

From: J.C. Foley, Construction Management Program Coordinator

To: Dr. Mahmoud Al-Odeh, Chair, LCBT School of Technology; and Dr. Austin Cheney, Dean, LCBT; Dr. Suzie Park, Special Assistant to the Provost on Student Learning

Re: Construction Management Year 4 Program Assessment

Date: October 15, 2022

Summary of Year Four Assessment

Data was not collected during the assessment cycle for the following reasons (see exception, second paragraph):

- High staff turnover in the Construction Management program, including the departure of Program Coordinator, Dr. John Cabage, and the necessity of utilizing numerous adjunct faculty, prevented the guidance and instruction to collect and analyze student data and the ability to consistently do so. (Note: Dr. Cabage left EIU July 31, 2020, end of AY20.)
- Full-time faculty were not requested or required to collect data as specified in the SLOs (see next bullet point).
- The intervention of the COVID pandemic which prevented meetings of the CMG Committee to develop the existing aspects of the assessment: Student Learning Outcomes, Expectations and Results, Discussion and Analysis, Use of Assessment Results for Program Improvement, and Faculty Engagement in Assessment. See Reviewer's Summary, Year 2 Program Assessment Review (June 9, 2021).

In addition, the faculty will want to revisit and significantly revise the SLOs to better fit the developing Construction Management program. The initial SLOs were developed to coincide with earning ACCE (American Council for Construction Education) accreditation. Beginning with the new evaluation cycle, AY 2023, the Construction Management program will instead be seeking ATMAE (The Association of Technology, Management, and Engineering) accreditation and will be creating new, streamlined SLOs coordinated with that accrediting organization, and better aligned with University Learning Objectives. Finally, the Construction Management curriculum is currently being revised to better meet the changing needs of a dynamic industry through a coordinated effort by the Dean Austin Cheney of the Lumpkin College of Business and Technology, Dr. Mahmoud Al-Odeh, Chair of the School of Technology, and Construction Management Program Coordinator, Mr. J.C. Foley.

Included in this assessment is the available data which aligns closely with the SLOs, evaluation instruments, and performance measures previously assigned to the CMG Program. This data was retroactively collected by the preparer (J.C. Foley) from archived student scores in his classes on relevant evaluation instruments. While wholly insufficient to a holistic assessment of the program, this data is incorporated to provide some insight into the performance of the Program during the assessment cycle. Assessed SLOs are referenced in the Overview below to the Student Outcomes Assessment Tables as prepared by Drs. John Cabage and Melody Wollan in Year 2 of the assessment cycle (Tables of CMG/ACCE Outcomes and EIU Learning Objectives are included as an attachment for reference.).

Year 4**Non-Accredited Programs Only****Student Learning Outcomes (SLOs) for Academic Programs**

Please list all of the student learning outcomes for your program as articulated in the assessment plan.

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 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 to construct projects.
9. Apply construction management skills as a member of a multi-disciplinary team.
10. Apply electronic-based technology to manage construction processes.
11. Apply basic surveying techniques for construction layout and control.
12. Understand different method of project delivery and the roles and responsibilities of all constituents involved in the design and construction process.
13. Understand construction risk management.
14. Understand construction accounting and cost control.
15. Understand quality assurance and control.
16. Understand construction control process.
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.
18. Understand the principles of sustainable construction.
19. Understand the principles of structural behavior.
20. Understand the basic principles of mechanical, electrical, and piping systems.

Overview of Measures/Instruments

Note: Please see attached spreadsheet (Assessment Scores-2022) for reference.

SLO(s) <i>Note: Measures might be used for more than 1 SLO</i>	ULG*	Measures/Instruments <i>Please include a clear description of the instrument including when and where it is administered</i>	How is the information Used? <i>(include target score(s), results, and report if target(s) were met/not met/partially met for each instrument)</i>
CMG/ACCE 1.1 Creation of technical-level Lab Reports	C, W, Q	Class Where Collected: EGT 2004G- Materials Science & Evaluation Cumulative of Semesters: Spring 2020, 2021, 2022	Target: At least 70% of students will score 70% or better
		Performance Measure: Written Technical Lab Report	Result: 68% \geq 70% Target Met? NO
CMG/ACCE 1.2, 8.2 Preparation of Professional Lab Reports	C, W, Q	Class Where Collected: CMG 2013 Soil, Concrete, & Paving Testing Cumulative of Semesters: Spring 2022	Target: At least 70% of students will score 70% or better
		Performance Measure: Written Professional Lab Report	Result: 82% \geq 70% Target Met? YES
CMG/ACCE 4.1, 7.4(5), 14.1 Development of detailed material, labor, and equipment takeoff	C, Q	Class Where Collected: CMG 4223 Construction Cost Estimating Cumulative of Semesters: Fall 2020, Spring 2022	Target: At least 70% of students will score 70% or better
		Performance Measure: Develop detailed estimate	Result: 81% \geq 70% Target Met? PARTIALLY: equipment and labor not estimated (materials only)

