

CONSTRUCTION ENGINEERING TECHNOLOGY (COET)

COET 125 Statics (3 Units)

Prerequisites: [MATH 149 or MATH 154 or higher math or placement in higher math] and [PHYS 160, PHYS 261, or PHYS 291]. This course covers forces, resultants, and couples. Equilibrium of force systems. Trusses, frames, centroid, moment of inertia, and friction. (Formerly 2990:125)

COET 129 Professional Topics in Construction (3 Units)

This course introduces students to important professional topics and computing skills for construction managers including software for estimating, scheduling, presentations, general business administration and graphics. (Formerly 2990:129)

COET 131 Building Construction (2 Units)

Materials and methods used in construction. Encompasses buildings constructed with wood, steel, concrete or a combination of these materials. (Formerly 2990:131)

COET 150 Plan Reading (3 Units)

Pre/Corequisite: MATH 143, MATH 144, MATH 145 or higher or placement. The language of construction. Symbols, scales, plan views, elevation views, sections and details. Quantity take-off estimation. (Formerly 2990:150)

COET 225 Strength of Materials (3 Units)

Prerequisite: COET 125. Stress, strain and stress-strain relationships. Tension, compression, torsion, beams. Shear and moment diagrams. Combines stresses. (Formerly 2990:225)

COET 226 Construction Supervision (3 Units)

Introduction to topics on construction supervision including planning, directing and coordinating onsite activities to build quality defined by drawings and specifications. (Formerly 2990:226)

COET 234 Elements of Structures (3 Units)

Prerequisites: COET 125 and COET 225. Principles of stress and structural analysis, concepts of steel, timber design, and reinforced concrete. (Formerly 2990:234)

COET 235 Construction Inspection (3 Units)

Prerequisite: COET 131. Fundamentals of total quality management and construction inspection. (Formerly 2990:235)

COET 237 Materials Testing I (2 Units)

Prerequisite: MATH 153, MATH 143, MATH 144, MATH 145 or higher math, or higher math placement. Laboratory testing of soils with emphasis on physical properties of soil. Laboratory and field procedures used for quality control. (Formerly 2990:237)

COET 238 Materials Testing II (2 Units)

Prerequisite: MATH 153, MATH 143, MATH 144, MATH 145 or higher math, or higher math placement. Mix design of concrete. Laboratory testing of concrete containing ordinary Portland cement and pozzolanic admixtures. Experiments demonstrate physical properties as related to design and quality control. (Formerly 2990:238)

COET 239 Construction Geomechanics (3 Units)

This course provides an understanding of the impact of the mechanical behavior and engineering properties of soils and rock related to construction processes and methods. Topics include erosion control, laboratory test methods for engineering design, flood and mass wasting behavior, soil subsidence, and sustainability of engineered coastal structures. (Formerly 2990:239)

COET 245 Construction Estimating (3 Units)

Prerequisites: [MATH 149 or MATH 154 or higher math, or placement in higher math] and COET 150. Quantity takeoffs in construction to include mass excavations, foundation systems, structural steel, residential construction, and various commercial construction methods. (Formerly 2990:245)

COET 246 Site Engineering (3 Units)

Prerequisite: MATH 153, MATH 143, MATH 144, MATH 145 or higher math, or higher math placement. The content includes study of the development of a site including surveying, excavation, soil treatment, heavy equipment requirements, storm water management, pavement design, and construction of roadways. (Formerly 2990:246)

COET 254 Building Codes (3 Units)

Prerequisite: COET 131. Students learn fundamental concepts for construction related to the residential building code. (Formerly 2990:254)

COET 310 Residential Building Construction (3 Units)

Introduction to building design, wood framing, and mechanical systems as commonly found in residential housing. (Formerly 2990:310)

COET 352 Field Management & Scheduling (2 Units)

Prerequisite: COET 245 or permission. Planning, scheduling, and controlling of field work within time and cost constraints. Manual methods and computer software packages studied. (Formerly 2990:352)

COET 354 Foundation Construction Methods (3 Units)

Prerequisites: COET 225 and COET 237. Soil mechanics and soils exploration as related to construction. Foundation construction methods and practice in the interest of safety and suitable economy. (Formerly 2990:354)

COET 356 Safety in Construction (3 Units)

The purpose of this course is to explain what creates hazards and why, and to suggest where to anticipate trouble in each phase of the work as it progresses. (Formerly 2990:356)

COET 358 Advanced Estimating (3 Units)

Prerequisite: COET 245. This course focuses on estimating and bidding for public and private construction. Includes heavy/highway, residential and building construction with use of computer software to facilitate bid price. (Formerly 2990:358)

COET 361 Construction Formwork (3 Units)

