

Master Degree in Construction Management

Handbook

Department of Construction Management
University of Washington



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Section 1: General Information

Why get a graduate degree in CM?

Professional development and career advancement! You will participate in the advancement of knowledge in construction and management and the solution to some of the most pressing problems that our industry faces today by doing research in a variety of subjects.

How long will it take to earn my Master's degree?

Full-time students may be able to complete the master's program in 12 months. Part-time students may be able to complete all requirements for graduation in 24 months, provided that they take at least two courses per quarter, including the summer quarters. Additionally, selecting a thesis or research paper topic as early as possible is crucial to timely degree completion.

Who studies CM?

Our graduate students take advantage of our evening classes as they work during the day for federal, state, and local agencies, general contractors, construction management firms, real estate developers, consulting firms, and multi-national corporations. These part-time students bring years of field experience and day-to-day experiences to our classes. CM graduate courses are offered during the evening to accommodate our students who work during the day. Graduate courses from related programs are generally offered during the day.

Many of our full-time students represent countries from all over the world. Our graduate students have a B.S. in civil engineering, construction management, architecture or a similar field. Some have undergraduate degrees in business or come from a variety of backgrounds, and will generally be required to complete prerequisites prior to completion of the MS degree.

What will I study?

The Master's degree curriculum was developed with industry input to provide graduates with the skills desired by the construction industry. Since the program is structured to build upon the educational foundation gained with an undergraduate degree in construction management, civil engineering, architecture, or similar areas, students with educational backgrounds different from construction management may need to take additional foundation courses.

The program consists of three required core courses, related electives, an area of emphasis, and a thesis or a professional research paper. In order to obtain the degree, 45 quarter credits (the equivalent of 30 semester credits) including an acceptable thesis (9 quarter credits) or professional research paper (3 quarter credits) are required.

Six focus areas are offered in the Master of Science in Construction Management Curriculum, including Integrated Project Delivery Systems, Sustainable Built Environment, Infrastructure Development, International Construction, Virtual Design and Construction, and Safety and Health in Construction.

Where will I study?

Students in our Master's Program in Construction Management attend classes at the UW's Seattle campus. The Construction Management Department at the College of Built Environments is housed in Architecture Hall on the main campus.

Section 2: Curriculum

In this section:

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- 1. Integrated Project Delivery Systems**
- 2. Sustainable Built Environment**
- 3. Infrastructure Development**
- 4. International Construction**
- 5. Virtual Design and Construction**
- 6. Safety and Health in Construction**

Master of Science in Construction Management Degree Requirements

Students must complete a total of 45 quarter credits (the equivalent to 30 semester credits) to earn the Master of Science degree. This include (See also the Degree Auditing):

1. Core courses account for 9 credits and must be graded credits.
2. Students who choose to write a thesis (9 credits) need to complete 27 course credits,
3. Students who write a research paper (3 credits) need to complete 33 credits.
4. A maximum of 12 non-CM credits could be taken toward the degree.
5. At least 18 credits must be graded credits.
6. S/NS or Cr/Nc must have prior approval by the advisor or CM graduate coordinator.

Timeframe

Full-time students should be able to finish all requirements in 12 months. Part-time students are able to complete their degree in 24 months as long as they take at least two courses per quarter, including the summer quarters. Selecting a thesis or project topic as early as possible will also help to ensure a timely completion of degree requirements.

Curriculum Overview

The courses offered in the program are listed in the table below. For detailed information on any of the classes listed here, see the [Construction Management Course Catalog](#) or the [University Course Catalog](#). Note that all the courses, except CM512, are offered in the evening.

