain 85% or above positive responses on questions 2,3,8,9 on the Senior Exit survey
		5.1.2 IASystem course evaluation average of all CME courses 4 or above on scale of 1-5
	5.2 Credentials	5.2.1 CM student pass rate on Associate Constructor exam above national average.
	5.3Applied learning	5.3.1 At least 4.5 out of 5 IASystem average course rankings for Applied Learning courses: CME 306, CME 342, CME 404, CME 405, RMS 387, RMS 422
	5.4 Community Engagement	5.4.1 100% of Juniors and Seniors involved in community engagement each year
	5.5 Program Accreditation	5.5.1 Receive and maintain ACCE accreditation

2.3 Program Learning Outcomes

As part of the Program mission to deliver a high-quality educational experience for our students (and Objective 5.5 of Degree Program Objectives), the Program faculty have identified 20 Program Learning Outcomes (PLOs) that we assess annually. These PLOs are identical to the current ACCE Student Learning Outcomes (SLOs). Each required CME course syllabus identifies the PLOs that are introduced, reinforced, or assessed in that course. A complete matrix of courses and PLOs in those courses can be found in Table 3.5.1 of the "SUNY- ESF CONSTRUCTION MANAGEMENT SELF-EVALUATION STUDY FOR ACCE PROGRAM ACCREDITATION - JUNE 15, 2021"

The 20 SUNY-ESF Construction Management BS Program Learning Outcomes are:

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 construction documents for planning and management of construction processes.
8. Analyze methods, materials, and equipment used to construct 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 project control processes.
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.
18. Understand the basic principles of sustainable construction.
19. Understand the basic principles of structural behavior.
20. Understand the basic principles of mechanical, electrical and piping

2.4 Assessment Tools

The assessment tools used to evaluate the Program Objectives as well as the Program Learning Outcomes include the following:

Alumni survey – This is a survey sent to all program alumni from the last five years. The purpose of this survey is to determine the alumni's satisfaction with their professional

preparation in technical skills and soft skills. The databased for distribution of the survey is provided by the Alumni Office. An example of this survey can be found in Appendix A.

Associate Constructor Exam – Is an exam to earn certification as an Associate Constructor through the American Institute of Constructors. This exam is nationally-normed, and the results of the exam (passing and failing, as well as performance in each of the twelve categories) are used as part of the Program Objectives.

Direct Assessments in courses – For each of the 20 Program Learning Outcomes, there is a homework assignment, in-class assignment, quiz, presentation, or test that is used to assess the performance of each student individually. The performance of all of the students in the class is compared to pre-defined metrics to determine the overall PLO performance.

Employer survey – For each of the alumni that respond to the alumni survey, we ask their direct supervisor to complete an evaluation to determine the level of satisfaction and a skills assessment for each ESF alumni. An example of this survey can be found in Appendix B

Employment Survey – Annually, the Office of Career Services performs a "First Destination Survey" for the College alumni one year after graduation. This survey provides program-specific data on employment and starting salaries for Construction Management BS graduates. An example of recent results from this survey can be found in Appendix C.

IASystem – This is an end-of-course survey system designed by the Univ. of Washington and subscribed to by SUNY-ESF. The tool allows the student to provide quantitative and qualitative feedback on the formative and summative experiences of the class. An overall numeric score is provided for the four key questions addressed at the beginning of the survey. An example of the four questions can be found in Appendix F.

Institutional databases – Institutional databases provide information on the number of international students, number of EOP (Equal Opportunity Program) students, number of student residents of the City of Syracuse, ESF student attendees to the NYS Green Building Conference, etc.

Intern Evaluation – For each student who completes a credit-bearing internship (CME 303), an evaluation of the intern by their direct supervisor is required. This evaluation includes a number so categories that address leadership skills that are inculcated in the program students. An example of this evaluation can be found in Appendix D

Senior Exit Survey – During the last week of the capstone class (CME 454), the Department Chair meets alone with the graduating Seniors. During this meeting the Chair asks questions and listens to the students' observations and suggestions regarding the program. As part of this process, each student completes an exit survey with two parts. One of those parts asks the student to self-evaluate their abilities in each of the 20 Program Learning Outcomes. The second part of the survey asks the students to rank their satisfaction with various program aspects, and to provide feedback on the resources and personnel supporting the program. An example of the Senior Exit Survey can be found in Appendix E

2.5 Performance Criteria

This was the first cycle in which the Program members developed the assessment criteria for these Program Objectives and the Program Learning Outcomes. As such, these metrics will change over time, and suggestions for adjustments can be found in descriptions that follow.

