Construction Management

The Master of Construction Management (MCM) is a 30-unit program designed for working professionals. Students will be prepared for every aspect of leading a construction project or organization. Created for any professional of the built environment, our curriculum incorporates traditional themes like cost, time, risk and quality management with multidisciplinary topics such as business, finance, ethics and law. Lecture and lab-based education provides students with an environment for practical application utilizing best practices that address current issues and developments in the industry. A 15-unit graduate certificate is also offered and can be transferred into the degree at any time.

1. Graduate Certificate (15 units, 10-15 months to complete)
2. Part-time Master's Degree (30 units, 2.5 years+ to complete)

The Master of Construction Management/Master of Architecture (MCM/MArch) dual-degree program prepares architectural students for the diverse roles within today's multidisciplinary design/construction process. Sam Fox School of Design & Visual Arts architecture students can earn an MArch degree and an MCM degree in considerably less time than they would need to pursue each degree separately. More information can be found on the Master of Construction Management/Master of Architecture (MCM/MArch) dual-degree program page (https://sever.wustl.edu/degree-programs/construction/Architecture-Joint-Degree-Program.html) of the Sever Institute website.

Contact: Sari Griffin
Phone: 314-935-6221
Email: sari@wustl.edu
Website: https://sever.wustl.edu/degree-programs/construction/index.html

Faculty
Program Director
Steve Bannes
Director of Graduate Studies, Construction Management
Instructor
MS, Southwest Baptist University

For a list of our program faculty (https://sever.wustl.edu/faculty/construction_management), please visit our website.

Requirements
Master of Construction Management/Master of Architecture (Dual Degree Program)

Total units required: 30 (21 McKelvey School of Engineering units and 9 units of A46 Architecture courses)

In order to earn the degree/certificate, all courses must be passed with a C- or higher. In addition, a student must have a cumulative grade-point average of at least 2.70 over all courses applied toward the degree/certificate.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required: 18 units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNST 523A</td>
<td>Construction Cost Estimating</td>
<td>3</td>
</tr>
<tr>
<td>CNST 572</td>
<td>Legal Aspects of Construction</td>
<td>3</td>
</tr>
<tr>
<td>CNST 573</td>
<td>Fundamentals in Construction Management</td>
<td>3</td>
</tr>
<tr>
<td>CNST 574C</td>
<td>Construction Project Planning and Scheduling</td>
<td>3</td>
</tr>
<tr>
<td>CNST 581A</td>
<td>MCM/MArch Capstone Project Phase 1</td>
<td>1</td>
</tr>
<tr>
<td>CNST 581B</td>
<td>MCM/MArch Capstone Project Phase 2</td>
<td>2</td>
</tr>
<tr>
<td>ETEM 587</td>
<td>Communication Excellence for Influential Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Elective: Choose 3 courses for 9 units

ARCH 447A  Structures I                              | 3     |
ARCH 448A  Structures II                             | 3     |
ARCH 462H  Information Modeling for Sustainable Design| 3     |
ARCH 573B  Alternative Modes of Professional Practice | 3     |
ARCH 574B  Principles of the Virtual Design and Construction (VDC) Process | 3     |
CNST 550D  Heavy Civil Construction Management       | 3     |
CNST 580B  Digital Construction Technology           | 3     |
CYBER 559  Introduction to Cybersecurity              | 3     |
ETEM 510   Understanding Emerging & Disruptive Technologies | 3     |
ETEM 581   Leading in a Technology-Rich World        | 3     |
ETEM 582   Human Performance in the Organization     | 3     |
ETEM 586   Cross-Cultural Negotiation                | 3     |
INFO 506   Fundamentals of Information Technology     | 3     |
INFO 575   Enterprise Data Management                 | 3     |
Master of Construction Management

Total units required: 30

In order to earn the degree/certificate, all courses must be passed with a C- or higher. In addition, a student must have a cumulative grade-point average of at least 2.70 over all courses applied toward the degree/certificate.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRJM 525</td>
<td>Introduction to Agile Project Management</td>
<td>3</td>
</tr>
<tr>
<td>PRJM 526</td>
<td>The Art &amp; Science of Risk Management</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Plus 9 units from Master of Architecture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total units required: 30</td>
<td></td>
</tr>
</tbody>
</table>

Electives: Choose 12 units

- Technology
  - ARCH 462H Information Modeling for Sustainable Design 3
  - ARCH 574B Principles of the Virtual Design and Construction (VDC) Process 3
  - CNST 580B Digital Construction Technology 3
  - CYBER 559 Introduction to Cybersecurity 3
  - ETEM 510 Understanding Emerging & Disruptive Technologies 3
  - INFO 506 Fundamentals of Information Technology 3
  - INFO 575 Enterprise Data Management 3

- Project Management
  - ARCH 447A Structures I 3
  - ARCH 448A Structures II 3
  - ARCH 573B Alternative Modes of Professional Practice 3
  - CNST 550D Heavy Civil Construction Management 3
  - PRJM 525 Introduction to Agile Project Management 3
  - PRJM 526 The Art & Science of Risk Management 3

- Leadership

Courses

Visit online course listings to view semester offerings for T64 CNST (https://courses.wustl.edu/CourseInfo.aspx?sch=T&dept=T64&crslvl=5:8).