Course	Course Title	Credits	Quarter
CM 500	Design & Construction Law	3	Autumn
CM 510	Advanced Construction Techniques	3	Autumn
CM 520	Construction Procurement Systems	3	Autumn
CM 575	Leadership in Construction	3	Autumn

CM 518	Lean Construction	3	Spring
CM 530	Project Economics and Risk Analysis	3	Spring
CM 560	Design-Build Project Management	3	Spring
CM 570	Facilities Management	3	Spring
CM 528	Advanced Cost Management in Construction	3	Summer
CM 565	Managing International Projects	3	Summer
CM 515	Innovative Project Management Concepts	3	Winter
CM 535	Research Methods	3	Winter
CM 540	Sustainable Construction	3	Winter
CM 5xx	Project Scoping and Risk Management	3	Winter
CM 512	Preconstruction Facilitations	3	Winter

Courses offered for the online Master's program can also be applied toward the Master degree. These courses are listed below and more information can be found on the department online program website. Note that these online courses require special registration and may carry higher tuition per credit hour. You may need to contact the Department Chair or the Graduate Program Coordinator for registration.

Course	Course Title	Credits	Quarter
CM 500	Design & Construction Law	3	Autumn
CM 520	Construction Procurement Systems	3	Autumn
CM 580	Temporary Structures	3	Spring
CM 586	Utility Systems	3	Summer
CM 582	Heavy Construction Estimating	3	Summer
CM 525	Cost Analysis and Management, Winter	3	Winter
CM 588	Construction Operations and Productivity	3	Winter
CM 590	Research Methods in Construction	3	Winter

To satisfy the degree requirements, a combination of CM and non-CM courses can be taken, however, the requirements in the Degree Auditing section must be satisfied.

Core and Thesis/Paper Courses

Core courses must be taken as graded credits, S/NS is not allowed for these credits. The core course requirements are 9 credits as follows:

CM 500: Design and Construction Law

CM 535: Research Methods

CM 575: Leadership in Construction

Thesis or Research Paper (9 or 3 quarter credits):

CM 600: Independent Study/Research Paper (3 credits)

CM 700: Thesis (9 credits)

Research Focus Areas

The following five focus areas are offered in the Master of Science in Construction Management Program:

1. Integrated Project Delivery Systems
2. Sustainable Built Environment
3. Infrastructure Development
4. International Construction
5. Virtual Design and Construction
6. Safety and Health in Construction

Students can satisfy the credit requirement for the Master degree either by taking courses from just one focus area (if they desire to develop a concentrated area of specialization) or from several areas (if they desire to pursue a more holistic education).

Non-CM courses listed under each focus area are suggestions only. It is the student's responsibility to verify that these classes will fulfill their expectations, are offered by the relevant department, and that they have the necessary prerequisites. Non-CM courses must be approved by the student's advisor or the Graduate Program Coordinator. Only 12 non-CM credits can be applied toward the CM Master degree requirements.

Integrated Project Delivery Systems

Integrated Project Delivery Systems focuses on the contractual and procurement systems used for the development of public and private infrastructure and the provision of public services. Two directions are emphasized: (1) the basic concepts and (2) the study and development of economic/financial models and risk analysis techniques and strategies for the assessment and evaluation of projects procured under the alternative delivery systems. Appropriate courses for this focus area include:

CM Courses

CM 500: Design & Construction Law

CM 518: Lean Construction

CM 520: Construction Procurement Systems

CM 525: Cost Analysis and Management

CM 530: Project Economics and Risk Analysis

CM 555: Construction Firm Management

CM 560: Design-Build Project Management

CM 575: Leadership in Construction

CM 5xx: Project Scoping and Risk Management

Non-CM Courses (Suggestions)

Course	Course Title	Credits
PBAF 555	Public Private Partnerships	3
IPM 503	Infrastructure Finance	3
IPM 502	Introduction to Systems Infrastructure	3
IPM 508	Risk Assessment and Business Continuity	3
CEE 552	Environmental Regulations	3

IMT 501	Teamwork for Information Professionals	1
FIN XXX	Finance Courses in Foster School of Business, Business Admin	TBD
IPM 506	Energy Systems	3
IPM 514	Transportation Systems	3