Alumni survey – While this instrument contains a number of questions that provide important feedback for our Program, we adopted a performance metric of at least 80% of the recent (<=5 years) alumni rating their satisfaction with the program as "satisfied" or "very satisfied".

Associate Constructor Exam – The performance criteria for this exam was that at least 50% of the ESF students should pass the exam each year.

Direct Assessment - Although the tools used for direct assessment varying between courses, as do the grading styles of the faculty, a value of at least 70% of the students should score 70% or above on the assessment tool. The faculty also reported data for 75% of students at 75% or above, 80% of students at 80% or above, and 90% of students at 90% or above. With this additional data we will be able to better understand the implications of raising this performance level in future cycles.

Employer Survey - We adopted a performance metric of at least 80% of the supervisors rating themselves "satisfied" or "very satisfied" with the performance of their recent hires (<= 5 years) from ESF.

Employment survey – We adopted a performance metric of 100% employment (or further studies) at one year.

IASystem – The average score of all courses with a CME prefix of at least a 4 out of 5 was set for one of the performance metrics. For another metric on courses with a significant applied learning component was set at 4.5 out of 5.

Institutional databases – We adopted a number of performance metrics for these institutional databases. These metrics are as follows:

International students – at least 5% of the total CM students

Hybrid courses – at least one each semester

EOP – Higher % EOP students in CM than in the college overall

City of Syracuse residents in the Program – at least 5%

ESF students attending the NYS Green Building Conference – at least 50%

Intern Evaluation – This evaluation contains 13 different categories of soft skills and an overall performance rating (Below average, Average, Above Average, Excellent). An average of the performance in the 13 categories was used to determine the aggregate performance for these leadership skills.

Senior Exit Survey – Tool contains two parts: The self-evaluation of the student competency for the 20 PLOs was used as the indirect assessment for the PLOs. A score of at least 3.5 out of 5 was set as the performance level for the indirect assessments (a score between 3.5 and 4.0 was flagged for monitoring). At least 85% of affirmative answers on questions 2,3,8,9 on the Senior Exit survey were used to assess the students' perception of the quality and value of their educational experience. Finally, a level of at least 66% affirmative response to being employed before graduation was set.

2.6 Evaluation Methodology

The Program Learning Outcomes and Program Objectives are all reviewed and updated or amended as necessary on an annual basis. This is done with input from faculty, administration, Industry Advisory Board members, and students. Alumni review these outcomes and objectives on a three-year cycle.

The Program Learning Outcomes and Program Objectives are evaluated on a schedule as follows:

The Associate Constructor Exam, the Direct Assessments of PLOs, the Employment Survey, the IASystem end-of-course surveys, the Institutional databases, the Intern Evaluations, and the Senior Exit Survey are all performed and evaluated on an annual basis.

The Alumni Survey and the Employer Survey are all performed and evaluated on a three-year cycle.

3.0 Assessment Implementation Plan for the Construction Management BS degree

3.1 Assessment of Program Learning Outcomes and objectives

3.1.1 Direct Assessment

Performance flagged in red indicate SLOs that were not met at the performance level proposed for each column (e.g. 70% for the 70 column, 75% for the 75 column, 80% for the 80 column, etc.).

For this assessment cycle the criteria of 70% of the scores above 70 was used.

PROGRAM LEARNING OUTCOMES	% of scores above 70	% of scores above 75	% of scores above 80	% of scores above 90
1. Create written communications appropriate to the construction discipline.	**72**	63	40	14

2. Create oral presentations appropriate to the construction discipline.	**100**	100	95	80
3. Create a construction project safety plan.	**92**	88	74	52
4. Create construction project cost estimates.	**65**	57	48	26
5. Create construction project schedules.	**94**	94	82	35
6. Analyze professional decisions based on ethical principles.	**94**	94	94	81
7. Analyze construction documents for planning and management of construction processes.	**95**	95	95	55
8. Analyze methods, materials, and equipment used to construct projects.	**95**	90	90	61
9. Apply construction management skills as a member of a multi- disciplinary team.	**100**	87	74	52
10. Apply electronic-based technology to manage the construction process.	**100**	100	90	40
11. Apply basic surveying techniques for construction layout and control.	**90**	85	85	60
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.	**72**	72	72	61
13. Understand construction risk management.	**89**	89	81	81
14. Understand construction accounting and cost control.	**93**	93	93	93
15. Understand construction quality assurance and control.	**86**	86	86	76
16. Understand construction project control processes.	**93**	93	86	20
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.	**100**	93	80	67
18. Understand the basic principles of sustainable construction.	**20**	0	0	0
19. Understand the basic principles of structural behavior.	**39**	39	39	26
20. Understand the basic principles of mechanical, electrical and piping systems.	**93**	86	86	58

