Department of Construction Science

The Department of Construction Science offers a Bachelor of Science degree in Construction Science and Management.

Admission to the Major in Construction Science and Management

Available openings within the Construction Science and Management Program (second to fourth year courses) are limited and, therefore, entry is competitive. Successful applicants entering the University from high school and transfer students will be directly admitted, as a pre-major, into the University College. At the completion of 30 credit hours of coursework, students may apply to the Construction Science and Management major. Applications will be reviewed at the end of each academic semester and students will be accepted to the major based on their grade point average (GPA) and number of available seats. Students who wish to transfer from another institution, or are currently enrolled in UTSA but wish to change their major, may apply to the major directly if they have more than 30 credit hours. The transfer and change of major applications will be reviewed at the end of each academic semester and students will be accepted to the major based on their GPA and number of available seats. Pre-CSM majors will be given preference in the application review.

Laptop Program

Students must have a laptop (notebook) computer upon entering the program. The computer should be upgradeable in order to be of productive use for the duration of the academic program.

Student Work

The Department of Construction Science reserves the right to retain, exhibit, and reproduce work submitted by students. Work submitted for grading is the property of the College of Architecture, Construction and Planning and remains such until it is returned to the student.

Bachelor of Science Degree in Construction Science and Management

The Construction Science and Management degree combines courses in construction science, design and business to educate managers for the construction industry. The minimum number of semester credit hours required for the degree, including Core Curriculum requirements, is 120, at least 39 of which need to be at the upper-division level. Students obtaining a Bachelor of Science (B.S.) degree in Construction Science and Management pursue management careers in a wide variety of occupations throughout the construction industry. The degree also provides students with the opportunity to continue with their studies in a graduate program.

The curriculum prepares students to manage the construction process on the job site and effectively interact with architects, engineers, owners and other professionals who compose the team required by the complexities of modern construction projects. Project owners recognize the need for timely project delivery, indoor/outdoor environmental quality, and short-term and life-cycle costing. Therefore, the curriculum emphasizes environmentally sustainable building practice, project and cost controls, communication skills, understanding the technical aspects of construction and the construction process, and the application of information technology to the construction industry. In addition to the formal academic curriculum, students are required to complete a construction management internship in the building industry between their junior and senior years. The program maintains a close partnership with the construction industry to provide graduates with various opportunities.

All candidates seeking this degree must fulfill the Core Curriculum requirements and the degree requirements.

Core Curriculum Requirements (42 semester credit hours)

Students seeking the B.S. degree in Construction Science and Management must fulfill University Core Curriculum requirements in the same manner as other students. The courses listed below satisfy both degree requirements and Core Curriculum requirements; however, if these courses are taken to satisfy both requirements, then students may need to take additional courses in order to meet the minimum number of semester credit hours required for this degree.

MAT 1033 or MAT 1073 may be used to satisfy the core requirement in Mathematics.

ES 2023 and GEO 1013 should be used to satisfy the core requirement in Life and Physical Sciences.

ECO 2023 should be used to satisfy the core requirement in Social and Behavioral Sciences.

COM 2113 should be used to satisfy the Component Area Option requirement.

Core Curriculum Component Area Requirements (http://catalog.utsa.edu/undergraduate/bachelorsdegreeregulations/degreerequirements/corecurriculumcomponentarearequirements)

| First Year Experience Requirement | 3 |
| Communication                      | 6 |
| Mathematics                       | 3 |
| Life and Physical Sciences         | 6 |
| Language, Philosophy and Culture  | 3 |
| Creative Arts                     | 3 |
| American History                  | 6 |
| Government-Political Science      | 6 |
| Social and Behavioral Sciences    | 3 |
| Component Area Option             | 3 |
| Total Credit Hours                | 42 |

Degree Requirements

A. Construction Science and Management Program sequence. Must be completed with a grade of “C-” or better in each course.

1. Required courses in design, construction science, and project management:

| CSM 2113 | Construction Materials and Methods | 3 |
| CSM 2143 | Construction Materials and Testing | 3 |
| CSM 3113 | Construction Surveying             | 3 |
| CSM 3123 | Technical Communication            | 3 |
| CSM 3143 | Structures I                       | 3 |
| CSM 4013 | Construction Estimating I          | 3 |
B.S. in Construction Science and Management – Recommended Four-Year Academic Plan

Students are strongly encouraged to complete WRC 1013, WRC 1023, MAT 1033 or MAT 1073, and PHY 1603 in their first year.