SLO(s) <i>Note: Measures might be used for more than 1 SLO</i>	ULG*	Measures/Instruments <i>Please include a clear description of the instrument including when and where it is administered</i>	How is the information Used? <i>(include target score(s), results, and report if target(s) were met/not met/partially met for each instrument)</i>
CMG/ACCE 8.1 Analyze materials such as steel, plastic, concrete, wood, ceramics, and composites, identifying their physical and chemical behavior under environmental stressors	C, Q	Class Where Collected: EGT 2004G- Materials Science & Evaluation Cumulative of Semesters: Spring 2020, 2021, 2022	Target: At least 70% of students will score 70% or better
		Performance Measure: Objective Test Questions	Result: 64% \geq 70% Target Met? NO
CMG/ACCE 8.3, 9.1 Construct a building project using tools, equipment, and trade workmanship	C, Q, (R)	Class Where Collected: CMG 2253 Construction Materials & Equipment Cumulative of Semesters: Fall 2018, 2019, 2020, 2021	Target: At least 70% of students will score 70% or better
		Performance Measure: Physical Building Project	Result: 91% \geq 70% Target Met? YES
CMG/ACCE 9.2 Participate in a survey party while conducting laboratory assignments	C, W, Q, (R)	Class Where Collected: CMG 3213 Surveying & Site Planning Cumulative of Semesters: Fall 2021	Target: At least 80% of students will score 80% or better
		Performance Measure: Survey Crew Laboratory Assignment-Peer Evaluation	Result 92% \geq 80% Target Met? YES
CMG/ACCE 11.1 Lay out a building and stake horizontal curves	C, Q, (R)	Class Where Collected: CMG 3213 Surveying & Site Planning Cumulative of Semesters:	Target: At least 70% of students will score 70% or better
		Performance Measure: (Survey Crew) Layout of a Building	Result: 89% \geq 70% Target Met? YES
CMG/ACCE 12.1 Understand the division of labor and resources on a jobsite	C, Q	Class Where Collected: CMG 2253 Construction Materials & Equipment Cumulative of Semesters: Fall 2018, 2019, 2020, 2021	Target: At least 70% of students will score 70% or better
		Performance Measure: Objective Test Questions	Result: 79% \geq 70% Target Met? YES

SLO(s) <i>Note: Measures might be used for more than 1 SLO</i>	ULG*	Measures/Instruments <i>Please include a clear description of the instrument including when and where it is administered</i>	How is the information Used? <i>(include target score(s), results, and report if target(s) were met/not met/partially met for each instrument)</i>
CMG/ACCE 19.2 Understand force flow within a building, foundations, lateral bracing, and construction techniques as they apply to building construction	C, Q	Class Where Collected: CMG 3023 Formwork & Building Processes Cumulative of Semesters: Fall 2018, 2020; Spring 2021	Target: At least 70% of students will score 70% or better
		Performance Measure: Objective Homework or Test Questions	Result: 73% ≥ 70% Target Met? YES
CMG/ACCE 20.1 Develop heating-cooling requirement for a building envelope; size appropriate passive and active cooling system requirements	C, Q, (R)	Class Where Collected: CMG Mechanical Systems in Residential & Commercial Buildings Cumulative of Semesters:	Target: At least 70% of students will score 70% or better
		Performance Measure: System Design Problem	Result: 73% ≥ 70% Target Met? YES

**Please reference any University Learning Goal(s) (ULG) that this SLO, if any, may address or assess. C=Critical Thinking, W=Writing & Critical Reading; S=Speaking and Listening; Q=Quantitative reasoning; R=Responsible Citizenship; NA=Not Applicable*

Improvements and Changes Based on Assessment

1. Provide a short summary (1-2 paragraphs or bullets) of any curricular actions (revisions, additions, and so on) that were approved over the past two years as a result of reflecting on the student learning outcomes data. Are there any additional future changes, revisions, or interventions proposed or still pending?

- **NONE over past 2 years, see Page 1 Summary**
- Beginning with the new assessment cycle, the entirety of the SLOs for the Construction Management Program will be changed to align with ATMAE accreditation, reducing the number (currently 20) of SLOs to between 5 and 10. Further, the CMG Program curriculum is currently undergoing changes to better prepare students and meet both University and accreditation requirements.