3.1.2 Indirect Assessment

Summary of Senior Self-Evaluation for Spring 2021

1 – Strongly Disagree, 2-Disagree, 3- Neutral, 4- Agree, 5 – Strongly Agree

Meeting performance criteria = Black score (4.00 and above)

Meeting performance criteria, but discussed as an area for attention = Blue score (3.50 – 3.99)

Not meeting performance criteria, requiring corrective action = Red score (0-3.49)

PROGRAM LEARNING OUTCOME	SCORE
1. Create written communications appropriate to the construction discipline.	**4.00**
2. Create oral presentations appropriate to the construction discipline.	**4.29**
3. Create a construction project safety plan.	**3.81**
4. Create construction project cost estimates.	**4.24**
5. Create construction project schedules.	**4.12**
6. Analyze professional decisions based on ethical principles.	**4.24**
7. Analyze construction documents for planning and management of construction processes.	**4.18**
8. Analyze methods, materials, and equipment used to construct projects.	**4.18**
9. Apply construction management skills as a member of a multi- disciplinary team.	**4.18**
10. Apply electronic-based technology to manage the construction process.	**4.12**
11. Apply basic surveying techniques for construction layout and control.	**2.75**
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.	**4.06**
13. Understand construction risk management.	**3.94**
14. Understand construction accounting and cost control.	**3.06**
15. Understand construction quality assurance and control.	**3.82**
16. Understand construction project control processes.	**4.06**
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.	**4.24**
18. Understand the basic principles of sustainable construction.	**4.41**
19. Understand the basic principles of structural behavior.	**4.18**
20. Understand the basic principles of mechanical, electrical and piping systems.	**3.53**

3.2 Documentation of assessment cycle results

Assessment performed May-June 2021, based on PLO documentation from 2020-2021 academic year.

PLO 1. Create written communications appropriate to the construction discipline.

Direct Assessment – Met (72% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.00 is greater than 3.50)

Comments – Discussion occurred around the need for all courses to consider reinforcing these important writing skills for our students. All in agreement.

PLO 2. Create oral presentations appropriate to the construction discipline.

Direct Assessment – Met (100% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.29 is greater than 3.50)

Comments – Instructors of upper level courses are generally pleased with the quality of the student presentations.

PLO 3. Create a construction project safety plan.

Direct Assessment – Met (92% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 3.81 is greater than 3.50)

Comments – Program faculty recognized that this is an area for improvement. All of the "Safety" skills have been siloed into this single course (as evident in the SLO Matrix). Program faculty recognize the need for reinforcement in other courses. Could this be included as part of the group work in Project Management (CME 454)? Applied Structures (CME 404) will increase the safety component in group project.

PLO 4. Create construction project cost estimates.

Direct Assessment – Not met (65% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.24 is greater than 3.50)

Comments – Course instructor is teaching this course for the second time. He is better understanding where the students are struggling.

Corrective Action – Course instructor will adjust the course next year to reinforce the skills that were tested by the Direct Assessment tool. We will have program discussion about including more quantity take off exercises in courses other than CME 343 to provide additional reinforcement for material.

PLO 5. Create construction project schedules.

Direct Assessment – Met (94% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.12 is greater than 3.50)

Comments – No further discussion

PLO 6. Analyze professional decisions based on ethical principles.

Direct Assessment – Met (94% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.24 is greater than 3.50)

Comments – Course instructor is a Visiting Professor who needs to be kept in close communication as the accreditation process moves forward.

PLO 7. Analyze construction documents for planning and management of construction processes.

Direct Assessment – Met (95% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.18 is greater than 3.50)

Comments - Discussion occurred around the need for all courses to consider reinforcing these important plan interpretation and specification skills for our students. All in agreement.

