**CONSTRUCTION MANAGEMENT PROGRAM**

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

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Description</th>
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<tr>
<td>101</td>
<td>Principles of Construction Management</td>
<td>Fall. Spring. 2(2-0) R: Not open to seniors. SA: BCM 101</td>
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<tr>
<td>124</td>
<td>Residential Construction Materials and Methods</td>
<td>Fall. Spring. 3(3-0) P: CMP 101 or concurrently R: Not open to seniors. SA: BCM 124</td>
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<td>210</td>
<td>Commercial Construction Methods</td>
<td>Fall. 3(3-0) P: CMP 124 or concurrently SA: BCM 211 or concurrently</td>
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<td>222</td>
<td>Statics and Strengths of Materials</td>
<td>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. Design and analysis of utility and environmental systems in residential and commercial construction with a focus on mechanical, electrical, and plumbing systems. 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 practices. The whole building concept and airflow, thermal, and moisture movement in buildings. Sustainable building systems and modern green construction practices. 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.</td>
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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.

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) R: 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) R: Computer application background in architecture, civil and construction engineering. Computer application 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

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.