

**CONSTRUCTION
MANAGEMENT
PROGRAM**

CMP

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

- 101 Principles of Construction Management**
Fall, Spring. 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**
Fall, Spring. 3(3-0) P: CMP 101 or concurrently R: Not open to seniors. 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.
- 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) and (MTH 124 or MTH 132 or LB 118) and (PHY 183 or PHY 231) R: Not open to seniors. SA: BCM 230
Design and analysis of utility and environmental systems in residential and commercial construction with a focus on mechanical, electrical, and plumbing systems
- 245 Principles of Green Building**
Spring. 3(3-0) P: CMP 210 and (CMP 230 or concurrently)
Origins of green building in the U.S. Codes, regulations, and standards governing green building practice. The whole building concept and airflow, thermal, and moisture movement in buildings. Sustainable building systems and modern green construction practices.
- 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. 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 project management principles and practices. Project start up, administration, and documentation. Project controls.
- 435 Residential Building and Development Projects (W)**
Fall. 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
Working in teams, applying skills of construction project management to develop a residential project and business plan that addresses preconstruction, construction, and marketing areas
- 445 Green and Energy Efficient Building Construction**
Spring. 3(2-2) P: CMP 245 Not open to students with credit in CMP 845.
Best building practices in building construction, based upon the Leadership in Energy and Environmental Design and National Green Building Standard, and other national programs.
- 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.

Construction Management Program—CMP

- 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, 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.
- 845 Advanced Green and Energy Efficient Building Construction**
Spring. 3(2-2) R: Open to graduate students in the School of Planning, Design and Construction or in the Civil Engineering Major. Approval of department. Not open to students with credit in CMP 445.
Best building practices in building construction, based upon the Leadership in Energy and Environmental Design and National Green Building Standard, and other national standards; basic understanding on building energy modeling.
- 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.