PLO 8. Analyze methods, materials, and equipment used to construct projects.

Direct Assessment – Met (95% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.18 is greater than 3.50)

Comments – There was discussion around whether this should be assessed in a higher-level course, but faculty agree to continue with current approach.

PLO 9. Apply construction management skills as a member of a multi- disciplinary team.

Direct Assessment – Met (100% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.18 is greater than 3.50)

Comments – No further discussion

PLO 10. Apply electronic-based technology to manage the construction process.

Direct Assessment – Met (100% of students scored 70 or above)

Indirect Assessment - Met (Student rank of 4.12 is greater than 3.50)

Comments – There was discussion around using some BIM tools in additional courses. It was agreed that this would be held for discussion during a curriculum revision.

PLO 11. Apply basic surveying techniques for construction layout and control.

Direct Assessment – Met (90% of students scored 70 or above)

Indirect Assessment – Not met (Student rank of 2.75 is less than 3.50)

Comments - Surveying is taught in the Environmental and Resources Engineering program. This instructor has all of the CM students in one lab section. Faculty observation agrees with students self-assessment that they are not confident of their surveying skills.

Corrective actions -

1. We will ask the instructor to provide feedback for the students in our program, and open a discussion on how to improve their mastery.

2. We will reach out to the instructor for CME 327 – Site investigations and solutions, and ask if he would be willing to add content to reinforce the students understanding of surveying techniques for CM.
3. We will determine the CM student performance on AC exam Geomatics portion, and determine if that data confirms the students' self-reported data. If yes, proceed with 1 and 2. If no, possibly have CME 327 instructor add content to help student understand how their surveying knowledge can be employed.

PLO 12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.

Direct Assessment – Met (72% of students scored 70 or above)

Indirect Assessment – Met (Student rank of 4.06 is greater than 3.50)

Comments – The instructor who is currently assessing this in the Project Management capstone is not comfortable with continuing this. He would like it to be assessed in a course where it is formally taught. We will discuss this with the Contracts and Specifications (CME 455) instructor.

PLO 13. Understand construction risk management.

Direct Assessment – Met (89% of students scored 70 or above)

Indirect Assessment – Met (Student rank of 3.94 is greater than 3.50)

Comments – Discussion of this topic centered around the different types of risk(safety, schedule, budget, manpower, etc.), and the different possible ways to reinforce and incorporate throughout all courses. No change at this time.

PLO 14. Understand construction accounting and cost control.

Direct Assessment – Met (93% of students scored 70 or above)

Indirect Assessment – Not met (Student rank of 3.06 is less than 3.50)

Comments – Introduction to Financial Accounting and Introduction to Managerial Accounting are taught by Visiting Instructor.

Corrective Action - Through the Department Chair, we will reach out to this adjunct to ask that he incorporate CM examples throughout these courses. If the instructor is amenable, Curriculum Coordinator will help to provide these materials. Update – After discussion with the Department Chair, the Department Chair agreed to review staffing for all accounting courses and plans to transition to a CM-focused approach for these courses.

PLO 15. Understand construction quality assurance and control.

Direct Assessment – Met (86% of students scored 70 or above)

Indirect Assessment – Met (Student rank of 3.82 is greater than 3.50)

Comments – Students comment on a lack of familiarity with contract administration during their internships. More work with RFIs and submittals will be incorporated into Engineering Materials for Sustainable Construction (CME 306)

PLO 16. Understand construction project control processes.

Direct Assessment – Met (93% of students scored 70 or above)

Indirect Assessment – Met (Student rank of 4.06 is greater than 3.50)

Comments – Discussion around whether Earned Value Analysis is sufficient for monitoring this PLO. Decision was made to continue using current direct assessment tool.

PLO 17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.

Direct Assessment – Met (100% of students scored 70 or above)

Indirect Assessment – Met (Student rank of 4.24 is greater than 3.50)

Comments – No further discussion

PLO 18. Understand the basic principles of sustainable construction.

Direct Assessment – Not met (20% of students scored 70 or above)

Indirect Assessment – Met (Student rank of 4.41 is greater than 3.50)

Comments – This PLO scored the lowest for the Direct Assessments (in a Freshman class), and scored highest for the Indirect Assessment among the Seniors. It is believed that by the end of their four years, the students have developed a level of mastery of principles of sustainable construction. However, there are two paths through the curriculum for students, with CME 215 or CME 304 as options. This year none of the Freshman chose CME 304.

