

**CONSTRUCTION
MANAGEMENT
PROGRAM**

CMP

**School of Planning, Design
and Construction
College of Agriculture and
Natural Resources**

101 Principles of Construction Management
Fall. 2(2-0) R: Not open to seniors. SA: BCM 101

Historical developments, current issues and trends in commercial and residential construction industries.

124 Residential Construction Materials and Methods

Spring. 3(3-0) P: CMP 101 SA: BCM 124

Properties of construction materials and their application in residential construction.

210 Commercial Construction Methods

Fall. 3(3-0) P: CMP 124 or concurrently SA: BCM 210 C: CMP 211 concurrently.

Commercial construction: principles, materials, assemblies, and commercial blueprints.

211 Building Codes

Spring. 3(3-0) P: CMP 124 or concurrently SA: BCM 211 C: CMP 210 concurrently.

Construction codes: structural, mechanical, electrical, and plumbing. Building safety and accessibility.

222 Statics and Strengths of Materials

Spring. 3(3-0) P: (CMP 210 and CMP 211) and (MTH 124 or MTH 132 or LB 118) and (PHY 183 or PHY 231) SA: BCM 222 Not open to students with credit in CE 221.

Equilibrium of forces. Free body diagrams. Force components. Bending moments. Stress and strain. Mechanical properties of materials. Beams and trusses. Computer applications. Indeterminate structures.

230 Utility Systems

Spring. 4(4-0) P: CMP 210 SA: BCM 230

Heating, cooling, ventilating, electrical, gas, lighting, water, waste water, telecommunications, fire protection, safety, security, and sound control systems in residential and commercial construction. Applicable codes.

305 Site Construction and Measurement

Fall. 3(2-2) R: Open to juniors or seniors in the Construction Management Major. SA: BCM 305

Site construction methods, materials and equipment for buildings, soil, foundation, erosion, and storm water. Layout, leveling, surveying, and underground utilities.

311 Construction Project Scheduling

Spring. 3(2-2) P: (STT 200 or STT 201 or STT 315 or STT 421) and (CMP 305 and CMP 322) R: Open to juniors or seniors in the Construction Management Major or in the Civil Engineering Major or approval of school. SA: BCM 411, CMP 411

Basic construction project scheduling procedures. Work breakdown structure, critical path method, and scheduling logic. Activity durations, status reports, resource allocation, and control.

315 Construction Quantity Surveying

Spring. 3(2-2) P: CMP 305 and (CSE 101 or CSE 131 or CSE 231 or CSS 110) R: Open to juniors or seniors in the Construction Management Major or in the Civil Engineering Major or approval of school. SA: BCM 315

Measurement of quantities for construction projects. Work breakdown structure. Industry standards.

322 Structural Systems

Fall. 3(3-0) P: CMP 222 or CE 221 or ME 222 R: Open to juniors or seniors in the Construction Management major or in the Civil Engineering Major or approval of school. SA: BCM 322

Structural design using wood, steel and concrete. Beams, columns, footings, and foundation walls. Loading, soils.

325 Real Estate Principles and Construction Finance

Fall. 4(4-0) P: EC 201 or EC 202 or EC 251H or EC 252H R: Open to juniors or seniors in the Construction Management Major or approval of department. SA: BCM 325

Financial methods and instruments utilized in construction, rehabilitation, development, and purchase of real estate. Terms, contracts, valuation, brokerage, taxation, risk, and interest rate analysis.

328 Construction Presentation Graphics and Building Information Modeling

Fall. 2(1-2) P: CMP 210 and CMP 230 R: Open to juniors or seniors in the Construction Management Major or approval of department. SA: BCM 328

Graphic communication methods used in construction organizations. Use of Building Information Modeling software.

385 Construction Documents and Contracts (W)

Spring. 3(3-0) P: (CMP 305) and completion of Tier I writing requirement R: Open to juniors or seniors in the Construction Management Major or in the Civil Engineering Major and open to juniors or seniors in the Interior Design Major or in the Bachelor of Landscape Architecture or approval of department. SA: BCM 385

Construction contracts for commercial and residential projects. Contract procedures, bidding, changes, substitutions. Specifications. Insurance, bonding, claims, disputes, and payments. Responsibilities of owners and contractors.

401 Construction Safety Management

Fall. 3(3-0) P: CMP 305 RB: CMP 385 or (CMP 423 or concurrently) R: Open to juniors or seniors in the Construction Management Major or in the Civil Engineering Major or approval of department. SA: BCM 401

Construction safety with Occupational Safety and Health Administration (OSHA) emphasis. General safety and health provisions, records, and safety management programs. Personnel protection and lifesaving equipment. Economic impact of safety program.

415 Cost Estimating and Analysis

Fall. 3(2-2) P: CMP 315 and CMP 385 SA: BCM 415

Estimation of construction project costs: direct and indirect, labor, material, and equipment. Overhead and profit. Bidding. Computer-based estimating.

423 Construction Project Management

Fall, Spring. 3(3-0) P: CMP 385 and CMP 311 and (CMP 415 or concurrently) R: Open to seniors in the Construction Management Major or in the Civil Engineering Major or approval of department. SA: BCM 423

Construction management principles and practices. Project planning and controls. Students are preparing for and taking a certification exam.

435 Residential Building and Development Projects (W)

Spring. 3(1-4) P: {(ACC 201 and ACC 202) or ACC 230} and ((CMP 423 or concurrently) and completion of Tier I writing requirement) R: Open to seniors in the Construction Management major. SA: BCM 435

Development of a residential project and business plan.