2. Please provide a brief description or bulleted list of any improvements (or declines) observed/measured in student learning. Be sure to mention any intervention made that has not yet resulted in student improvement (if applicable).

- **NONE: See Page 1 Summary**

3. Using the form below, please document annual faculty and committee engagement with the assessment process (such as the review of outcomes data, revisions/updates to assessment plan, and reaffirmation of SLOs).

History of Annual Review

Date of Annual Review	Individuals/Groups who Reviewed Plan	Results of the Review (i.e., reference proposed changes from #1 above, revised SLOs, etc...)
October 15, 2022	J.C. Foley	Accurate 4-year not possible; extremely limited data available. See Year 4 Assessment Summary provided by J.C. Foley, CMG Program Coordinator.
June 9, 2021	Dr. Melody Wollan	See Year 2 Assessment Review (archived)
October 15, 2021	Austin Cheney	Attendees developed tactical items for the three strategic focus areas. These are to combined with four other task force meeting and a final CM strategic plan developed. Standardization of syllabi was discussed. Objective assessment and measurement was discussed. It was agreed that two additional meetings were required to finalize the curriculum map. These will occur over the next month. *NOTE* NO FURTHER MEETINGS OR ACTION TAKEN. JCF 10/15/22
	John Cabage	
	J C Foley	
	David Melton	
	Susan Meacham	
	Logan Cannady	
	Scott Gossett	
	Dan Ordos	
Ed Thomas		

Dean Review & Feedback

The Construction Management (CMG) program is relatively new (4 years), and significant work needs to be completed in order to create a comprehensive assessment program, with both direct and indirect assessment measures that are used to inform program improvement. That said, the CMG program has suffered significantly from under staffing and an abrupt and unexpected change in leadership. In addition, the assessment plan will likely undergo significant changes with the expected transition from pursuing ACCE accreditation to pursuing ATMAE accreditation.

Austin C. Cheney _____

___11-15-22___
Date

Dean or designee

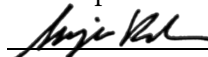
Academic Affairs – Academic Success Center Review & Feedback B.S. Construction Management

2022-11-17 _____

Executive Director

Date

The SLO report explains the current status of the Construction Management program’s assessment activities. Because of high staff turnover and unexpected staff changes, the program is finding its footing on new and innovative ground. Under new leadership, the program will pursue a different accrediting body’s approval (The Association of Technology, Management, and Engineering), which will mean significant realignment of student learning outcomes. This will be an opportunity to start anew and bring every faculty member on board as the leadership coordinates a highly intentional approach to articulating, collecting, and using assessment data to measure what the program expects students to learn.

 Suzie Park, VPAA Office

Referenced Documentation

Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
CMG/ACCE 1.1	EGT 2004G- 504	SP20	84	30	64%	NO
	EGT 2004G- 503	SP20	104	24	77%	YES
	EGT 2004G- 502	SP20	84	38	55%	NO
	EGT 2004G- 503	SP21	60	20	67%	NO
	EGT 2004G- 502	SP21	84	38	55%	NO
	EGT 2004G- 503	SP22	84	5	94%	YES
	EGT 2004G- 502	SP22	72	27	63%	NO
SLO Results			572	182	68%	NO
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
CMG/ACCE 1.2, 8.2	CMG 2013-002	SP22	45	8	82%	YES
SLO Results			45	8	82%	YES
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
CMG/ACCE 4.1, 7.4(5), 14.1	CMG 4223-600	FA 20	10	2	80%	YES
	CMG 4223	SP22	27	5	81%	YES
SLO Results			37	7	81%	YES
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
CMG/ACCE 8.1	EGT 2004G- 504	SP20	36	19	47%	NO
	EGT 2004G- 503	SP20	39	16	59%	NO
	EGT 2004G- 502	SP20	36	22	39%	NO
	EGT 2004G- 503	SP21	24	10	58%	NO
	EGT 2004G- 502	SP21	24	14	42%	NO
	EGT 2004G- 503	SP22	126	18	86%	YES
	EGT 2004G- 502	SP22	108	44	59%	NO
SLO Results			393	143	64%	NO
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
	CMG/AET 2253-001	FA18	34	3	91%	YES