The wisdom of assessing this PLO during a Freshman class was discussed. In spite of the challenges, the course instructor who is teaching the course for the second time believes that it should stay in this course. His comments were "Overall I was happy with student performance. I will make adjustments in the final exam to make results more balanced. I expect to see around 15 points improvement in the overall average grade. Use the entire exam as evaluation, and use 70% above 70 for the metric."

Corrective actions – Course instructor will change the LCA final exam requirement, and provide the students sufficient time to complete the exam. With these changes he believe the performance will improve notably. Also, as a team we will ensure that both CME 215 and CME 304 use the same assessment tool for consistency among CM majors.

PLO 19. Understand the basic principles of structural behavior.

Direct Assessment – Not met (39% of students scored 70 or above)

Indirect Assessment – Met (Student rank of 4.18 is greater than 3.50)

Comments – These courses have traditionally challenged our students, but the program faculty believe that greater success is possible with more coordination and more reinforcement in exercises.

Corrective Actions - Course Instructors for Statics and Mechanics (CME 226) and Applied Structures (CME 404) will work together to standardize notation, problem solving approach, necessary course content, and expectations for passing grade on CME 226 final. CME 404 course assignments will be increased to better reinforce the material.

PLO 20. Understand the basic principles of mechanical, electrical and piping systems.

Direct Assessment – Met (93% of students scored 70 or above)

Indirect Assessment – Met (Student rank of 3.53 is greater than 3.50)

Comments – Although this PLO met both of the assessment, the students' self-assessment was close to borderline. This course was taught for the first time this year by a new Visiting Instructor. It was communicated to him that the students sense of understanding of the material was minimally sufficient. It is expected that he will be refining the course delivery and content for improved performance. It was also noted that the students find a 3-hour, one night a week class a difficult environment to maintain concentration. The possibility of offering the class during daytime hours will be explored at scheduling time.

ESF State University of New York College of Environmental Science and Forestry

3.3 Evaluation of Degree Program Objectives and Program Learning Outcomes

Overview

CM Program Goals	Objectives	Metric	Performance	Corrective Actions
1. Provide program access for individuals from all backgrounds, including under-represented groups through community engagement, scholarships, and distance education.	1.1 Access for International students	1.1.1 At least 5% of students in our program are international students on a 5 year rolling average	4.3%	Complete MoU with NCUT.-Endong Wang – projected 8-10 students per year
				Complete MoU with TU Dublin -Paul Crovella
	1.2 Access for online students	1.2.1 Offer 1 CME course each semester in a hybrid modality	Fall 2020 – 4 Spring 2021 -4	Ongoing discussions about modalities for Fall '21, Spring '22
	1.3 Access for under-represented students	1.3.1 Maintain 15% female students (5-year average)	10.4%	Based on outreach to alumni, a program with current female undergraduates is being developed to expose female MS/HS students to this opportunity.
		1.3.2 Maintain 15% under-represented ethnicity students (5-year average)	16.5%	No action necessary. PC is pursuing collaborations with CNYworks for I-81project
	1.4 Access for local community	1.4.1 Maintain at least 5% of students in the program from City of Syracuse (5-year average)	6.9%	No action necessary
2.Maintain close alliance with the	2.1 Curriculum development	2.1.1 Alumni (past 5 years) survey 80% satisfied or very satisfied with	100%	Will use survey results for SLO discussion

industry to provide direction and support for curriculum development and student employment.		curriculum (courses, course content, topical level, etc.)		
		2.1.2 Employer survey 80% satisfied or very satisfied with skills of alums from past 5 years	80%	Only five employers responded to the survey, we will reach out for more with the next survey.
	2.2 Student employment	2.2.1 At least 66% of graduating students employed before graduation, 100% after one year.	72%, 100%	No Action
3.Provide opportunities for all students to develop leadership skills and take on responsibility as part of a team, both in and outside the classroom.	3.1 In classroom	3.1.1 At least 75% of construction courses include "significant" student group work.	66%	Fall semester planning in anticipation of curriculum changes for 2022-23 will ensure that each semester the students are involved a significant group project.
	3.2 Outside classroom	3.2.1 Leadership skills – 85% of interns receive "Always" rating for all skills, (including interpersonal skills, reliability, problem solving, enthusiasm, and ability to listen, and resourceful)	88%	Leadership skill development – Have 100% of CM students complete one of the following requirements -
4.Provide an understanding of the relation between the built and natural environments, and the need to consider multiple impacts in decision-making.	4.1 Outside class	4.1.1 At least 50% of CM students participate in the NYS Green Building Conference.	42%	With an in-person conference for 2022, this should improve. Low student interest in 2021 due to online format.
	4.2 In class	4.2.1 Maintain a 100% pass rate for students taking the LEED GA exam, and provide partial financial support for students to take the exam.	100%, full support	Follow up funding for future student support is being pursued, first application to NYSERDA was unsuccessful