Faculty with Research Interest in Integrated Project Delivery Systems:

Dr. Ahmed-Abdel Aziz

Dr. Bill Bender

Dr. Carrie Dossick

Dr. Yong-Woo Kim

Dr. Giovanni Migliaccio

Dr. John Schaufelberger

Sustainable Built Environment

Built environment refers to the totality of all that humans have changed or rearranged within the natural environment. The purpose of the sustainable built environment focus area is to optimize and reflect nature in sustainable built environments, and to promote understanding of the disciplines that shape the built environment. The topics of courses include sustainable construction, regulations, environmental management, production, and supply chain management. Appropriate courses for this focus area include:

CM Courses

CM 510: Advanced Construction Techniques

CM 540: Sustainable Construction

CM 588: Construction Operations and Productivity

Non-CM Courses (Suggestions)

Course	Course Title	Credits
URBDP 502	Tools for Sustainable Cities	
ME515	Life Cycle Assessment (LCA) Introduction	3
ENVIR 502	Business Strategy and the Natural Environment	4
ENVIR 550	Global Commercialization of Sustainable Technologies	4
URBDP 552	Real Estate Process	

Faculty with Research Interest in Sustainable Built Environment:

Dr. Bill Bender

Dr. Saeed Daniali

Dr. Yong-Woo Kim

Dr. Chris Lee

Dr. Ken-Yu Lin

Dr. Kamran M. Nemat

Infrastructure Development

Infrastructure development focuses on the real estate development process as well as the construction of infrastructure projects. Appropriate courses for this focus area include:

CM Courses

- CM 520: Construction Procurement Systems
- CM 530: Project Economics and Risk Analysis
- CM 545: Real Estate Development
- CM 550: Residential Project Development
- CM 570: Facilities Management
- CM 580: Temporary Structures
- CM 582: Heavy Construction Estimating
- CM 584: Marine Construction
- CM 586: Utility Systems Construction

Non-CM Courses (Suggestions)

Course	Course Title	Credits
CEE 595	Construction Methods	3
CEE 592	Statistical Fundamentals for Construction and Materials Apps	3
CEE 596	Pavement Construction	3
CEE 599	Sustainable Roadway Design and Construction	3
CEE 594	Computer-Aided Construction	3

Faculty with Research Interest in Infrastructure Development:

Dr. Ahmed-Abdel Aziz

Dr. Saeed Daniali

Dr. Giovanni Migliaccio

Dr. Kamran M. Nemati

International Construction

International construction involves the study of topics related to the planning and execution of construction projects outside the United States. The primary topics include risk assessment and management, cross-cultural relationships, international finance, geographic studies, international business and logistics, country studies, and international contracting. Appropriate courses for this focus area include:

CM Courses

- CM 515: Innovative Project Management Concepts
- CM 520: Construction Procurement Systems
- CM 530: Project Economics and Risk Analysis
- CM 565: Managing International Projects

Non-CM Courses (Suggestions)

Course	Course Title	Credits
HCDE 513	Globalization and Localization Management	4
HCDE 514	Strategies for International Product Management	4
MGMT 544	Managing Effectively Across Cultures	4

Faculty with Research Interest in this Focus Area:

Dr. Ahmed-Abdel Aziz

Dr. Chris Lee

Dr. Ken-Yu Lin

Dr. John Schaufelberger

Virtual Design and Construction

People who plan, build and manage cities seek to use new tools in new ways to bring designers and builders together to build faster, cheaper and safer, with higher quality, more healthy user-friendly spaces, and with minimum impact on the natural world. This focus area explores the adoption of digital technologies for design, fabrication and construction applications. The courses cover both the technologies themselves as well as new ways of working with these technologies. Appropriate courses for this focus area include:

CM Courses

CM 512: Preconstruction Facilitation

CM 515: Innovative Project Management Concepts

Non-CM Courses (Suggestions)