CMG/ACCE 8.3, 9.1	CMG 2253-001	FA19	34	2	94%	YES
	CMG 2253-001	FA20	14	2	86%	YES
	CMG 2253-001	FA21	26	3	88%	YES
SLO Results			108	10	91%	YES
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 80%	Meets Criteria?
CMG/ACCE 9.2	CMG 3213-001	FA 21	60	5	92%	YES
SLO Results			60	5	92%	YES
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
CMG/ACCE 11.1	CMG 3213-001	FA 21	9	1	89%	YES
SLO Results			9	1	89%	YES
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
CMG/ACCE 12.1	CMG/AET 2253-001	FA18	714	99	86%	YES
	CMG 2253-001	FA19	714	208	71%	YES
	CMG 2253-001	FA20	560	115	79%	YES
	CMG 2253-001	FA21	156	21	87%	YES
SLO Results			2144	443	79%	YES
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
CMG/ACCE 19.2	CMG 3023-001	FA18	136	61	55%	NO
	CMG 3023-001	FA20	144	29	80%	YES
	CMG 3023-001	SP22	160	29	82%	YES
SLO Results			440	119	73%	YES
Performance Measure-SLO	Course-Section	Semester	Total Number of Scores	Scores BELOW Criterion	Percent of scores \leq 70%	Meets Criteria?
CMG/ACCE 20.1	CMG 3603-500	FA21	7	1	86%	YES
	CMG 3603-001	SP21	14	4	71%	YES
SLO Results			901	243	73%	YES

Overview of Measures/Instruments

A preliminary draft table of the Outcomes mapped to individual classes and rubrics with performance measures and expected results is provided. Additionally, mapping to EIU University objectives is included. These items were initially reviewed by the Dean's office and are in the process of being reviewed by CMG Faculty and Industrial Advisory Board. These are expected to be complete in final form by the end of Fall Semester 2020.

Eastern Illinois University CMG Program Student Outcomes Assessment Table by ACCE Outcomes

This is the data collection plan for compliance with ACCE accreditation outcomes. The individual instructor is responsible for collecting this data and transmitting the data to the Program Coordinator every semester within a week of the instructor's last final examination and before leaving campus. The Program Coordinator will assemble the data within a binder (maybe online file system) and transmit to the Chair, Dean's Office, and VPAA's office as warranted.

Data collection is required for construction management core classes only as the core classes collectively meet all ACCE requirements. Other courses, required and elective, reinforce these outcomes.

<i>ACCE Learning Outcomes (1,2,3) and Substantiating Event (1.1, 1.2, 1.3)</i>	<i>Class Where Collected with Class Description</i>	<i>Rubric or Other Evaluation Instrument</i>	<i>Performance Measures</i>	<i>Acceptable Performance Level and Expectation of Results</i>	<i>Direct or Indirect Assessment?</i>
1. Create written communications appropriate to the construction discipline.					
1.1 Creation of Technician-level Lab Reports	EGT 2004G - Material Science and Evaluation	CMG committee-approved technician-level lab report instructions.	Written Technician Lab Report	At least 70% of the students will score 70% or better.	Direct
1.2 Preparation of Professional Laboratory Reports	CMG 2013 - Soil, Concrete, and Paving Testing	CMG committee-approved professional-level lab report instructions.	Written Professional Lab Report	At least 70% of the students will score 70% or better.	Direct
1.3 Development of a written Job Hazard Safety Analysis	EGT 2773 - Safety for Engineers and Technical Professionals	In compliance with OSHA and other governmental safety standards.	Written Job Hazard Safety Analysis	At least 70% of the students will score 70% or better.	Direct
1.4 Development of a Sustainability Construction Work Plan Meeting LEED of Green Globes Protocols	CMG 3833 - Sustainable Buildings	LEED and Green Globes published standards.	Work Plan	At least 70% of the students will score 70% or better.	Direct
1.5 Create a Project Safety Plan	CMG 4243 - Construction Management Capstone	In compliance with OSHA and other government and industry safety standards.	Written Project Safety Plan	At least 70% of the students will score 70% or better.	Direct
2. Create oral presentations appropriate to the construction discipline					
2.1 Present finding regarding the student-developed subdivision layout.	CMG 3213 - Site Surveying and Planning	EIU Speaking and Listening Rubric and CMG-committee-approved evaluation forms	Oral Individual Presentation	At least 70% of the students will score 70% or better.	Direct
2.2 Present Group Development of a Passive Heating and Lighting System Design	CMG 3603 - Mechanical Systems Residential and Commercial	EIU Speaking and Listening Rubric and CMG-committee-approved evaluation forms	Oral Group Presentation	At least 70% of the students will score 70% or better.	Direct
2.3 Presentation of Findings of a LEED or Green Globes Sustainable Construction Work Plan	CMG 3833 - Sustainable Buildings	EIU Speaking and Listening Rubric and CMG-committee-approved evaluation forms	Oral Group Presentation	At least 70% of the students will score 70% or better.	Direct
2.4 Presentation of Findings of a Group Cost Estimate for a Small Commercial Project	CMG 4223 - Construction Cost Estimating	EIU Speaking and Listening Rubric and CMG-committee-approved evaluation forms	Oral Group Presentation	At least 70% of the students will score 70% or better.	Direct
2.5 Presentation of Findings for a Design-Build Project as Part of a Charrette	CMG 4243 - Construction Management Capstone	EIU Speaking and Listening Rubric and CMG-committee-approved evaluation forms	Oral Group Presentation	At least 70% of the students will score 70% or better.	Direct