		4.2.2 ESF CM students lead an interdisciplinary team for Solar Decathlon competition every other year	2020-2021- Yes one team	Discuss student interest for 2022, and plan to incorporate in curriculum
5.Provide students with technical competence in construction management, including through high quality learning experience, recognized credentials, applied learning opportunities, community engagement, and program accreditation.	5.1 High quality learning	5.1.1 Maintain 85% or above positive responses on questions 2,3,8,9 on the Senior Exit survey	86%	The one low question involved student preparedness for industry – All faculty will address as we respond to the Indirect Assessment data.
		5.1.2 IASystem course evaluation average of all CME courses 4 or above on scale of 1-5	4.0	No action – This is up from 3.9. We hope to see further improvement post-Covid
	5.2 Credentials	5.2.1 CM student pass rate on Associate Constructor exam above national average (41%)	32%	Students will only be reimbursed if they pass the exam.
	5.3Applied learning	5.3.1 At least 4.5 out of 5 IASystem average course rankings for Applied Learning courses: CME 306, CME 342, CME 404, CME 405, RMS 387, RMS 422	4.5	No action
	5.4 Community Engagement	5.4.1 100% of Juniors and Seniors involved in community engagement each year	100%, 100% (CME 454, CME 404)	CME 454 instructor will discuss plans for coming year
	5.5 Program Accreditation	5.5.1 Receive and maintain ACCE accreditation	Waiting for review	Planned submission for August 1, 2021

1. Provide program access for individuals from all backgrounds, including under-represented groups through community engagement, scholarships, and distance education.

1.1 Access for International students

1.1.1 At least 5% of students in our program are international students

Performance – 4.2%

Objective – Not met

Comments – Two promising arrangements for exchange programs were disrupted by the Covid-19 global pandemic. One faculty member has visited North China University of Technology, there is interest for a student exchange program between Construction Management programs and a Memorandum of Understanding (MoU) was developed. The Curriculum Coordinator has been in communication with the Technical University of Dublin, and there is interest in an exchange program between Construction Management programs.

Corrective Actions – 1. SUNY-ESF legal department completes their review of the MoU, and both institutions sign on to the agreement. (Responsible party – Endong Wang, timeline – 1 year). 2. TU-Dublin and SUNY-ESF program directors meet to discuss curriculum and technical aspects of exchange. SUNY-ESF Office of International Education coordinates with TU-Dublin to develop an MoU. (Responsible party – Paul Crovella, timeline – 1 year) We believe that on an annual basis there are 6-8 interested students from NCUT, and 1-2 from TU-Dublin that would be interested in attending SUNY-ESF

1.2 Access for Online students

1.2.1 Offer one CME course each semester in a hybrid modality.

Performance – Fall 2020 - Spring 2021 – 4

Objective – Met

Comments – The requirement for Covid-19 remote learning forced many classes into an online format in the 2020-2021 year. With that in mind, we are planning to take advantage of the learning and opportunities presented by online education and integrate them into the primarily face-to-face program format. Discussions are on-going about the modalities for the 2021-2022 academic year.

1.3 Access for under-represented students

1.3.1 Maintain 15% female students (5-year average)

Performance – 10.6%

Objective – Not met

Comments – The last two years, the average has been even lower than the 10%.

Corrective Action- We have reached out to ~20 female alums on LinkedIn to determine their suggestions for improving in this category. We will also survey the current female students to develop our plan. Based on outreach to alumni, a program with current female undergraduates is being developed to expose female MS/HS students to this opportunity.

1.3.2 Maintain 15% under-represented ethnicity students (5-year average)

Performance – 16.5%

Objective – Met

Comments – While we were able to meet this objective, we will have ongoing conversations with Admissions to discuss how this can be maintained.