Course	Course Title	Credits
ARCH 527	Introduction to Digital Design and Fabrication	3
ARCH 528	Digital Design for Fabrication and Construction	3
URBDP 573	Digital Design	4
IS 504	Computer-Based Information Systems for Management	3
IS 545	Database Systems and Applications	4
MSIS 501	Information Technology and Organizational Strategy	3
MSIS 511	Digital Transformation of Organizations	3
MSIS 523	Compliance and Legal Issues in Information Technology	3
MSIS 534	Managing Information Technology Projects	3
HCDE 503	Navigating Design in Organizations	4
HCDE 505	Computer-Assisted Communication	4
IMT 501	Teamwork for Information Professionals	1
IMT 510	Human aspects of Information Systems	4
IND E 583	Decision Analysis in Engineering	3

Faculty with Research Interest in Virtual Design and Construction:

Dr. Carrie Dossick

Dr. Chris Lee

Dr. Ken-Yu Lin

Dr. Giovanni Migliaccio

Transfer Credits

Graduate students may petition the Dean of the Graduate School for permission to transfer to the University of Washington the equivalent of a maximum of 6 quarter credits of graduate-level course work taken while a registered graduate student in another recognized graduate school. These credits must not have been used to satisfy requirements for another degree. The petition must include a written recommendation from the Graduate Program Coordinator and an official transcript indicating completion of the course work. Transfer credits are not included on the University of Washington transcript.

Section 3: Degree Requirements for Graduation

Before enrolling in classes, a graduate student must contact his/her advisor to arrange for a meeting to review the master degree requirements and prepare a study plan showing the courses intended to be taken for graduation. While enrolled, a graduate student must do a regular self-audit of his/her progress toward the master degree requirements. The major issues and requirements to be attained to are summarized as follows:

Study Plan

1. You need to acquaint yourself with the master program, research interest areas, and courses at the curriculum page of our master program website. Note that you may also take courses from our online program, however, they have separate registration and may come at a bit higher cost than normal classroom/campus courses.
2. Print a copy of the study plan form, or obtain a copy from the CM front desk and start filling out the form before meeting your advisor. A copy of the form must be kept updated in your file with the CM Department.

Credit Requirements for Graduation (Degree Audit)

When completing the plan of study form, pay attention to the following:

1. You need to have a **total of at least 45 credits** to satisfy the graduation requirements for the Master in CM. All grad courses must be of 2.7 minimum and/or satisfactory (S) to be considered toward the 45 credits of the degree. Also, note the following:
 - a. Graduate students may repeat any course. Both the first and second grades will be included in the cumulative GPA. Subsequent grades will not be included, but will appear on the permanent record. The number of credits earned in the course will apply toward degree requirements only once.
 - b. You could select courses to be a combination of courses from all the research focus areas and you could add non-cm courses as discussed below
 - c. You must maintain a satisfactory performance with 3.0 cumulative GPA to graduate. Failure to do that would trigger the probation procedure over a number of quarters (probation, final probation, and drop).
2. List any **remedial course(s)** (if noted in your acceptance letter) in the study plan. Note that any 400 level courses (e.g. those of the remedial courses) **will not be counted** toward the 45 required credits but will be considered in the GPA calculations (this is standard in UW). Unlike regular graduate classes, to pass a remedial course, then
 - a. If the course is graded, then pass with at least 2.0 grade,
 - b. If the course is taken as S/NS, then you must obtain 2.7 to be considered as satisfactory “S” (you need GPC or advisor approval for S/NS), or
 - c. Complete a waiver exam and pass at least with 2.0.
 - d. If a remedial course is obtained at less than 2.0, then you will have to repeat the course, take an exam(s) waiver, or to take other course(s) in consultation with the GPC or advisor.
3. Allow for the Core Courses (3 courses = 9 credits); these must be taken as graded credits (**S/NS not allowed for core courses**),