<i>ACCE Learning Outcomes (1,2,3) and Substantiating Event (1.1, 1.2, 1.3)</i>	<i>Class Where Collected with Class Description</i>	<i>Rubric or Other Evaluation Instrument</i>	<i>Performance Measures</i>	<i>Acceptable Performance Level and Expectation of Results</i>	<i>Direct or Indirect Assessment?</i>
3. Create a Construction Safety Plan					
3.1 Development of a Written Site Safety Work P	EGT 2773 • Safety for Engineers and Technical Professionals	In compliance with OSHA and other government and industry safety standards.	Written Project Safety Plan Assignment	At least 70% of the students will score 70% or better.	Direct
3.2 Create a Project Safety Plan	CMG 4243 • Construction Management Capstone	In compliance with OSHA and other government and industry safety standards.	Written Project Safety Plan Assignment	At least 70% of the students will score 70% or better.	Direct
4. Create Construction Project Cost Estimates.					
4.1 Development of detailed Material, Labor, and Equipment Take-off Estimates using Excel	CMG 4223 • Construction Cost Estimating	RSMeans or MasterFormat Template	Develop Detailed Estimate	At least 70% of the students will score 70% or better.	Direct
4.2 Develop a Preliminary Estimate in the Development of a Sustainable Building Project	CMG 3833 • Sustainable Buildings	CMG-committee-approved and IAB Education Task Force-approved Format	Develop a Preliminary Estimate	At least 70% of the students will score 70% or better.	Direct
4.3 Create an Estimate and Develop a Project Bid for a Design-Build Project	CMG 4243 • Construction Management Capstone	CMG-committee-approved and IAB Education Task Force-approved Format	Develop an Conceptual Estimate and Project Proposal	At least 70% of the students will score 70% or better.	Direct
4.4 Develop a Risk-based Estimate based upon Monte Carlo Analytical Techniques	CMG 4023 • Construction Risk Management	CMG-committee-approved and IAB Education Task Force-approved Format	Develop a Risk-based Estimate and Monte Carlo Simulation	At least 70% of the students will score 70% or better.	Direct
5. Create Construction Project Schedules					
5.1 Develop Project Schedule using Microsoft Project demonstrating a mastery of understanding precedence and their impact upon Project Time Scheduling	EGT 3414 • Engineering Technology Project Management	Rubric developed by Certified Master Project Manager or Professional Engineer	Develop Project Schedule	At least 70% of the students will score 70% or better.	Direct
5.2 Relate Take-off Estimating to Project Scheduling	CMG 4243 • Construction Management Capstone	RSMeans or MasterFormat Template	Develop line-based Project Schedule	At least 70% of the students will score 70% or better.	Direct
5.3 Develop an Advanced Project Schedule using Resource Leveling Techniques and Monte Carlo Analysis	CMG 4243 • Construction Management Capstone	CMG-committee-approved and IAB Education Task Force-approved Format	Develop Risk-based Schedule with Resource Leveling	At least 70% of the students will score 70% or better.	Direct
6. Analyze Professional Decisions based upon ethical principles.					
6.1 Write a short paper balancing ethics, safety, productivity, and business objectives within the realm of a construction project.	EGT 2773 • Safety for Engineers and Technical Professionals	EIU Writing and Critical Reading Rubric	Written Short Paper	At least 70% of the students will score 70% or better.	Direct
6.2 Prepare a short paper and presentation examining risk and rewards associated with ethical decision-making.	CMG 4023 • Construction Risk Management	EIU Writing and Critical Reading and Speaking and listening Rubrics	Written Short Paper	At least 70% of the students will score 70% or better.	Direct

