

CONSTRUCTION MANAGEMENT (CON)

CON 121. Introduction to Construction. (3 Credits)

I, II. A survey of the construction industry. Nature, scope, and general characteristics of the industry with an emphasis on careers, safety, and typical contracting methods.

CON 201. Materials and Methods of Construction. (3 Credits)

I, II. Composition, manufacture and grades of construction materials and building products with emphasis on wood, metal, glass, roofing, finishing, and plastic materials. Methods, including safety, involved in the placement and installation of these materials.

CON 202. Materials and Methods of Construction II. (3 Credits)

II. Composition, manufacture, and grades of construction materials and building products with an emphasis on concrete and masonry. Methods, including safety, involved in the placement and installation of these materials. 2 Lec/2 Lab.

CON 221. Plane Surveying. (3 Credits)

I, II. Prerequisite: MAT 120 with a minimum grade of "C". Principles of surveying, including the measurement of distances, elevations, and angles. Calculations for the various operations, including traverse computations. Introduction to the use of surveying instruments and note keeping. 2 Lec/2 Lab.

CON 250. Structural Systems & Material. (3 Credits)

I. Prerequisite: DES 122. Emphasis on building systems and materials for residential structures. An understanding of the properties of structural materials and their appropriate applications. Laws, codes, and standards will be addressed along with instruction in blueprint reading.

CON 294. Construction Graphics. (3 Credits)

A. Basic principles of residential and small commercial planning; styles of architecture; a comparative study of structural systems and the preparation of working drawings. 2 Lec/2 Lab.

CON 303. Statics and Strength of Materials. (3 Credits)

I, II. Prerequisites: MAT 120 or 234 (4) with a minimum grade of "C", and PHY 131 or 201. Study of loads, forces and their effects on rigid bodies and structures at rest. Computation of equilibrium reactions, internal forces, shear, moments, couples, friction, stress, strain, and deformation. Finding centroids and moments of inertia.

CON 307. Soils and Foundations. (3 Credits)

I. Prerequisite: CON 303. A study of soil mechanics as it relates to foundation construction. Topics include soil classification, engineering properties, compaction testing, types of foundation systems, and methods of foundation construction.

CON 320. Construction Surveying. (3 Credits)

I, II. Prerequisite: CON 221. The application of surveying skills as they relate to horizontal and vertical control on construction projects. Activities include building layout, centerline staking, earthwork computations, and slope staking. The use of electronic instruments is emphasized. 2 Lec/2 Lab.

CON 321. Boundary Surveying. (3 Credits)

I. Prerequisite: CON 221. This course introduces students to the principles of boundary surveying and provides them with the basic knowledge and skill to practice boundary surveying under the supervision of a registered professional surveyor.

CON 322. Construction Structural Design. (3 Credits)

I, II. Prerequisites: CON 303 and MAT 211 or MAT 234 and MAT 217. A study of the design of beams and columns using steel and wood. Principles of structural design related to the design of temporary structures used in the construction process.

CON 323. Estimating I. (3 Credits)

I, II. Prerequisites: CON 201, 202 and MAT 120 with a grade of "C". A study of the materials and labor required in the construction of commercial projects. Experience is gained in reading drawings, calculating material quantities, and listing work items in a standardized format. 2 Lec/2 Lab.

CON 324. Mechanical/Electrical Systems. (3 Credits)

II. Prerequisites: CON 201 and 21 additional hours of CON courses. A study of plumbing, heating, air-conditioning, electrical power distribution, and lighting for vertical and horizontal construction. Basic fundamentals of water supply, waste drainage, electrical circuits, and heat loss/gain calculations are studied. 2 Lec/2 Lab.

CON 325. Construction Estimating. (4 Credits)

(5) I, II. Prerequisite: CON 201, 202; MAT 120 with a minimum grade of "C"; and TEC 161. A study of estimating construction materials, equipment, labor, and costs, through reading drawings and calculating quantities and costs. Estimating software and cost databases are utilized to list work items in standardized format. 4 Lec/2 Lab.

CON 326. Horizontal Construction. (3 Credits)

(3) A. A study of construction equipment, roadwork, bridge construction and various other topics involved in horizontal construction means and methods.

