



## **PROGRAM MISSION, GOALS, AND OBJECTIVES**

## 1. Program Mission

The mission of the Construction Science and Management program is to achieve a regionally and nationally recognized, student-focused, and industry-oriented construction program that provide graduates with knowledge and skills in management and supervisory professions that are valued by the construction industry.

## 2. Program Goal and Learning Objectives

### Goal

To prepare diverse graduates for an outstanding professional career in the construction industry and related fields through an appropriate curriculum delivered with professional and exceptional instruction to achieve excellence in student learning.

This goal will be achieved through faculty development, research and creative scholarly activities for both faculty and students, professional organizations' involvement, and excellence in teaching and learning. With this goal, the program will support its mission to achieve a regionally and nationally recognized, student focused, and industry-oriented construction program.

### Objectives

The TSU Construction Science and Management program objectives are as follows:

#### Objective 1:

*Students will demonstrate the capacity to manage complex construction projects including the bidding, contracting, and implementation phase within an interdisciplinary team environment.*

Key Performance Measure: Supervisory feedback from internship supervisors – CNST 4395 Internship

Target: 70% will receive a satisfactory rating or above from their supervisor – rated as a 3 on the 1 to 5 Likert Scale with 1 being Strongly Disagree and 5 being Strongly Agree

Key Performance Measure: Project submission from capstone course – CNST 4395

Capstone project

Target: 70% will receive a rating of 80/100 or above in their capstone project report/packet.

#### Objective 2:

*Students will demonstrate technical competence in the tools and processes required in the construction field to perform field operations and management.*

Key Performance Measure: Supervisory feedback from internship supervisors – CNST 4395 Internship

Target: 70% will receive a satisfactory rating or above from their supervisor – rated as a 3 on the 1 to 5 Likert Scale with 1 being Strongly Disagree and 5 being Strongly Agree

Key Performance Measure: Lab performance in CNST 1306/CNST 1307.  
Target: 70% of students taking CNST 1306/CNST 1307 score an 80% or above on the labs.

**Objective 3:**

*Students will demonstrate an ability to communicate effectively both orally and written in a professional environment.*

Key Performance Measure: Project presentation and report from capstone course – CNST 4395 Capstone project

Target: 70% will receive a rating of 80/100 or above in their capstone project report/presentation.

**Objective 4:**

*Students and faculty members will demonstrate continued growth in professional knowledge, lifelong learning and service to profession, industry, and community.*

Key Performance Measures: Student involvement in professional organization's student chapters.

Target: 70% of students in the program are members of professional organizations' student chapter.

Key Performance Measures: Faculty or Professional Development

Target: 70% of faculty members have at least 3 faculty or professional development attended per year related to field of expertise.

Key Performance Measures: Professional Committee Members

Target: 70% of faculty members are involved as committee or advisory member of professional organizations.

**Objective 5:**

*Students will achieve recognition and/or compensation consistent with their educational achievements.*

Key Performance Measure: Employment

Target: 70% of graduates receive a job offer before or within three months after graduation.

### **3. Student Learning Outcome**

Student Learning Outcomes are based on ACCE criteria as defined in ACCE Document 103B. The 20 student learning outcomes demonstrate students' ability to apply fundamental knowledge in construction science and construction management areas as described in ACCE Document 103B, which lists required curricular content.

Faculty in the construction science and management program at Tarleton State University operationally defined each of the 20 ACCE learning outcomes. The operational definition of each student learning outcome provides a broad categorization of the knowledge and skills graduates with a Bachelor's of Science in Construction Science and Management from Tarleton State University will possess for each student learning outcome. Students graduating with a B.S. in Construction Science and Management will achieve the following objectives:

SLO #1: Create written communications appropriate to the construction discipline

- Summarize information into appropriate and concise format
- Format professional communications
- Use language and content appropriate to audience

*Assessment: CNST 4395 - Final project/internship presentation.*

SLO #2: Create oral presentations appropriate to the construction discipline

- Demonstrate verbal and non-verbal communication skills
- Tailor language and message to the audience being addressed
- Deliver correct information

*Assessment: CNST 4395 - Final oral presentation of project and internship.*

SLO #3: Create a construction project safety plan

- Prepare safety data and fact sheets
- Prepare task training checklists
- Develop Jobsite Safety Analysis (JSA) Report

*Assessment: CNST 3320 - Term project on Construction Job Site Safety Plan*

SLO #4: Create construction project cost estimates

- Read plans and understand specifications
- Perform quantification/takeoff (QTO), pricing, and productivity estimates
- Develop conceptual, current, projected, and revised project budgets

*Assessment: CNST 2323 and CNST 3302 - Final Comprehensive Exam*

SLO #5: Create construction project schedules

- Develop, update, revise, and edit schedules
- Understand cost and time variances and their impacts on the project schedule