<i>ACCE Learning Outcomes (1,2,3) and Substantiating Event (1.1, 1.2,1.3)</i>	<i>Class Where Collected with Class Description</i>	<i>Rubric or Other Evaluation Instrument</i>	<i>Performance Measures</i>	<i>Acceptable Performance Level and Expectation a/ Results</i>	<i>Direct or Indirect Assessment?</i>
7. Analyze Construction Documents for planning and management of construction processes!					
7.1 Prepare a set of facility prints including floor plans, elevations, and details using 3-dimensional software.	CMG 2223 - Print Reading and Building Informational Modeling	Standards set by CMG-committee with consultation with Education Task Force of Construction Management IAB	Detailed Project Prints	At least 70% of the students will score 70% or better.	Direct
7.2 Develop a site-specific safety plan drawing using CAD, Sketch-up, Photoshop or other digital methods to illustrate logical progression of safe construction events.	EGT 2773 - Safety for Engineers and Technical Professionals	In compliance with OSHA and other government and industry safety standards.	Site-specific Site Safety Plan Drawing	At least 70% of the students will score 70% or better.	Direct
7.3 Analyze construction or facility prints while developing a logical activity progression plan.	EGT 3414 - Engineering Technology Project Management	Rubric developed by Certified Master Project Manager or Professional Engineer	Logical Activity Progression Plan	At least 70% of the students will score 70% or better.	Direct
7.4 Using a set of construction plans, develop a scale model of the foundations and structural components of a multi-story building.	CMG 3023 - Formwork and Building Processes	Standards set by CMG-committee with consultation with Education Task Force of Construction Management IAB	Scale Group Model Project	At least 70% of the students will score 70% or better.	Direct
7.4 Development of detailed Material, Labor, and Equipment Take-off Estimates using Excel.	CMG 4223-Construction Cost Estimating	RSMeans or MasterFormat Template	Detailed Estimate	At least 70% of the students will score 70% or better.	Direct
7.5 Create a preliminary estimate and schedule for a commercial building using construction documents.	CMG 4243-Construction Management Capstone	Standards set by CMG-committee with consultation with Education Task Force of Construction Management IAB	Preliminary Estimate	At least 70% of the students will score 70% or better.	Direct
8. Analyze methods, material, and equipment used to construct projects,					
8.1 Analyze materials such as steel, plastic, concrete, wood, ceramic, and composite identifying their physical and chemical behavior under environmental stressors.	EGT 2004G - Material Science and Evaluation	ASTM and Other Materials Specification Standards	Objective Test Questions	At least 70% of the students will score 70% or better.	Direct
8.2 Conduct advanced analysis of soil, polyaniline concrete, and asphaltic concrete for use as construction materials.	CMG 2013 - Soil, Concrete, and Paving Testing	CMG committee-approved professional-level lab report instructions.	Written Professional Lab Report	At least 70% of the students will score 70% or better.	Direct
8.3 Construct a building project using equipment, tools, and trade workmanship.	CMG 2253-Construction Equipment and Materials	Standards set by CMG-committee with consultation with Education Task Force of Construction Management IAB	Physical Building Project	At least 70% of the students will score 70% or better.	Direct
8.4 Write a Short Paper examining the selection of equipment and their use on heavy construction projects.	CMG 3023 - Formwork and Building Processes	EIU Writing and Critical Reading Rubric	Written Short Paper	At least 70% of the students will score 70% or better.	Direct
8.5 Present findings of an investigation either for construction or manufacturing assigning resources using LEAN techniques.	EGT 3414 - Engineering Technology Project Management	Rubric developed by Certified Master Project Manager or Professional Engineer	Either Written Paper or Oral Presentation	At least 70% of the students will score 70% or better.	Direct
8.6 Present finding of an investigation using either sustainable active or passive mechanical systems in the built environment.	CMG 3603 - Mechanical Systems Residential and Commercial	EIU Speaking and Listening Rubric and CMG-committee-approved evaluation forms	Oral Individual or Group Presentation	At least 70% of the students will score 70% or better.	Direct
8.7 Present alternate methods of material selection and construction practices to enhance project sustainability.	CMG 4243-Construction Management Capstone	Standards set by CMG-committee with consultation with Education Task Force of Construction Management IAB	Written Comprehensive Proposal	At least 70% of the students will score 70% or better.	Direct