436 Commercial Building Projects (W)

Spring. 3(1-4) P: {(ACC 201 and ACC 202) or ACC 230} and ((CMP 328 and (CMP 423 or concurrently)) and completion of Tier I writing requirement) R: Open to seniors in the Construction Management major. SA: BCM 436

Evaluation, procurement, and management of commercial building projects.

453 Land Development

Fall. 3(3-0) P: (CMP 305 and CMP 325) or UP 458 R: Open to juniors or seniors in the College of Agriculture and Natural Resources or in the School of Planning, Design and Construction or in the Construction Management major or in the Civil Engineering Major or in the Urban and Regional Planning major. SA: BCM 353, CMP 353

Methods and practices of land development, market research, financial feasibility, land use regulations, legal documentation, and site analysis and design. Case studies.

479 Wood and Engineered Composites Science and Technologies

Spring. 3(2-2) Interdepartmental with Forestry. Administered by Forestry. P: FOR 414 or concurrently

Sciences and technologies governing industrial and manufacturing processes for lumber, engineered wood, and composite wood products.

CMP—Construction Management Program

- 490 Independent Study**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open to undergraduate students in the Construction Management major. Approval of department; application required. SA: BCM 490
Special problems in acquisition and development of residential land, design, construction technology, building materials, finance, marketing, construction management, or land use codes and regulations.
- 491 Special Topics in Construction Management**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open to undergraduate students in the Construction Management major. Approval of department. SA: BCM 491
Topics such as computer methods in construction management, construction technology, solar energy, special land use codes, or new technology management.
- 492 Capstone Project Competitions**
Fall. 3(2-2) A student may earn a maximum of 6 credits in all enrollments for this course. P: CMP 385 and CMP 311 or approval of school R: Open to seniors in the Construction Management major.
Process, evaluation, bidding, procurement, value engineering, and management through simulated construction projects within the context of construction competitions. Field trips may be required.
- 493 Professional Internship in Construction Management**
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. A student may earn a maximum of 6 credits in all enrollments for any or all of these courses: ABM 493, AEE 493, ANR 493, ANS 493, CMP 493, CSS 493, CSUS 493, EEP 493, FIM 493, FSC 493, FW 493, HRT 493, PKG 493, and PLP 493. R: Open to students in the Construction Management major. Approval of department; application required. SA: BCM 493
Supervised professional experiences in agencies and businesses related to a student's major field of study.
- 801 Construction, Building, and Energy Systems**
Fall. 3(3-0) R: Open to graduate students in the School of Planning, Design and Construction or in the Civil Engineering Major or approval of department.
Construction, building, and energy systems in the U.S. including steel and wood construction and mechanical, electrical, and plumbing systems.
- 811 Advanced Project Scheduling**
Fall. 3(2-2) SA: BCM 811
Critical path analysis for effective and logical scheduling of construction projects. Identification of project activities and their relationships. Schedule development, analysis, and updating. Relationship of project costs and resources to the schedule. Effective communication of schedule information.
- 815 Advanced Cost Estimating and Analysis**
Fall. 3(2-2)
Advanced estimation of construction project costs: direct and indirect, labor, material, quantity surveying, productivity, and equipment. Overhead and profit. Bidding. Role of contractor, owner, and architect or engineer. Computer-based estimating.
- 817 Construction Project Management and Information Systems**
Spring. 3(2-2) RB: Background in estimating and scheduling required. SA: BCM 817 Not open to students with credit in CMP 423.
Construction project administration, project controls, information generation and utilization for the management of construction projects. Integration of construction management software, and knowledge-based models.
- 822 Contracts and Legal Issues in Construction**
Spring. 3(3-0) R: Open to master's students or doctoral students in the Construction Management major or in the Interior Design and Facilities Management major or in the Civil Engineering major or in the Master in Urban and Regional Planning.
Construction contracts and documents. Application of Michigan and federal case law to construction and development claims and litigation.
- 828 Advanced Virtual Design and Construction**
Fall. 3(2-2) RB: Computer application background in architecture, civil and construction engineering R: Open to graduate students in the School of Planning, Design and Construction or approval of department.
Advanced mechanisms, applications, and practices of virtual design and construction (VDC) in the construction management using Building Information Modeling (BIM) technology.
- 831 Lean Construction Principles and Methods**
Spring. 3(2-2) RB: Some aspects of project management (scheduling, estimating), statistics, and probabilities.
Origins and elements of lean production. Principles of lean construction. Production management. Project and production computer simulation. Last Planner System. Work structuring.
- 890 Special Problems**
Fall, Spring, Summer. 1 to 9 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Open to graduate students in the College of Agriculture and Natural Resources. Approval of department; application required. SA: BCM 890
Individual study in land acquisition and development, design, construction, management, finance, marketing, and structural analysis.
- 891 Advanced Topics in Building Construction Management**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to graduate students in College of Agriculture and Natural Resources. Approval of department. SA: BCM 891
Advanced topics in building construction management.
- 893 Elements and Methods of Research for Built Environment**
Spring. 3(3-0) R: Open to graduate students in the School of Planning, Design and Construction or in the Civil Engineering Major or approval of department. SA: CMP 892, BCM 892
Current areas and topics of research in built environment. Responsible conduct of research. Techniques to search for, analyze, and synthesize published literature. Critical analysis of existing research. Development of a preliminary proposal. Verbal and written communication of technical information.
- 898 Master's Research**
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to master's students in the Construction Management major. SA: BCM 898
Master's degree research paper.
- 899 Master's Thesis Research**
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to master's students in the Construction Management major. SA: BCM 899
Master's thesis research.