

# CONSTRUCTION MANAGEMENT PROGRAM

## CMP

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

#### 101 Principles of Building Construction Management

Fall, Summer. 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, Summer. 3(3-0) RB: 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 101 or concurrently and CMP 124 SA: BCM 210 C: CMP 211 concurrently.

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

#### 211 Building Codes

Fall. 3(3-0) P: (CMP 101 or concurrently and CMP 124 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 LBS 118) and (PHY 183 or PHY 231 or PHY 231B or PHY 231C) SA: BCM 222 Not open to students with credit in ME 221 or ME 222.

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 and CMP 211 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) P: CMP 230 R: Open only 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.

#### 315 Construction Quantity Surveying

Spring. 3(2-2) P: CMP 305 and (CSE 101 or CSE 131 or CSE 231 or CSS 110 or LBS 126) R: Open only to juniors and seniors in the Construction Management or Civil Engineering major. 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 (ME 221 or ME 222) R: Open only to juniors or seniors in the Construction Management or Civil Engineering majors. SA: BCM 322 Not open to students with credit in CE 406.

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) and (MTH 124 or MTH 132 or LBS 118) R: Open only 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

Fall, Spring. 2(1-2) P: CMP 230 and (CSE 101 or CSE 131 or CSE 231 or CSS 110 or LBS 126) R: Open only to juniors or seniors in the Construction Management major. SA: BCM 328

Graphic communication methods used in construction organizations.

#### 353 Land Development

Spring. 3(3-0) P: (CMP 211 and CMP 305) and (CMP 325 or UP 458) R: Open only to juniors or seniors in the Construction Management or Civil Engineering or Landscape Architecture or Urban and Regional Planning major. SA: BCM 353

Methods and practices of land development. Market research. Financial feasibility. Land use regulations. Legal documentation. Site analysis and design. Case studies.

#### 385 Construction Documents and Contracts (W)

Spring. 3(3-0) P: (CMP 305) and completion of Tier I writing requirement R: Open only to juniors and seniors in the Construction Management or Civil Engineering or Landscape Architecture major. 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

Spring. 3(3-0) P: CMP 305 RB: CMP 385 or (CMP 423 or concurrently) R: Open only to juniors or seniors in the Construction Management or Civil Engineering major. 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 life saving equipment. Economic impact of safety program.

#### 411 Construction Project Scheduling

Fall. 3(2-2) P: (STT 200 or STT 201 or STT 315 or STT 421) and (CMP 315 and CMP 322) R: Open only to juniors or seniors in the Construction Management or Civil Engineering major. SA: BCM 411

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

#### 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 411 or concurrently) and (CMP 415 or concurrently) R: Open only to seniors in the Construction Management or Civil Engineering major. SA: BCM 423

Construction management principles and practices. Project planning and controls.

#### 435 Residential Building Projects (W)

Spring. 3(1-4) P: ((ACC 201 and ACC 202) or ACC 230) and ((CMP 328 and CMP 353 and (CMP 423 or concurrently)) and completion of Tier I writing requirement) R: Open only 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 353 and (CMP 423 or concurrently)) and completion of Tier I writing requirement) R: Open only to seniors in the Construction Management major. SA: BCM 436

Evaluation, procurement, and management of commercial building projects.

#### 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 only to Construction Management majors. 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 Building Construction Management

Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. P: CMP 210 R: Open only to Construction Management majors. Approval of department. SA: BCM 491

Topics such as computer methods in building construction management, construction technology, solar energy, special land use codes, or new technology management.

#### 493 Professional Internship in Building 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, EEP 493, ESA 493, FIM 493, FSC 493, FW 493, HRT 493, PKG 493, PLP 493, and PRR 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.

## Construction Management Program—CMP

- 810 Construction Systems**  
Fall, Spring. 1(0-2) R: Open only to graduate students in the Construction Management major or Civil Engineering major or Interior Design major and Facilities Management major. SA: BCM 810 Not open to students with credit in CMP 124 or CMP 210.  
Construction materials and methods in the U.S. Steel and wood construction.
- 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, Summer. 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 & 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 masters 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.
- 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.
- 892 Construction Management Research Seminar**  
Fall. 2(2-0) R: Open only to graduate students in the College of Agriculture and Natural Resources or College of Engineering or College of Human Ecology. SA: BCM 892  
Current areas and topics of research in construction management. Resources of research results, analysis of existing research, and development of preliminary proposal.
- 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.