ACCE Learning Outcomes (1,2,3) and Substantiating Event (1.1, 1.2,1.3)	Class Where Collected with Class Description	Rubric or Other Evaluation Instrument	Performance Measures	Acceptable Performance Level and Expectation a/ Results	Direct or Indirect Assessment?
9. Apply construction management skills as a member of a multi-disciplinary team.					
9.1 Construct a building project as part of a group activity.	CMG 2253-Construction Equipment and Materials	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Physical Building Project	At least 70% of the students will score 70% or better.	Direct
9.2 Participate in a survey party while conducting laboratory assignments.	CMG 3213 -Site Surveying and Planning	Peer Evaluation Form approved by CMG committee	Survey Crew Laboratory Assignment	Favorable Rating of Performance by Peer for 80% of the Students	Indirect
9.3 Present a summary of group findings as part of group mechanical/electrical systems design.	CMG 3603. Mechanical Systems Residential and Commercial	EIUSpeaking and Listening Rubric and CMG-committee approved evaluation forms	Group Presentation	At least 70% of the students will score 70% or better.	Direct
9.4 Participate within a Charrette examining a sustainability project from the perspective of many stakeholders.	CMG 38-33 Sustainable Buildings	Peer Evaluation Form approved by CMG committee	Charrette Group Work	Favorable Rating of Performance by Peer for 80% of the Students	Indirect
10. Apply electronic based technology to manage construction process					
10.1 Develop Project Schedule using Microsoft Project demonstrating a mastery of understanding precedence and their impact upon Project Time Scheduling	EGT 3414 . Engineering Technology Project Management	Rubric developed by Certified Master Project Manager or Professional Engineer	Microsoft Project Scheduling	At least 70% of the students will score 70% or better.	Direct
10.2 Develop an Advanced Project Schedule using Resource Leveling Techniques and Monte Carlo Analysis	CMG 4243 Construction Management Capstone	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Advanced Project Scheduling	At least 70% of the students will score 70% or better.	Direct
11. Apply basic surveying techniques for construction layout and control.					
11.1 Layout a building structure and stake horizontal curves.	CMG 3213 Site Surveying and Planning	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Layout of Building	At least 70% of the students will score 70% or better.	Direct
11.2 Calculate cut and fill requirements for a roadway project.	CMG 3213 Site Surveying and Planning	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective Assignment	At least 70% of the students will score 70% or better.	Direct
11.3 Understand error determination and precision as it pertains to surveying.	CMG 3213 Site Surveying and Planning	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective Test Questions	At least 70% of the students will score 70% or better.	Direct
12. Understand different methods of project delivery and the roles and responsibilities of all constituents involved in the design and construction process.					
12.1 Understand the division of labor and resources on a job site.	CMG 2253 Construction Equipment and Materials	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective Test Questions	At least 70% of the students will score 70% or better.	Direct
12.2 Understand the best contractual methods to develop a sustainable building. Explain how stakeholders are included within the process.	CMG 38-33 Sustainable Buildings	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective Test Questions	At least 70% of the students will score 70% or better.	Direct
12.3 Comprehend each contract type and the risk associated as it relates to the client, contractor, subcontractor, and other stakeholders.	CMG 4023 Construction Risk Management	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective Test Questions	At least 70% of the students will score 70% or better.	Direct