1.4 Access for local community

1.4.1 Maintain at least 5% of students in the program from City of Syracuse

Performance - 6.9%

Objective – Met

Comments – This number has stayed relatively constant

2.Maintain close alliance with the industry to provide direction and support for curriculum development and student employment.

2.1 Curriculum development

2.1.1 Alumni (past 5 years) survey 80% satisfied or very satisfied with curriculum (courses, course content, topical level, etc.)

Performance – 100%

Objective – Met

Comments - Although the overall performance is acceptable, there was a wealth of data and suggestions regarding the SLOs and the PLOs that we will work to address during 2021-2022.

2.1.2 Employer survey 80% satisfied or very satisfied with skills of alums from past 5 years

Performance – 80%

Objective – Met

Comments – Only five employers responded to this survey. We will need to use a different approach in the future to increase employer participation.

2.2 Student employment

2.2.1 At least 66% of graduating students employed before graduation, 100% after one year.

Performance – 72% before graduation, 100% after one year

Objective – Met

Comments – Continue to develop strong relationships with employers for internships, as internships provide a strong path to employment by graduation.

3.Provide opportunities for all students to develop leadership skills and take on responsibility as part of a team, both in and outside the classroom.

3.1 In classroom

3.1.1 At least 75% of construction courses include "significant" student group work.

Performance – 66% of courses

Objective – Not met

Comments – Fall semester planning in anticipation of curriculum changes will ensure that each semester the students are involved a significant group project.

Corrective Action – We plan to revise the curriculum and ensure that each semester of the students' progress at ESF they are enrolled in one class in the curriculum that is a project-based applied learning experience delivered in a group/collaborative approach. This will increase the number of classes, and bring us up to meet our objective.

3.2 Outside classroom

3.2.1 Leadership skills – 85% of interns receive "Always" rating for all skills, (including interpersonal skills, reliability, problem solving, enthusiasm, and ability to listen, and resourceful)

Performance - 88%

Objective- Met

Comments – Current Curriculum Coordinator is interested in adapting this metric over time, and would like to include other experiences outside the CME courses such as; Lead/participate in a competition team, Study abroad or a second internship, Lead a community service project, Organize a speaker of interest for the class, Make a summary presentation to classmates on experiences, Complete online course in conflict resolution, Complete training in persuasive speaking, Serve as a PM in one group project.

4.Provide an understanding of the relation between the built and natural environments, and the need to consider multiple impacts in decision-making.

4.1 Outside class

4.1.1 At least 50% of CM students participate in the NYS Green Building Conference.

Performance – 42%

Objective – Not met

Comments - Low student interest in 2021 due to online format.

Corrective Action - With an in-person conference for 2022, this should improve.

4.2 In class

4.2.1 Maintain a 100% pass rate for students taking the LEED GA exam, and provide partial financial support for students to take the exam.

Performance - 100%, full support

Objective – Met

Comments – Current funding and support for LEED GA course (CME 496) and exam fees will end after 2021-2022. Applications for funding extension are being prepared

4.2.2 ESF CM students lead an interdisciplinary team for Solar Decathlon competition every other year

Performance – Team participation in 2019- 2020

Objective – met

Comments – Ongoing participation has been recognized as extremely valuable by participants, but requires a large commitment. This objective will be evaluated in the future to determine how it can become more sustainable for required resources.

5.Provide students with technical competence in construction management, including through high quality learning experience, recognized credentials, applied learning opportunities, community engagement, and program accreditation.

5.1 High quality learning

5.1.1 85% or above average on questions 2,3,8,9 on the Senior Exit survey.

Performance – 86%

Objective – Met

Comments - The one low question involved student preparedness for industry – All faculty will address as we respond to the Indirect Assessment data.

5.1.2 IASystem course evaluation average of all CME courses is 4 or above on scale of 1-5

Performance – 4.0

Objective – Met

Comments - No action – This is up from 3.9 the previous year. We hope to see further improvement post-Covid with a return to face-to-face classes

5.2 Credentials

5.2.1 CM student pass rate on Associate Constructor exam above national average (41%)

Performance – 32%

Objective – Not met

Comments – This is much lower than traditional student performance

Corrective Actions – There is no one category that appears to be an outlier. The student engagement in review sessions for the exam was below past levels of participation. This year all students were partially subsidized for the cost of the exam. In future years the students will only be reimbursed if they pass.

