

2019 Construction Management Program Information

The UNLV Construction Management program is accredited by the American Council for Construction Education (ACCE). Our most recent accreditation visit occurred in April 2014 and the program was reaccredited at ACCE's Board of Trustees meeting in July 2014. Next accreditation visit is expected in March 2020.

ACCE accreditation requires information about the program and its success be provided to the general public. Specifically, the program must publish objectives of the degree program, admission requirements, degree program assessment measures employed, the information obtained through these assessment measures and actions taken as a result of the feedback, student achievement, the rate and types of employment of graduates, and any data supporting the qualitative claims made by the degree program. This document provides this information for the UNLV Construction Management program.

If you have questions about the information published here or if you would like more information about UNLV's Construction Management program, please contact Dr. Sajjad Ahmad, Department Chair, at 702-895-5456 or sajjad.ahmad@unlv.edu.

1. UNLV BS in Construction Management Program Objectives

The UNLV BS in Construction Management focuses on four (4) specific objectives. These objectives are:

Graduates will meet the expectations of employers of construction managers in all areas of construction practice

Graduates will be capable of advancement in the construction profession

Qualified graduates will be capable of pursuing advanced study

2. Admission Requirements for Construction Management Students

University admission requirements are described in detail at the following links:

Freshmen Students: <https://www.unlv.edu/admissions/freshman>

Transfer Students: <https://www.unlv.edu/admissions/transfer>

International Students: <https://www.unlv.edu/admissions/international>

Howard R. Hughes College of Engineering has additional admission requirement: students complete Math 126 - Pre-Calculus I (or higher) with a minimum grade of C. This is described at: <https://www.unlv.edu/asc/advising/major>

The Department of Civil & Environmental Engineering and Construction does not have any additional admission requirements.

3. UNLV BS in Construction Management (BSCM) Quality Improvement Plan

A continuous improvement process ensures that the BSCM program provides students with the best possible undergraduate education in construction and prepares them to become successful construction managers. In that pursuit, the Construction Management Program strives to provide the following learning outcomes:

Upon graduation from UNLV Construction Management Program a graduate shall be able to:

SLO 1- Create written communications appropriate to the construction discipline.

SLO 2- Create oral presentations appropriate to the construction discipline.

SLO 3- Create a construction project safety plan.

SLO 4- Create construction project cost estimates.

SLO 5- Create construction project schedules.

SLO 6- Analyze professional decisions based on ethical principles.

SLO 7- Analyze construction documents for planning and management of construction processes.

SLO 16- Understand construction project control processes.

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

SLO 18- Understand the basic principles of sustainable construction.

SLO 19- Understand the basic principles of structural behavior.

SLO 20- Understand the basic principles of mechanical, electrical and plumbing systems.

Assessment Process for Student Learning Outcomes

The Civil and Environmental Engineering and Construction faculty has established and follows a robust process for evaluating the academic program and implementing changes toward our goal of continuous improvement. A variety of assessment tools gather information from students, faculty, alumni, and employers. Some provide direct measurements of student outcomes and others provide stakeholder opinions on student outcomes, while some provide more general program assessment information. The student outcome assessments and data collected from alumni, industry, and stakeholders are reviewed every year in a dedicated faculty retreat, and suggestions for improvement or changes are made and voted on by the faculty.

Assessment Tools and Data Collection

The following assessment tools are used:

Course examinations and assignments. Most Construction courses utilize homework problems, quiz questions, and exam problems to assess student performance. These same measures link directly to student learning outcomes.

Student term projects. Student projects are an important component of many courses and usually culminate with a written report, oral presentation, or both. Most projects require independent thinking to formulate a problem, identify possible approaches or solutions to the problem, and gather information to complete the project.

Course evaluations. Students complete evaluations for each course near the end of the semester. These evaluations allow direct student input on instructor effectiveness and student learning outcomes, and also allow students to provide written comments. These results are provided to instructors at the end of the semester. The Department Chair uses the results to provide broad feedback to all faculty members and as input to annual faculty evaluations. In addition, the Department Chair uses these data to identify faculty who need teaching training, additional instruction support, or change in teaching strategies.

Senior Exit Surveys. Each student is asked to complete (anonymously) a Senior Exit Survey that covers a wide range of topics including Student Learning Outcomes and Program Objectives. These surveys are

from these surveys are shared with faculty and used, along with other assessment data, for learning outcome assessment and program improvement.

Senior Exit Interviews. The Department Chair interviews each graduating senior within a few weeks of graduation. These interviews usually last 30 minutes and consist partially of career mentoring, but primarily provide students an opportunity to give direct input to the Department Chair. Students are asked to comment on facilities, support services (tutoring, advising, and career), instructors, courses and any issues students may have encountered in thi (e e)7.g5 (r)-he er.002 (s, .002.004 (en)9)11.005 (a)-h. (s,Anpu)4 (en)9uden-l

Table 1. Summary of assessment tools.