<i>ACCE Learning Outcomes (1,2,3) and Substantiating Event (1.1, 1.2,1.3)</i>	<i>Class Where Collected with Class Description</i>	<i>Rubric or Other Evaluation Instrument</i>	<i>Performance Measures</i>	<i>Acceptable Performance Level and Expectation of Results</i>	<i>Direct or Indirect Assessment?</i>
13, Understand c.onstruction risk management,					
13.1 Identify risk sources and impact.	CMG 4023 .Construction Risk Management	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective Test Questions	At least 70%ofthe studentswill score 70% or better.	Direct
13.2 Evaluate risk sensitivity and risk attitude asit pertains to construction management.	CMG 4023 .Construction Risk Management	Standards set by CMG committee with consultation with Education Task Force of Construction ManaE:ement IAB	Objective HomeworkAssignment	At least 70%ofthe studentswill score 70% or better.	Direct
13.3 Create statistical mathematic models to evaluate project risk and exposure.	CMG 4023 .Construction Risk Management	Standards set by CMG committee with consultation with Education Task Force of Construction ManaE:ement IAB	Excel Sheet Statistical Modelling	At least 70%ofthe studentswill score 70% or better.	Direct
13.4 Develop a project Quality Assurance plan and describe how it imoactsconstruction risk.	EGT 4843 .Statistical Quality and Reliability	EIU Writing and Critical Reading Rubric	Written ShortPaper	At least 70%ofthe studentswill score 70% or better.	Direct
14, Understand c.onstruction acc.ountingand c.ostc.ontr ol,					
14.1 Development of detailed Material, labor, and EquipmentTake ff Estimates using Master Format Guidelines.	CMG 4223 .Construction Cost Estimating	RSMeans or MasterFormatTemplate	Detailed Estimate	At least 70%ofthe studentswill score 70% or better.	Direct
14.2 Develop a Project Cost Control plan based uponlearned business and financial practices.	CMG 4243 .Construction Management Capstone	Standards set by CMG committee with consultation with Education Task Force of Construction ManaE:ement IAB	Project Cost Control Plan	At least 70%ofthe studentswill score 70% or better.	Direct
15, Understand quality assurance and c.ontr ol,					
15.1 Develop a project Quality Assurance plan for a construction project and describe how it impacts construction risk.	EGT 4843 .Statistical Quality and Reliability	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Project Quality Assurance Plan	At least 70%ofthe studentswill score 70% or better.	Direct
15.2 Develop a project specific QA/QCPlan for a commercial project.	CMG 4243 .Construction Management Capstone	Standards set by CMG committee with consultation with Education Task Force of Construction ManaE:ement IAB	Commercial Project QA/QCPlan	At least 70%ofthe studentswill score 70% or better.	Direct
16, Understand c.onstruction c.ontr olprocess.					
16.1 Understand the construction control process within construction.	CMG 4223 .Construction Cost Estimating	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective Test Questions	At least 70%ofthe studentswill score 70% or better.	Direct
16.2 Develop a construction control plan for a commercial project.	CMG 4243 .Construction Management Capstone	Standards set by CMG committee with consultation with Education Task Force of Construction ManaE:ement IAB	Written Construction Control Plan	At least 70%ofthe studentswill score 70% or better.	Direct
17, Understand the legal implications of c.ontract, c.ommon, and regulatory law to manage a c.onstruction project,					
17.1 Understand relevant ethical principles and valuesfrom the perspectivesofvarious stakeholders as they relate to contractual and legal implications.	BUS2750. Legal and Social Environment of Business	Standards set by School of Business	Objective HomeworkorTestQuestions	At least 70%ofthe studentswill score 70% or better.	Direct
17.2 Analyze through case studies the legal implications of contract, common, and regulatory law as it ertainsto the construction industry.	CMG 4023 .Construction Risk Management	EIUSpeaking and listening Rubric and CMG-committeeapproved evaluation forms	Oral Individual or Group Presentation	At least 70%ofthe studentswill score 70% or better.	Direct

<i>ACCE Learning Outcomes (1,2,3) and Substantiating Event (1.1, 1.2,1.3)</i>	<i>Class Where Collected with Class Description</i>	<i>Rubric or Other Evaluation Instrument</i>	<i>Performance Measures</i>	<i>Acceptable Performance Level and Expectation of Results</i>	<i>Direct or Indirect Assessment?</i>
18, Understand the principles of sustainable construction,					
18.1 Development of a Sustainability Construction Work Plan Meeting LEED of Green Globes Protocols	CMG 3833 -Sustainable Buildings	LEED and Green Globes published standards.	Work Plan	At least 70%ofthe studentswill score 70% or better.	Direct
18.2 Develop value added alternated to support green initiatives aspart of a design/build project.	CMG 4243 Construction Management Capstone	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	ProjectValueadded Plan	Atleast 70%ofthe studentswill score 70% or better.	Direct
19, Understand the principles of structural behavior,					
19.1 Understand the conceptsof force, force distribution, stress, strain and how to apply mathematical models to assessmaterial sufficiency.	CMG 29S3 -Statics and Strength of Materials	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective HomeworkorTestQuestions	At least 70%ofthe studentswill score 70% or better.	Direct
19.2 Understand force flow within abuilding, foundations, lateral bracing, and construction techniques as they apply to buildine construction.	CMG 3023 - Formwork and Building Processes	Standards set by CMG committee with consultation with Education Task Force of Construction Management IAB	Objective HomeworkorTestQuestions	Atleast 70%ofthe studentswill score 70% or better.	Direct
20, Understand the basic principles of mechanical, electrical, and piping systems.					
20.1 Develop heating cooling requirement for a building envelope. Size appropriate passive and cooling system requirements.	CMG 3603 - Mechanical Systems Residential and Commercial	Standards set by CMG committee with consultation with MCA and NECA	System Design Problem	At least 70%ofthe studentswill score 70% or better.	Direct
20.1 Determine DMV and supply piping requirements within abuildine.	CMG 3603 - Mechanical Systems Residential and Commercial	Standards set by CMG committee with consultation with MAC and NECA	Piping Design Problem	At least 70%ofthe studentswill score 70% or better.	Direct
20.3 Understand the function of electrical systems within acommercial buildine.	CMG 3603 - Mechanical Systems Residential and Commercial	Standards set by CMG committee with consultation with MCA and NECA	Objective HomeworkorTestQuestions	At least 70%ofthe studentswill score 70% or better.	Direct