Undegraduate Construction Courses

CNST 1305. Construction Graphics. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
Computer based 2D & 3D graphics used in the construction industry including CAD/REVIT based drawing development, construction drawing interpretation, site/plan/elevation/section/detail drawings, structural and MEP drawings. Residential and commercial construction based. Lab fee: $10.

CNST 1306. Construction Materials and Methods. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
This course introduces students to the basic building materials and systems used in constructing buildings, bridges, and infrastructure projects. It offers the basic Understanding of the use of common systems such as foundations, structural framing/skeleton, building envelops, and finishes. Namely, it introduces students to proper terminology and usage of wood, steel, and concrete materials and selected manufactured components. Lab fee: $10.

CNST 1307. Construction Methods-Concrete and Masonry. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
This course is an investigation into concrete and masonry construction methods, testing, and design used an residential and commercial construction is made. Topics include: concrete slab, wall, footing, and pier construction; brick and concrete masonry unit (CMU) wall construction; and decorative concrete /masonry design techniques. Lab fee: $30.

CNST 2323. Construction Estimating. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
This course introduces students to the skills and tools necessary to prepare formal cost estimations for residential construction projects. It focuses on pricing, indirect costs, bid analysis and use of computer aided software. The goal of this course is to expand the student's skills in new topics of estimating and to assist in developing high confidence in the application of construction estimating skills. This course addresses the typical procedures from familiarization with the CSI Divisions, building plans, material quantification, work breakdown, work quantification, pricing and bid submittals while creating detailed cost estimates. Prerequisite: CNST 1306, CNST 1307 Lab fee: $2.

CNST 3301. Building Mechanical and Electrical Systems. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
This course introduces students to the planning and construction of mechanical and electrical systems common to construction projects. It involves basic calculations of cooling/heating loads, determination of temporary power demands, and sizing of pipes, HVAC equipment, and ducts. Lab fee: $30.

CNST 3302. Construction Cost Estimating and Analysis. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
This course covers quantification and pricing of direct field costs and general condition costs for light commercial and industrial construction projects from contract documents as well as preparation of complete lump sum bid package ready for project execution with emphasis on the use of software in the estimating process. Prior knowledge or experience in construction, mechanical, and electrical systems is recommended. Prerequisite: CNST 2323, CNST 3301, or appropriate Occupational Specialization credit Lab fee: $2.

CNST 3308. Structural Steel and Timber Construction. 3 Credit Hours (Lecture: 2 Hours, Lab: 2 Hours).
Design and analysis of temporary structures used in construction, including scaffolding, shoring, ground support systems, concrete falsework, and formwork, bracing, soldier beam and lagging, trenching, equipment bridges, and temporary support of permanent structures. Besides, this course introduces construction safety associated with temporary structures. Prerequisites: CNST 1306 or appropriate Occupational Specialization credit, and either PHYS 1401 or PHYS 2425. Lab fee: $2.

CNST 3309. Commercial Construction and Industrial Subsystems. 3 Credit Hours (Lecture: 2 Hours, Lab: 2 Hours).
This course introduces students to the terminology and functions of details of mechanical and electrical systems common to process and industrial plant projects. It involves basic calculations of systems, determination of power requirements, and selection of systems. Lab fee: $2.

CNST 3311. Construction Materials Testing and Inspection. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours). [WI **(**http://catalog.tarleton.edu/academicaffairs/**)]**
Construction materials testing and inspection procedures in laboratory and field situations using standard testing equipment, methods, and field inspection techniques per ASTM and ACI standards. Laboratory reports, computer analysis, data collection and simulated field inspections are included. Focus is placed on acceptance testing for construction materials. Prerequisites: CNST 1306 Lab fee: $2.

CNST 3320. Construction Safety Management. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
This course introduces students to OSHA regulations and industry practices related to creating and maintaining safe construction sites. Students will be eligible to sit for the 10-hour OSHA safety certification exam. Prerequisites: CNST 1306 or concurrent enrollment or appropriate Occupational Specialization credit.

CNST 3321. Construction Management. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Construction Management courses including construction operations and key project management skills. Critical path scheduling, duration, logic, resource leveling, and the calculation of costs. Typical contract formats: project planning with emphasis on legal aspects of various types of corporations and structure.