First Year

Fall

Credit Hours

AIS 1203 Academic Inquiry and Scholarship 3
MAT 1033 or 1073 Algebra with Calculus for Business (core) 3
WRC 1013 Freshman Composition I (Q) (core) 3
American History core 3
Language, Philosophy and Culture core 3

Spring

ES 2023 or GEO 1013 Introduction to Environmental Science II (core) 3
PHY 1603 Algebra-based Physics I 3
WRC 1023 Freshman Composition II (Q) (core) 3
American History core 3
Creative Arts core 3

Second Year

Fall

ACC 2013 Principles of Accounting I 3
CSM 2113 Construction Materials and Methods 3

Spring

CSM 4143 Structures II 3
CSM 4523 Project Planning and Scheduling 3
CSM 4623 Construction Safety 3
CSM 4643 Mechanical, Electrical and Plumbing Systems 3
MGT 3013 Introduction to Organization Theory, Behavior, and Management 3

B. Two free electives. Must be completed with a grade of “C-” or better in each course.

Total Credit Hours: 78

Construction Science and Management (CSM) Courses

CSM 2113. Construction Materials and Methods. (3-0) 3 Credit Hours.
Prerequisite: Enrollment as an Architecture, Interior Design, or Construction Science and Management major or permission of instructor. Introduction to materials, methods, equipment and sequences of the construction process including structural elements, components, and assemblies.
CSM 2143. Construction Materials and Testing. (3-0) 3 Credit Hours.
Prerequisites: CSM 2113, PHY 1603, and enrollment as a Construction Science and Management major or permission of instructor. Analysis of materials and methods used in the design and construction process with a particular emphasis on quality control, quality assurance, and testing including soils, concrete, steel, masonry, and wood.

CSM 2323. Construction Documents. (3-0) 3 Credit Hours.
Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Introduction to construction documents and applicable software for use in communicating building design intentions to field personnel, including an understanding of how to interpret, explain, quantify and use construction documents to bid, construct and manage construction projects.

CSM 2333. Construction Culture and History. (3-0) 3 Credit Hours.
History of construction and building technologies in Western and non-Western cultures. Emphasis on work traditions, graphical illustrations, social and political concerns.

CSM 3011. Construction Industry Contemporary Issues. (1-0) 1 Credit Hour.
Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Exploration of various professional options and specialties across the construction industry, professional ethics and introduction to professional societies. Must be taken on a credit/no-credit basis.

CSM 3113. Construction Surveying. (3-0) 3 Credit Hours.
Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Practical applications of surveying, including distance, grade and angular measurements, surveying equipment and its application to construction layout and control, surveying documentation and field work. (Formerly CSM 3111. Credit cannot be earned for both CSM 3113 and CSM 3111).

CSM 3123. Technical Communication. (3-0) 3 Credit Hours.
Prerequisites: MAT 1033 or MAT 1073 and enrollment as a Construction Science and Management major or permission of instructor. Visualization, interpretation and communication of graphical geometry in construction design and engineering; graphical analysis of problems; plan reading; computer aided design, and fundamentals of information modeling software; introduction to common quantitative tools in construction.

CSM 3143. Structures I. (3-0) 3 Credit Hours.
Prerequisites: PHY 1603 and enrollment as a Construction Science and Management major or permission of instructor. Introduction to the physical principles that govern classical statics and strengths of materials through the design of concrete, timber, and steel components of structures.

CSM 3621. Construction Safety I. (1-0) 1 Credit Hour.
Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Introduction to safety and safety programs, workers’ compensation, OSHA organization and structure, safety policies, standards, and record keeping. Emphasis on communication and job-site safety ethics and management. Generally offered: Summer.

CSM 4013. Construction Estimating I. (3-0) 3 Credit Hours.
Prerequisites: CSM 2113 and CSM 3123. Introduction to estimating procedures for buildings related to quantity surveying, cost of materials and labor, life-cycle costs, and applicable software. (Formerly ARC 4013. Credit cannot be earned for both CSM 4013 and ARC 4013.) Generally offered: Spring.

CSM 4023. Construction Estimating II. (3-0) 3 Credit Hours.
Prerequisites: CSM 2143 and CSM 4013. Continuation of CSM 4013 with emphasis on pricing work, subcontracting, and bidding strategies utilizing applicable software. (Formerly ARC 4023. Credit cannot be earned for both CSM 4023 and ARC 4023.) Generally offered: Fall, Spring.

CSM 4143. Structures II. (3-0) 3 Credit Hours.
Prerequisite: CSM 3143. Analysis and design of structural members in steel, reinforced concrete, reinforced masonry and their relationship to design and construction.