5.3 Applied learning

5.3.1 At least 4.5 out of 5 IASystem average course rankings for Applied Learning courses: CME 306, CME 342, CME 404, CME 405, RMS 387, RMS 422

Performance – 4.5 (4.5,4.6,4.7.4.8, 3.8, 4.6)

Objective – Met

Comment – The program faculty will continue the discussion of which courses should be included in this category.

5.4 Community Engagement

5.4.1 100% of Juniors and Seniors involved in community engagement each year

Performance – 100% of Juniors (CME 404) and 100% of Seniors (CME 454)

Objective – Met

Comments – Students find great value in engaging with community clients for project work.

5.5 Program Accreditation

5.5.1 Receive and maintain ACCE accreditation

Performance – This will not be evaluated until Spring 2022

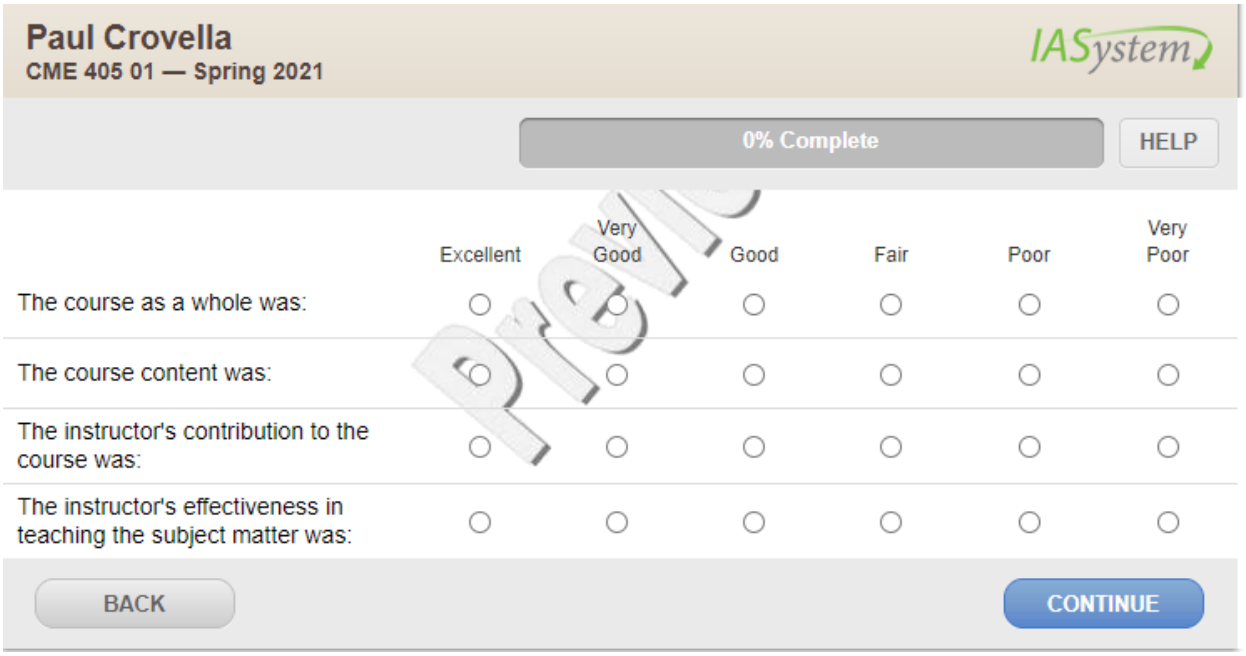
Objective – To be determined

Comments – Key timeline dates – Meeting with ACCE mentor, IAB meeting, submission to ACCE for initial review.

3.4 Improvements to degree program assessment plan

One of the clear observations from the 2021 review was the need to spread and integrate PLOs more broadly across our coursework. Specifically, the SLO matrix 4.3.1 from the Self Study needs to be more broadly developed.

We foresee the ability to raise the Direct Assessment performance above the current 70% of students scoring above a 70.



Paul Crovella
CME 405 01 — Spring 2021

IASystem

0% Complete

HELP

	Excellent	Very Good	Good	Fair	Poor	Very Poor
The course as a whole was:	○	○	○	○	○	○
The course content was:	○	○	○	○	○	○
The instructor's contribution to the course was:	○	○	○	○	○	○
The instructor's effectiveness in teaching the subject matter was:	○	○	○	○	○	○

BACK

CONTINUE