CON 349. Applied Learning in Construction Management. (0.5-8 Credits)

A. Prerequisites: 30 hours of credit including 9 credit hours of CON courses with a 2.0 GPA and departmental approval. Transfer students must have completed at least one semester of full-time work at EKU. Work under faculty and field supervisors in placements related to construction management.

CON 401. Spec Prob in Constr Tech. (1-3 Credits)

A. An independent study course for exceptional upper division undergraduate students. A study proposal will be developed by the student and approved by the faculty supervisor and department chair prior to enrollment. May be retaken provided the topic of study is different.

CON 420. Engineering Economy. (3 Credits)

I, II. Junior Class Restriction. A systematic application of engineering economy to design, selection of construction materials, and construction methods. A study of first costs, operating and maintenance costs, service life, and replacement costs.

CON 421. Construction Contracts. (3 Credits)

I. Prerequisite: CON 325. Contract documents, drawings, and specifications and their impact on the construction process. A study of the types and organization of construction contracts, and the roles and responsibilities of the parties involved.

CON 423. Estimating II. (3 Credits)

I, II. Prerequisite: CON 323 and TEC 161. Construction projects of moderate complexity are divided by scope, then materials are quantified and costed. Cost databases are utilized for estimating labor, materials, equipment, and overhead. Emphasis is placed on the use of estimating software. 2 Lec/2 Lab.

CON 425. Project Organization and Supervision. (3 Credits)

II. Prerequisites: MGT 300 or MGT 301 or INT 408 or AEM 408 and CON 421. A study of principles of construction project administration, systems for efficient operation of office and field personnel, and dispute avoidance and resolution procedures. The construction process is followed from project inception to closeout.

CON 426. Scheduling. (3 Credits)

I, II. Prerequisites: ACC 201 or FIN 310 and CON 325. A study of the planning and control of construction activities and project costing. Topics include critical path method scheduling, metric based progress monitoring, cash flow analysis, and cost control. Standard scheduling software is used. 2 Lec/2 Lab.

CON 428. Construction Sustainability. (3 Credits)

(3) A. A study focused on understanding the concept of sustainability in construction, which uses the requirements and procedures for obtaining Leadership in Energy and Environmental Design (LEED) professional accreditation.

CON 480. Construction Management Graduate Preparation. (1-6 Credits)

Prerequisite: Admission to MS program in Applied Engineering and Technology Management, Construction Management concentration, and departmental approval. A guided study of construction management moduls meant for graduate students who have an undergraduate degree in an unrelated field but who hae a minimun of 3 years of verifiable construction experience.

CON 499. Construction Mgt. Capstone. (4 Credits)

(4) II. Co-requisites and/or prerequisites: CON 425, CON426. A project-based capstone course for senior-level construction management students under the direction of the construction management faculty. This course integrates applied components of undergraduate construction courses and incorporates online environmental and safety certifications. 3 Lec/2 Lab.

CON 824. Engin and Construct Forensics. (3 Credits)

A. Prerequisite: Departmental approval. Design, material, and ethical failures and their impacts on engineering and construction practice. Case studies will present facts including design and construction, the failure, subsequent investigation and analysis and additional issues such as technical concerns and ethical considerations.

CON 825. Airport Plan & Construction. (3 Credits)

A. Prerequisite: Departmental Approval. Basic airport planning and design topics including system and master planning, capacity, airside and passenger side planning, drainage and pavement design. Regulations in water and air pollution, carbon footprint, renewable energy, security, and sustainable development.

CON 826. Practical Construction Law. (3 Credits)

A. Construction law from the perspectives of the owner, project designers, and contractor. Analysis of "real world" practical cases. Introduction to topics including contract clauses, licensure, contractor liability, dispute resolution, lien laws, and the Miller Act.

CON 827. New Construction Entity. (3 Credits)

A. A study focused on establishing a new construction entity, which includes: selecting company type, establishing professional relationships, fulfilling federal/state mandates, developing a marketing plan and establishing a risk mitigation strategy.

CON 828. LEED Principles & Procedures. (3 Credits)

A. A study focused on understanding of the requirements and procedures for obtaining Leadership in Energy and Environmental Design (LEED) professional accreditation.

CON 829. Construction Portfolio Mgmt.. (3 Credits)

A. Prerequisites: Departmental Approval. A study for seasoned project managers responsible for complex projects and/or portfolios of construction projects. From charrette to managing project execution, enterprise-wide project management principles will be examined.