CNST 3335. Construction Layout and Site Development. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
Basic surveying techniques for construction layouts, fundamentals and regulations related to land development. Prerequisites: MATH 1316 or MATH 2412 or appropriate Occupational Specialization credit Lab fee: $2.

CNST 3385. Construction Project Scheduling. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours). [WI **(**http://catalog.tarleton.edu/academicaffairs/**)]**
This course explores major problems, tasks and techniques required to manage the technical program in each phase of the product life cycle. Organizational planning, decision-making, and internal external interface techniques for each phase of the project life cycle are addressed. Additional concepts such as: Earned Value Analysis (EVA), Critical Path Management (CPM), Project Requirements Analysis, and Schedule Task Analysis will be explored in depth. Lab fee: $2.

CNST 4084. Seminar. 1-3 Credit Hours (Lecture: 1-3 Hours, Lab: 0 Hours).
Topics will vary according to timeliness and special needs. May be taken more than once for credit.

CNST 4086. Problems. 1-3 Credit Hours (Lecture: 1-3 Hours, Lab: 0 Hours).
This course is designed to meet the needs of Engineering Technology students who have above average academic ability and who need to pursue subject matter that is not normally included in the Engineering Technology curriculum. Approval for enrollment in this course shall be with the concurrence of the individual instructor and the department head. The student must be currently enrolled in one of the majors offered in the Engineering Technology Department.

CNST 4310. Site & Building Foundations. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
The course gives an overview of the difference and correlation between soil mechanics and foundations engineering. Soil mechanics is the branch of engineering that involves the study of the properties of soils and their behaviors under stress and strain in idealized conditions. Foundation engineering is the application of the principles of soil mechanics in the planning, design and construction of foundations for buildings, highways, dams and so forth. This course presents a detailed look into soil properties and foundations design. Prerequisites: PHYS 1401 or PHYS 2425. Lab fee: $2.

CNST 4313. Construction Law and Ethics. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
This course introduces students to basic understanding of contractual issues that are significant to construction managers. The course is designed to teach basic concepts of contract law and to recognize legal issues making decisions based on current industrial standards. The course also focuses on addressing ethics in the construction industry.

CNST 4322. Building Information Modeling. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
This course is designed specifically to both introduce specific BIM (Building Information Modeling) techniques and software as well as further develop VDC (Virtual Design and Construction) software as they align with current managerial methods and project delivery platforms. The course is also designed and developed to promote discussion with respect to the roles played by owners, designers, builders, and suppliers. Specific attention is paid to BIM's role in various project platform delivery systems including DESIGN-BID-BUILD, DESIGN BUILD, CM AT RISK, and IPD. Prerequisite: CNST 4325, CNST 3385, CNST 3321, Minimum of 90 hours coursework complete Lab fee: $2.

CNST 4323. Construction Estimating. 3 Credit Hours (Lecture: 2 Hours, Lab: 4 Hours).
This course introduces students to the skills and tools necessary to prepare formal bids for construction projects. It focuses on pricing, indirect costs, bid analysis and use of computer aided software. The goal of this course is to expand your skills in new topics of estimating and to assist you in developing high confidence in the application of the estimating skills you learned previously. The course addresses the bidding procedure from receipt of bid documents through work breakdown, work quantification, pricing and bid submittal for lump sum and unit price bids, and preparation of design/build proposals. Prerequisites: CNST 1306, 1307, and 3301 Lab fee: $2.

CNST 4325. Contract Administration. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
This course introduces students to issues regarding administering construction contracts. It focuses on understanding of the purpose of contract documents, legal hierarchy of the documents, the interrelationships among the documents, liabilities accepted with each document, and typical challenges related to communications among the parties involved, establishing chain of commands, warranties, and progress/final payments. Prerequisites: CNST 3321.

CNST 4395. Construction Capstone. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Capstone projects course emphasizing a team approach to the analysis and solutions of Construction problems. Projects will be supplied by industry whenever possible. Emphasizes scheduling, design, working in teams. A final written report drawings and presentations will be provided to the customer. Prerequisite: Minimum of 90 hours coursework complete and department head approval.