External Assessments Tools		
Label	Description	Frequency
A1	AIC Exam Results	Once per Year
A2	Employer Surveys	Every Three Years
A3	Alumni Surveys	Every Three Years
A4	Program Review by Advisory Board	Every Three Years
Internal Assessments		
Section	Description	Frequency
A5	Faculty Evaluation of Student Learning Outcomes	Every Semester

Continuous Improvement Cycle

Figure 1. Course and program assessments and continuous improvement cycle.

Internal assessments (A5-A8) are also integral to our continuous Quality Improvement Process. Information is gathered from graduating seniors, who are at a point to provide particularly insightful input, through a formal exit survey and one-on-one exit interviews with the Department Chair. While some of the input is duplicative, the different characteristics of the two instruments provide robust feedback and input for improvement. During the last weeks of each semester, students evaluate every offered course. These evaluations cover instructor performance in areas related to both classroom performance and levels of learning outcome attainment. Additionally, class instructors provide formal assessment of Student Outcomes through several

Flows of program assessment information and subsequent continuous improvement feedback are illustrated in Figure 2. The Department Chair or UCAC, as appropriate, initiates consultation with faculty, and changes are implemented either through individual instructors at course level, or directly at the curriculum/program level. Progress as a result of changes made is monitored to ensure improvements in the learning outcomes.

Figure 2. Program assessment information flows and continuous improvement cycle.

Evaluation of Collected Data and Decision Making

Direct and indirect assessment measures are employed to regularly evaluate our success in achieving these learning outcomes. These assessments collect information from all of our constituents –

Department's Undergraduate committee, and then voted on by the entire CEEC faculty. Once approved by the faculty, changes must also be approved by College and University Curriculum Committees prior to implementation.

This Quality Improvement Plan is a continuous process and assessment results are analyzed immediately upon receipt. However, organized annual evaluations of all available assessment results are conducted during a daylong faculty retreat to ensure that the process leads to a continuously improving program.

4. Program Assessment Measures

A range of instruments are employed to assess how well our program accomplishes the learning objective and program outcomes. The measures employed and the schedule of their deployment is as follows:

Table: External Assessments Tools

Label	Description	
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A8-2	Program Review (Minor) for Catalog Updates	Every Year	Summative Assessment	SLO and Program Objectives	Report by faculty committee
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Additional assessments are employed as appropriate. The most recent data and assessments from each instrument are provided below.

Performance Criteria

Performance Criteria used to measure the achievement of the Degree Program Objectives and Program Learning Outcomes is provided in following Table.

Assessment Tool Performance Criteria Used to Measure

Results

a.

Construction Management Seniors takes the American Institute of Constructors' Associated Constructor Level I – Construction Fundamentals examination as part of CEM 455 Construction Management Practice. This course is taken in the student's final semester. All students must take the exam and the results comprise a portion of their course grade.

The program uses this examination as a measure of academic quality. The goal established by the program is to exceed the national average pass rate on the exam. Historically, the performance of UNLV CM students has exceeded that goal; the data are shown in the table below.

Associated Constructor Level I Exam

Year	Taking	Passing	% Passing	
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2019 Subject Area scores for UNLV students compared to the national average.

Subject Area	UNLV Avg.	National Avg.
SLO 1- Create written communications appropriate to the construction discipline.	80	75
SLO 2- Create oral presentations appropriate to the construction discipline.	75	71
SLO 3- Create a construction project safety plan.	75	73
SLO 4- Create construction project cost estimates.	75	72
SLO 5- Create construction project schedules.	79	74
SLO 6- Analyze professional decisions based on ethical principles.	77	73

SLO 7- Analyze construction documents

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SLO 16- Understand construction project control processes.	83	79
SLO 17- Understand the legal implications of contract, common, and regulatory law to manage a construction project.	78	76
SLO 18- Understand the basic principles of sustainable construction.	67*	58
SLO 19- Understand the basic principles of structural behavior.	77	70
SLO 20- Understand the basic principles of mechanical, electrical and plumbing systems.	64*	59

*considered to be an area of weakness by AIC

b. Alumni and Employer Surveys

Associate Dean, College of Engineering

Did your studies at UNLV help you develop the following capabilities?	<i>Alumni</i>	<i>Employer</i>
SLO 1- Create written communications appropriate to the construction discipline.		
SLO 2- Create oral presentations appropriate to the construction discipline.		
SLO 3- Create a construction project safety plan.		
SLO 4- Create construction project cost estimates.		
SLO 5- Create construction project schedules.		
SLO 6- Analyze professional decisions based on ethical principles.		
SLO 7- Analyze construction documents for planning and management of		

c. Senior Exit Interviews and Surveys

Senior exit surveys and interviews are also important components of program assessment. They provide essential student input on the program, its strengths, weaknesses, and areas of concern. First, students complete an online exit survey. Then the Department Chair interviews each graduate individually. Students are asked for their input related to all aspects of the program, including coursework, faculty, advising, career guidance, and any other related subject they may wish to raise. The Chair attempts to limit questions to clarification of specific points or as necessary to stimulate a productive conversation. These unstructured, open-ended discussions typically last 30 minutes each. Since data collected in this form is subject to bias, there is no attempt to gather quantifiable data. Instead, the Department Chair produces a summary of the interviews that is distributed to the faculty and Dean. The summary focuses primarily on synergistic issues raised by multiple graduates, although a critical issue raised by a single graduate could be sufficient to raise the concern to the faculty. Responses vary by issue, but the faculty attempt to respond to each issue appropriately.