T64 CNST 523A Construction Cost Estimating
Construction cost estimating explores the application of cost estimating principles and estimating within a project management framework in conjunction with scope definition, quality control, planning and scheduling, risk management and loss prevention techniques, local conditions, information and communication, and working relations with stakeholders. Using a single building project, the course introduces the application of basic quantity surveying and estimating principles using a methodical approach with suggested check lists and techniques for arriving at a reliable cost estimate including direct, indirect, and contingency costs and profits. Student's estimating efforts culminate with a competitive bid day scenario. Prerequisite: T64 573 or permission of instructor. Credit 3 units.

T64 CNST 550D Heavy Civil Construction Management
This course provides a broad perspective of the means, methods, and procedures associated with managing civil engineering and heavy construction projects. Topics include strategic bidding and estimating, heavy equipment, marine construction heavy civil operations and bridge building. Integration of scheduling, estimating, and construction contracts with a project based approach. Prerequisite: T64 573 or permission of instructor. Credit 3 units.

T64 CNST 572 Legal Aspects of Construction
A survey of the legal problems of the construction manager, including but not limited to liability in the areas of contracts, agency, torts, insurance, bad judgment and oversight. Credit 3 units.

T64 CNST 573 Fundamentals in Construction Management
In this course, students will be exposed to the overall construction process from initial concept through startup of the completed facility. The focus is to provide familiarization of the construction and contracting process and potential involvements by construction managers in the planning, design, construction, and post construction phases. Additional topics are introduced to provide a foundation which will prepare students for future construction management coursework. Case studies and industry examples are used throughout the course to authenticate the lectures and assignments. Credit 3 units.
T64 CNST 574C Construction Project Planning and Scheduling
Project planning and scheduling process utilizing current techniques including 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; legal implications; effective communication of schedule information; development of procedures to monitor actual field progress; computer application in project scheduling. Prereq: T64 CNST 573 or permission of instructor. Credit 3 units.

T64 CNST 579 Advanced Construction Management
A comprehensive study of the operations encountered in the management of a construction firm. Topics include estimating, scheduling, forms of contracts, risk analysis and management, extra work orders, claims and disputes, construction safety, and contract close-out. Prerequisite: T64 573, T64 574, T64 523A, or permission of the program director. Credit 3 units.

T64 CNST 580B Digital Construction Technology
This course focuses on BIM's philosophy of integration between designers, construction professional, and owners, in order to overcome both technological and implementation changes using Virtual Design and Construction (VDC) and Integrated Project Delivery (IPD). VDC is a methodology that relies on a multidisciplinary collaboration of the digital simulation of design & construction. IPD, on the other hand, integrates people, systems, business structures and practices into a process to optimize efficiency and productivity. In this course, students will learn about BIM's application by exploring 3D, 4D aspects of BIM including geometry, spatial relationships, quantity take off, estimation and scheduling. Along with that, students also will learn about Virtual Design and Construction (VDC) and Integrated Project Delivery (IPD) system that are integral component of a successful BIM projects. Prerequisite: T64 573 or permission of instructor. Credit 3 units.

T64 CNST 581A MCM/MArch Capstone Project Phase 1
This capstone course allows MCM/MArch joint-degree program students to apply constructability principles to their MArch degree projects (A46 ARCH 616) and to successfully demonstrate how they have applied those principles. Constructability principles include analysis of the construction methods and procedures, project cost, time, value, quality, and safety. Phase 1 is to be taken simultaneously with A46 ARCH 616 Degree Project. Phase 1 students will develop a constructability review, analysis, and plan for their individual project. Prerequisites: Admission to the MCM/MArch joint-degree program, T64 573, T64 523A, and T64 574C. Credit 1 unit.

T64 CNST 581B MCM/MArch Capstone Project Phase 2
This capstone course allows MCM/MArch joint-degree program students to apply constructability principles to their MArch degree projects (A46 ARCH 616) and to successfully demonstrate how they have applied those principles. Constructability principles include analysis of the construction methods and procedures, project cost, time, value, quality, and safety. Phase 2 is to be taken after completing A46 ARCH 616 Degree Project. Phase 2 students will execute the constructability plan developed in Phase 1 and prepare and present the deliverables. Pre/Corequisite: T64 581A. Credit 2 units.

T64 CNST 599 Applied Research Study
Applied Research Study (ARS) is an advanced, project-based course designed to allow students to develop in-depth knowledge and further their education building on the education offered in the Programs. Applied research is a type of examination looking to find practical solutions for existing problems. These can include challenges in the workplace, education, and society. Students collaborate with an adjunct faculty advisor to collect data. Findings are applicable and may be implemented upon completion of a study. Applied research focuses on answering one specific applied research question for a client or sponsor. Applied Research Study must have prior approval of a faculty sponsor and the Program Director. Credit 3 units.