4. Allow for a **Thesis (9 credits)** or **Research Paper (3 credits)**, the choice will affect the number of other credits to take toward the degree, i.e. 27 credits (9 courses if a thesis is selected) or 33 credits (11 courses if a research paper is selected).
5. You can take non-CM courses from other departments, however, a **max of 12 non-CM credits** will be counted toward the 45 credits. (The non-CM courses need to be consulted with the advisor before registration to make sure they are within the CM areas of interests).
6. If you have taken credits under the status of Graduate Non-matriculated (GNM), then only **12 UW GNM credits** can be applied to the 45 credit total. Note that regular non-matriculated (NM), i.e. not GNM, will not be considered toward the 45 credits.
7. Among all 45 credits, **at least 18 credits must be numerically graded**. S/NS could be taken after consultation and approval from the Graduate Program Coordinator and/or your advisor. You could change to/from S/NS up to the 7th week of the quarter, but also check with UW registration for any rule changes.
8. You could **transfer up to 6 credits** from other accredited institutions in the USA if those credits were taken toward a graduate degree that you did not complete. Meaning, the credits could be transferred if they were not used to take other degrees. The transfer needs submitting a petition to the graduate school which will be routed to the GPC.
9. If you are taking two degrees from two different departments within UW, then each degree must have its own 36 credits that will not be taken toward the other degree. Only credits above the 36 can be shared between the degrees.
10. Note that credits obtained during the Curricular Practical Training (**CPT**) **will not be counted** toward the fulfillment of the 45 credits of the Master degree. We only facilitate taking a CPT to help you in getting industry experience which will help you in your degree. You will need, however, to register for CM499 course, it will be recorded on your transcript, and it will be graded as CR/NC. You will need to write a brief report to your advisor summarizing your work experience so that the advisor can give you the credit for CM499.
11. Once the study plan is ready, discuss it with your advisor, sign on the plan and give to your advisor. Then, you may start registering for the courses. A copy of the plan will be left in the file and could be adjusted later with the consultation of the advisor.

Research Paper and Thesis

1. Based on the courses attended, you could select a topic for your research paper or thesis. A topic would be selected in consultation with your advisor, as well. If the selected topic is not in the research areas of your advisor, then you may elect to change to another CM faculty most familiar with your new research topic. From that point, the new advisor will work with you and check your credits toward completion of your degree.
2. With an unofficial transcript, do audit review to check on the fulfillment of the credit requirements as listed above. Review that with your advisor. If satisfied, then your advisor will report the recommendation to graduate to the Graduate Program Coordinator to communicate it with the Graduate School for final Audit. It is better to prepare a count of all the credits (graded) and non-credits (S/NS and CR/NC), cm and non-cm credits to assist the advisor checking on satisfying the requirements.

3. Toward the end of your MS study, you need to know the Graduate School deadlines for the “Request to Graduate” and to do that online after consultation with your advisor. Deadlines are here
<http://www.grad.washington.edu/students/dates.shtml>.
4. If you select a thesis track, then in consultation with your advisor:
 - a. A thesis committee of at least two faculty members will be selected by your advisor. When the research work is done and getting ready for presentation, the advisor will request a warrant from the Graduate Program Coordinator and get it signed by the committee after approving your thesis work and completion of the degree requirements.
 - b. Note that the 9 credits for thesis work (CM700) can be taken over a number of quarters, e.g. 3 credits for 3 quarters. If more than 9 credits are taken, only 9 will be counted.
 - c. Check the following UW website for electronic thesis submission
<http://www.grad.washington.edu/students/etd/index.shtml>
5. If you select a research paper track, then in consultation with your advisor:
 - a. No committee will be required. The graduate student will still need to apply for Graduation.
 - b. Based on the research paper outcomes, the advisor will need to recommend/Not recommend graduation to the Graduate Program Coordinator. When the research work is done and getting ready for presentation, the advisor will request a warrant from the Graduate Program Coordinator and sign it after approving your research work and completion of the degree requirements. Only 3 credits of CM600 will be taken toward the paper.