The primary issue raised by the CM graduates during the Spring 2019 exit interviews was course scheduling; they want more courses at night. This is an important issue that merits careful consideration. While I understand their concerns, it is not clear whether night or day courses are best for the program's growth. Currently, we start out with day classes at the freshman level,

Did your studies at UNLV help you develop the following capabilities?	2018	2019
SLO 1- Create written communications appropriate to the construction discipline.		
SLO 2- Create oral presentations appropriate to the construction discipline.		
SLO 3- Create a construction project safety plan.		
SLO 4- Create construction project cost estimates.		
SLO 5- Create construction project schedules.		
SLO 6- Analyze professional decisions based on ethical principles.		
SLO 7- Analyze construction documents for planning and management of construction processes.		
SLO 8- Analyze methods, materials, and equipment used to construct projects.		
SLO 9- Apply construction management skills as an effective member of a multi-disciplinary team.		
SLO 10- Apply electronic-based technology to manage the construction process.		
SLO 11- Apply basic surveying techniques for construction layout and control.		
SLO 12- Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.		
SLO 13- Understand construction risk management.		
SLO 14- Understand construction accounting and cost control.		
SLO 15- Understand construction quality assurance and control.		
SLO 16- Understand construction project control processes.		
SLO 17- Understand the legal implications of contract, common, m		

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d. Individual Course Assessments

Internal reviews monitor performance of faculty and students on a routine basis to identify issues and concerns quickly and ensure program delivery and quality remains at a high level. Every course includes formal, anonymous evaluation by the students. The evaluation consists of three parts, course content, faculty performance, and student comments. These reviews are administered on-line and compiled by the UNLV to ensure anonymity. The results are provided individually to each faculty member and collectively to the Department Chair. The Department

Providing the data in this manner allows faculty to compare their performance with others in the department while respecting instructors' privacy. The results are used by individual instructor to improve course delivery and content.

CM Course/Curriculum Review by Advisory Board

Assessment results and the continual need to improve the program suggested that a comprehensive review of all existing CM courses in the program could potentially be useful. This review was conducted by the IAB Curriculum Committee in Spring of 2018 in the leadership of Mr. James Caviola.

This intensive review of the CM curriculum provided useful insights into what local employers are looking for in BSCM graduates. It also served to better inform the participants of the rigor within the current program. Many verbal comments were made about how "surprised" they were about the depth and breadth of the curriculum; they found it to be much more than they expected based upon their previous understanding. It also served to provide a foundation for our future discussion on program changes.

work in multi-disciplinary teams. CM students will also be able to participate in College of Engineering Senior Design competition. This change will not result in any increase in total credit requirements because a social science course has been dropped. This will start in Fall 2020.

Content of CEE 121 Engineering Surveying have been modified to include a dedicated building layout exercise.

Based on student feedback, scheduling course now includes use of both Microsoft Project and Primavera.

Content of CEE 301 CAD tools for Civil Engineering Design has been modified to accommodate topics of interest for Construction Students.

Students reported that one of our Part Time Instructors (PTI) was not delivering a course at a satisfactory level. Some investigation showed that this had been a growing problem. After some discussion with the instructor, it was decided that it was best for all involved to find a new PTI for that course. Instructor was replaced in the next semester.

6. Student Achievement

BSCM student achieve many goals during the course of their academic program.

Probably the most significant of these is passing the American Institute of Constructors' Associated Constructor Level I Exam. As shown in the table above, UNLV CM students continue to maintain a level of success far beyond the national average. In 2019, 9 of 12 students passed the exam on their first attempt.

In 2019, BSCM students also had the chance to participate in the UNLV's entry into the 2020 Solar Decathlon competition. UNLV has participated in this competition in 2013 and 2017. The UNLV team placed 2nd overall and was the highest ranked US entry (2013). More information on the DesertSol project can be found at <http://solardecathlon.unlv.edu/>.

Most of our CM students participate every year in ASC Regions 6 & 7 Student Competition that is held in the Reno, Nevada in February. In 2018 and 2019 our students took first place in the Design-Build Category. They also competed in the Commercial category. Our students are taking part in this competition in February 2020.

7. Employment of BSCM Graduates

All 12 BSCM graduates in Spring 2019 secured full-time employment in construction-related positions prior to graduation or immediately thereafter. Almost all graduates were employed in entry-level professional positions. All graduates took positions in the Las Vegas area.

Fifteen percent graduates reported receiving a salary between \$40,000 and 60,000/yr.
Remaining 85 % graduates reported salary above \$60,000/yr.