*Assessment: CNST 3385-Term Project Report / CNST 4322 – Laboratory Exercise 5: Primavera, Laboratory Exercise 10: 4D Model Analysis*

SLO #6: Analyze professional decisions based on ethical principles

- Identify ethical issues using applicable elements of a code of ethics and/or a company code of ethics
- Identify the parties involved, relationships, impacts and responsibilities of each

*Assessment: CNST 4313 – Homework 5, Exam 2*

SLO #7: Analyze construction documents for planning and management of construction processes

- Examine the submittal process
- Read plans and understand specifications
- Understand contract requirements and deliverables

*Assessment: CNST 3302 – Laboratory Exercises / CNST 4322 – Laboratory Exercises*

SLO #8: Analyze methods, material, and equipment used to construct projects

- Understand common materials, methods, and equipment in construction
- Select appropriate means and methods for a construction project

*Assessment: CNST 1306/1307 – Exams / CNST 4310 - Laboratory Exercises 1 to 6, CNST 4310 Comprehensive Final Exam*

SLO #9: Understand construction management skills as a member of a multi-disciplinary team

- Participate with various project members to accomplish a construction project
- Understand the training, experience, and qualifications of various parties involved in the construction project
- Understand team member roles and responsibilities for successful project outcomes
- Create a project-specific management plan

*Assessment: CNST 4322 – Laboratory Exercise 1: Multi-Disciplinary Team Members*

SLO #10: Apply electronic-based technology to manage the construction process

- Demonstrate appropriate use of technologies to complete construction operations and management tasks

*Assessment: CNST 1305 – Term Project, CNST 4322 – Laboratory Exercise 3 to 12, CNST 3302 – laboratory Exercises.*

SLO #11: Apply basic surveying techniques for construction layout and control

- Understand distance, grade, and angular measurement
- Demonstrate use of surveying equipment for construction layout and control
- Use three-dimensional measurement, modeling, and positioning systems

*Assessment: CNST 3335 – Laboratory Exercises 1 to 10.*

SLO #12: Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process

- Understand the aspects of, and risks associated with, different project delivery methods
- Compare different project delivery methods and select the most effective method

*Assessment: CNST 3321 – Major Exam 1, CNST 4322 – Major Exam 1*

SLO #13: Understand construction risk management

- Identify and understand different types of risk
- Understand techniques for risk shifting and mitigation
- Quantify risk

*Assessment: CNST 3321 – Major Exam 1, CNST 3385 – Major Exam*

SLO #14: Understand construction accounting and cost control

- Understand the relationships between time and resources on project costs
- Understand labor and operations cost reports

*Assessment: CNST 3385 – Final Exam / CNST 3321 – Comprehensive Final Exam*

SLO #15: Understand construction quality assurance and control

- Understand the submittal process for construction materials and deliverables
- Understand specifications as they apply to project QA/QC
- Understand the role of construction material testing standards

*Assessment: CNST 3311 – Laboratory Exercises reports*

SLO #16: Understand construction project control processes

- Understand project control procedures and inputs
- Understand basic project control systems and their effects on tracking project costs and budgets

*Assessment: CNST 3321 – Comprehensive Final Exam*

SLO #17: Understand the legal implications of contracts, and common and regulatory law to manage a construction project

- Identify the essential components and critical clauses in a construction contract
- Understand appropriate vocabulary in legal communication
- Understand the remedies available to parties impacted by breaches of legal duties
- Understand alternative dispute resolution methods

*Assessment: CNST 3321 – Major Exam 1, CNST 4325 – Final Exam*

SLO #18: Understand the basic principles of sustainable construction

- Understand the definition and application of sustainability
- Understand the characteristics of sustainable materials and methods

*Assessment: CNST 1306 and CNST 1307 – Major Exam 1, Assignments*

SLO #19: Understand the basic principles of structural behavior

- Understand basic structural systems
- Understand the fundamental properties of soils
- Understand the basic forces that act upon buildings

*Assessment: CNST 3308 – Major Exams, Final Exam, CNST 4310- Major Exam 1*

SLO #20: Understand the basic principles of mechanical, electrical, and piping (MEP) systems

- Understand the contractor's role in the delivery of MEP systems
- Understand the operation and installation of MEP systems

*Assessment: CNST 3301 – Major Exams, Laboratory reports / CNST 3309 – Major Exams, Laboratory Reports*

### **Business and Interpersonal Skills**

Students will demonstrate the soft skills that employers seek: communication, interpersonal relationships, management, problem solving, and professional skills. These skills are necessary for the student to complete assignments effectively whether in a group or independently.

### **Faculty Review**

Faculty will evaluate the result objectively on an annual basis. The faculty will map the courses against the criteria based on ACCE documentation. This document will be shared with the advisory board to ensure that we are meeting industry's demands for our students.