CSM 4513. Project Management. (3-0) 3 Credit Hours.
Prerequisite: CSM 3123. Continuation of CSM 4513 with emphasis on scheduling and project delivery methods utilizing applicable software. (Formerly ARC 4623. Credit cannot be earned for both CSM 4523 and ARC 4623.) (Formerly titled "Construction Management II.") Generally offered: Fall, Spring.

CSM 4533. Building Information Modeling for Construction Management. (3-0) 3 Credit Hours.
Prerequisite: CSM 3123. Introduction to techniques used in development and management of Building Information Models. Emphasis on constructability and management. Generally offered: Spring.

CSM 4613. Sustainable Building Practice. (3-0) 3 Credit Hours.
Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Ethics and application of environmental sustainability practice in building construction. Introduction to U.S. Green Building Council LEED program standards, methods, and procedures as applied to construction documents interpretation and construction. Generally offered: Fall, Spring.

CSM 4623. Construction Safety. (3-0) 3 Credit Hours.
Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Development and management of safety programs, worker’s compensation, OSHA compliance, safety policies, standards, and record keeping.

CSM 4633. Construction Law. (3-0) 3 Credit Hours.
Prerequisite: Enrollment as a Construction Science and Management major or permission of instructor. Legal and ethical aspects of construction contracts, bonds, insurance, and bidding. Owner, architect, contractor, and subcontractor relationships. Generally offered: Fall, Spring.

CSM 4643. Mechanical, Electrical and Plumbing Systems. (3-0) 3 Credit Hours.
Prerequisite: CSM 4533 or permission of instructor. Building systems with an emphasis on design, installation and control of heating, ventilation and cooling, plumbing and drainage, electrical, fire and lightning protection systems. Generally offered: Fall.

CSM 4713. Construction Capstone. (3-0) 3 Credit Hours.
Prerequisites: CSM 4023, CSM 4523, CSM 4633, and CSM 4643. Senior capstone project emphasizing integration of the design and construction processes. Project delivery systems, project development, estimating, scheduling and project controls of various types of construction projects. Generally offered: Fall, Spring, Summer.
Department of Construction Science

CSM 4911. Independent Study. (0-0) 1 Credit Hour.
Prerequisites: Permission in writing (form available) of the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor’s degree. Generally offered: Fall.

CSM 4913. Independent Study. (0-0) 3 Credit Hours.
Prerequisites: Permission in writing (form available) of the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor’s degree.

CSM 4916. Independent Study. (0-0) 6 Credit Hours.
Prerequisites: Permission in writing (form available) of the instructor, the student’s advisor, the Department Chair, and the Dean of the College in which the course is offered. Scholarly research under the direction of a faculty member. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, may apply to a bachelor’s degree.

CSM 4931. Summer Internship. (0-0) 1 Credit Hour.
Prerequisites: CSM 2323, CSM 3011, and CSM 3621. This is a full-time, on-site, construction work experience. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required. Must be repeated for credit and taken in consecutive five-week summer sessions. Generally offered: Summer.

CSM 4932. Internship. (0-0) 2 Credit Hours.
Prerequisites: CSM 2323, CSM 3011, and CSM 3621. This is a part-time, on-site, construction work experience. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required. Generally offered: Fall, Spring.

CSM 4933. Summer Internship. (0-0) 3 Credit Hours.
Prerequisite: CSM 4623. This is a full-time, on-site, construction work experience during summer semester. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required.

CSM 4943. Internship I. (0-0) 3 Credit Hours.
Prerequisite: CSM 4623. This is a part-time, on-site, construction work experience during fall or spring semesters. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required.

CSM 4946. Internship II. (0-0) 6 Credit Hours.
Prerequisite: CSM 4623. This is a full-time, on-site, construction work experience during fall or spring semesters. Supervision by qualified construction manager and intern mentor to prepare the intern for building construction management functions. Instructor prior approval of details for individual work experience required.

CSM 4951. Special Studies in Construction Science and Management. (1-0) 1 Credit Hour.
Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 3 hours for CSM 4951, 6 hours for CSM 4953, or 12 hours for CSM 4956, regardless of discipline, will apply to a bachelor’s degree.

CSM 4953. Special Studies in Construction Science and Management. (0-6) 3 Credit Hours.
Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 3 hours for CSM 4951, 6 hours for CSM 4953, or 12 hours for CSM 4956, regardless of discipline, will apply to a bachelor’s degree.

CSM 4956. Special Studies in Construction Science and Management. (0-12) 6 Credit Hours.
Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Studies may be repeated for credit when the topics vary, but not more than 3 hours for CSM 4951, 6 hours for CSM 4953, or 12 hours for CSM 4956, regardless of discipline, will apply to a bachelor’s degree.