

**Oregon State University**  
**Construction Engineering Management (CEM) Program**  
**Degree Program Assessment Plan**

**Mission Statement (CEM Program Mission)**

The mission of the Construction Engineering Management (CEM) Program is to provide a comprehensive, state-of-the-art education to prepare students for professional and responsible constructor positions with business, industry, consulting firms, or government.

**Degree Program Objectives (CEM Program Educational Objectives)**

1. Provide a *compelling education* based in the natural sciences; mathematics; engineering sciences; business; and the fundamental paradigms, concepts, understandings, applications, and knowledge of civil and construction engineering.
2. Develop students' abilities through their education to *analyze, synthesize, and evaluate* information; solve engineering problems; and be prepared to effectively perform project engineering and management tasks for effective execution of construction projects.
3. Provide education for *modern professional practice* including the abilities for effective communication, collaborative work in diverse teams, ethical decision-making, successful management of personal and professional career objectives, and continual development through lifelong learning and professional involvement.
4. Prepare our graduates for either *immediate employment* or for graduate school opportunities in construction or business.
5. Provide students with knowledge of *contemporary societal issues* and a sensitivity to the challenge of meeting social, environmental, and economic constraints within a global community.

**Degree Program Learning Outcomes**

Each of the CEM Degree Program Learning Outcomes, referred to on the matrix below as "CEM Program Educational Objectives," are correlated to each of the 20 ACCE Student Learning Outcomes. The 20 SLO's are assessed annually as described in the following section.

CEM Program Educational Objectives					CEM Student Learning Outcomes (SLO's)
Compelling Education	Analysis, Synthesis, & Evaluation	Modern Professional Practice	Immediate Employment / Grad School	Contemp. Society	
			X		1. Create written communications appropriate to the construction discipline.
			X		2. Create oral presentations appropriate to the construction discipline.
			X		3. Create a construction project safety plan.
			X		4. Create construction project cost estimates.
			X		5. Create construction project schedules.
	X	X	X	X	6. Analyze professional decisions based on ethical principles.
	X		X		7. Analyze construction documents for planning and management of construction processes.
	X		X		8. Analyze methods, materials, and equipment used to construct projects.
		X	X	X	9. Apply construction management skills as an effective member of a multi-disciplinary team.
	X	X	X		10. Apply electronic-based technology to manage the construction process.
X	X	X	X		11. Apply basic surveying techniques for construction layout of control.
X			X	X	12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
X			X	X	13. Understand construction risk management.
X			X		14. Understand construction accounting and cost control.
X			X		15. Understand construction quality assurance and control.
X			X		16. Understand construction project control processes.
X			X	X	17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.
X			X	X	18. Understand the basic principles of sustainable construction.
X			X		19. Understand the basic principles of structural behavior.
X			X		20. Understand the basic principles of mechanical, electrical, and plumbing systems.

### **Assessment Tools and Frequency of Use**

Each of the 20 SLO's, and thus each of the five CEM Program Educational Objectives, is assessed annually using at least one direct assessment measure and one indirect assessment measure. Each SLO is assessed directly in a course assignment, typically a project, homework assignment, or exam, each time the course is taught, which is generally once or twice per year. Even if an SLO is not assessed with each course offering due to extenuating circumstances, in no case will each SLO be assessed less frequently than every three years. The indirect assessment measure is the senior exit survey of graduating seniors that is conducted annually through the College of Engineering's online survey tool. The senior exit survey is administered and analyzed every year but in no case less frequently than every three years.

### **Performance Criteria**

The CEM Program has a goal that 70% students have a passing grade of 70% or greater for the assignment on which an SLO is directly assessed. The program's goal is that the mean of graduating senior survey scores for each of the 20 Student Learning Outcomes is 4.9 out of 7.0 (70% of the maximum score) or higher.

### **Evaluation Methodology**

Individual faculty members assess the performance on the SLO's directly assessed in their courses generally upon completion of each offering of a course, at a minimum of once every three years. If the student performance on a SLO falls below the 70% threshold, the individual faculty member generates action items to be implemented in the next offering of the course. These action items are reviewed with the other CEM faculty at a group meeting, typically the first meeting of the fall term. Data generated from surveys of graduating senior, recent alumni, and employers of CEM graduates is compiled and analyzed annually by the CEM faculty at a group meeting and is reviewed with the Industry Advisory Board (IAB) at one of its two annual meetings. Based on the feedback from CEM faculty and the IAB, an action item is finalized and documented in the Annual Assessment Report and Action Plan. This Action Plan serves as the starting point for the next year's continuous improvement cycle. Changes expected to improve accomplishment of learning objectives on the course level are implemented the next time the course is taught. For changes on a curriculum level, the proposed change moves through the School's Curriculum Council, the CCE faculty as a whole, including the CCE School Head, and the University curriculum proposal system before being implemented.

### **Assessment Implementation Plan**

The documentation of the results of each assessment cycle, the analysis of data collected in each assessment cycle, and any program revisions made as a consequence of analysis are found in the each year's "Annual Assessment Report and Action Plan," which is posted on the CEM website.

\*The content of this document was developed by CEM faculty with input from the Industry Advisory Board and is reviewed annually by CEM faculty and updated as needed.