Prerequisite: COET 234 or permission. Introduction to design and construction of formwork and temporary wood structures. (Formerly 2990:361)

COET 371 Green & Sustainable Building Practices (3 Units)

This course is designed to provide an understanding of sustainable construction practices and their importance on environmental issues. (Formerly 2990:371)

COET 421 Risk Management and Contract Strategies (3 Units)

Prerequisite: Admission to the BSCET program, or permission from program director. This course focuses on current trends and challenges related to construction contracting. Students will learn critical "issue spotting" skills in areas of construction risk management, loss avoidance, collaboration, and strategic thinking. (Formerly 2990:421)

COET 422 Leveraging AI and Construction Technologies (3 Units)

Prerequisites: Junior or greater standing and admission to an engineering major within the College of Engineering and Polymer Science. This course we will describe how to use emerging trends and technologies to improve project outcomes. Topics include digital and computing technologies - AI and cloud computing, BIM, video and laser scanning, big data and data analytics, reality capture, blockchain, simulation, augmented reality, data standards and interoperability, and vertical and horizontal integration, industrial production - prefabrication, 3D printing and assembly, offsite manufacture, cyber-physical systems - actuators, sensors, IoT, robots, cobots, and drones. (Formerly 2990:422)

COET 442 Lean Building Science (3 Units)

Prerequisite: Admission to the BSCET program. This course is designed to provide an understanding of collaborative leadership and lean building science as it relates to job site construction safety, building first cost, schedule, ongoing building operating expenses, and upcycle construction benefits. Students will work in classroom and workshop settings led by construction industry leaders and subject matter experts. There will also be the opportunity to experience job site application of these practices. Core concepts will be taught through a variety of methods, such as learning checks, peer presentations, videos, social media posts and smaller group projects. Students will learn a variety of tools they can apply immediately to their work to reduce waste and improve the overall efficacies of their organizations. (Formerly 2990:442)

COET 453 Legal Aspects of Construction (2 Units)

Prerequisite: Admission into the BCET program or permission. Study of business of contracting and subcontracting and legal problems therein such as breach, partial performance, payment, insolvency, subsurface. Review of standard contracts and construction industry rules of arbitration. (Formerly 2990:453)

COET 462 Mechanical Service Systems (3 Units)

Introduction to materials and equipment used in mechanical heating, ventilating, air conditioning, water and waste systems. (Formerly 2990:462)

COET 463 Electrical Service Systems (3 Units)

Introduction to materials and equipment in electrical systems of buildings. Includes illumination, electrical sources, materials and distribution. Emphasis of fire safety. (Formerly 2990:463)

COET 465 Heavy Construction Estimating (3 Units)

Prerequisite: COET 245. Quantity takeoffs and cost analysis to include methods, systems, and equipment relevant to heavy highway and civil infrastructure projects. (Formerly 2990:465)

COET 466 Hydraulics (3 Units)

Prerequisite: Junior or greater standing. Pre/Corequisite: MATH 356. Introduction to hydrology. Flow in closed conduits and open channels, distribution, systems, storage requirements and basic concepts of hydraulic structures. Basic concepts of seepage and working knowledge of pumps. (Formerly 2990:466)

COET 468 Construction Management (3 Units)

Prerequisites: COET 352 and COET 358. Construction Management takes established construction practices, current technological advances, and latest management methods and makes them into an efficient, smooth working system. (Formerly 2990:468)

Gen Ed: Capstone

COET 469 Contracts and Specifications (3 Units)

Prerequisite: Admission to BSCET program or permission. This course studies the principles and applications of construction specifications, contracts, processes for managing professional risk and increasing economic performance of the construction process. (Formerly 2990:469)

COET 489 Special Topics in Construction (1-3 Units)

Prerequisite: Permission of instructor. (May be repeated for up to six credits.) Special lecture/laboratory courses offered once or only occasionally in areas where no formal courses exist. (Formerly 2990:489)

COET 490 Workshop in Construction (1-3 Units)

Prerequisites: Permission. Group studies of special topics in construction. May not be used to meet undergraduate major requirements in construction. May be used for elective credit only. (May be repeated for up to six credits) (Formerly 2990:490)

COET 497 Honors Project (1-3 Units)

Prerequisite: Senior standing in Honors College and permission of supervising faculty in student's degree field and pursuit of major in CET. Individual Senior Honor's Project relevant to student's major field of study. Specific projects are approved and supervised by a designated member of the faculty in the student's degree field. (Formerly 2990:497)

COET 498 Independent Study in Construction (1-3 Units)

Prerequisite: Permission. Directed study in a special field of interest chosen by student in consultation with instructor. (May be repeated for up to six credits) (Formerly 2990:498)