



The Myles and Eugenia Sweeney Construction Management Program



## **Quality Improvement Plan (QIP) Master of Science in Construction Management (MSCM)**



### **Construction Management Program**



SCHOOL OF  
MANAGEMENT



The Myles and Eugenia Sweeney Construction Management Program

**Quality Improvement Plan (QIP)  
Master of Science in Construction Management (MSCM)  
Construction Management Program  
School of Management**

**Introduction**

The Construction Management Program and the School of Management strive for continuous improvement to remain relevant as a provider of education in the continuously evolving construction industry.

The CM Program employs various constituencies (current students, alumni, faculty, administrators, employers, industry advisors, subject matter experts and accreditors) in a structured assessment procedure that uses quantitative and qualitative data gathered from a variety of sources on a regular basis to affect change and improvement in the program as needed. The CM Program leader (Associate Dean/Department Chair and/or appointed Graduate Faculty member) in concert with MSCM regular appointment graduate faculty manage the QIP process. Any action taken because of assessment to modify the curriculum begins at the MSCM program level with recommendations being made to the Dean, by the CM graduate faculty and the CM Program leader. Before implementation, these recommendations must be approved by the Institute Curriculum Committee (ICC), the MSCM Graduate Program Committee and ultimately by Wentworth’s Vice President for Academic Affairs/Provost.

The Master of Science in Construction Management program is directed by the Dean and Associate Dean of the School of Management (formerly directed by the Director of Graduate Programs within the Department of Construction Management in the College of Architecture, Design and Construction Management (CADCM)). The MSCM program is a part-time program and uses regular appointment and adjunct faculty as graduate instructors who are contracted employees for the School of Management’s Construction Program (formerly the CM Department). All MSCM instructors are approved by the Dean, CM Graduate Programs Committee (GPC), and constitute an academically qualified pool of practicing professional/subject matter experts (SME), as well as regular appointment faculty from across Wentworth Institute of Technology’s diverse set of Graduate Programs related to the built environment. Exhibit I below summarizes the 2020 faculty for the MSCM face-to-face and online formats, since the start of the MSCM graduate program in 2010 at Wentworth.

**Exhibit I  
Master of Science in Construction Management Program Faculty**

<b>Name</b>	<b>Rank</b>	<b>Degree/Certification</b>	<b>Years on Staff</b>
Joshua Anderson	Adjunct	MS	10
Fope Bademosi	Assistant Professor	Ph.D.	1
Payam Bakhshi	Associate Professor	Ph.D./ PE	10
Ilyas Bhatti	Associate Professor	MS/ PE	10
Celis Brisbin	Adjunct	MEM	1
Albert Caldarelli	Adjunct	MS/JD	7
Richard Christiano	Assistant Professor	MS	11
Christina Cosma	Professor	Ph.D. / PE	16
John Cribbs	Assistant Professor	Ph.D. / LEED AP / CDT	3
Michael D’Agostino	Adjunct	MS	15
Gautham Das	Associate Professor	Ph.D. / PE	8



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Laura Davis	Adjunct	MBA	7
Leonard DeLosh	Associate Professor	MS	11
Mark Edward Fitzgerald	Adjunct	MS	6
Karman Ghavami	Adjunct	Ph.D. / PE	4
Josh Goodrich	Adjunct	M.S./MBA	1
Hollis Greenberg	Associate Professor	MS	16
Virginia Greiman	Adjunct	M.Ed/JD/PMP	2
Edward Harris	Adjunct	Ph.D.	4
Scott Kelting	Adjunct	Ph.D./PE	7
William Kearney	Assistant Professor	M.S. / CCM	8
William Lyons	Adjunct	MS/JD	4
Thomas G. Massimo	Adjunct	MS	10
Robert Massoud	Adjunct	MS	4
Katherine McClellan	Adjunct	MS	5
Hariharan Naganathan	Assistant Professor	Ph.D.	1
Sean O'Brien	Adjunct	MS	1
Carl Pearson	Adjunct	MS	10
Afshin Pourmokhtarian	Assistant Professor	Ph.D.	3
Cory Pouliot	Adjunct	MS	3
Justin Reginato	Adjunct	Ph.D. / PE	7
Amir Schur	Adjunct	MS	4
Monica Snow	Associate Professor	Ph.D. / PE	19
Gregory Starzyk	Adjunct	Ph.D. / PE/JD	1
Cindy Stevens	Professor	Ph.D.	21
Durga Suresh-Menon	Associate Professor	Ph.D.	19
Kathryn Thibeault	Adjunct	MBA	17
Clifford Tischler	Adjunct	MS	8
Cynthia C.Y. Tsao	Adjunct	MS / Ph. D.	9
Wendy Venoit	Adjunct	MS	1
Loan Vu	Adjunct	MS	2
Lindsey Wagner	Adjunct	MS	6
Tramaine Weekes	Adjunct	MS	3
Michael Willett	Adjunct	MS	4
Jeffrey Williams	Adjunct	MS	4

The CM Program's Quality Improvement Plan (QIP) is the basis for continuous improvement of the Master of Science in Construction Management (MSCM) at Wentworth Institute of Technology (hereafter "Wentworth" or "the Institute"). The QIP has three (3) major components:

- I. The Strategic Plan for Wentworth's Construction Management Program's MSCM Program.



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- II. An Assessment Plan
- III. An Assessment Implementation Plan

## **I. Master of Science in Construction Management (MSCM) Program Strategic Plan**

### **MSCM Program Mission**

The Master of Science in Construction Management (MSCM) program at Wentworth Institute of Technology is a graduate program of study for construction professionals. The program is designed to educate students in foundational post graduate management principles combined with relevant construction education and experience in topics that are specific to preparing and advancing professional skills in administrative and executive leadership positions in design firms, construction companies and related disciplines. Both thesis and non-thesis options are available which allow for a variety of employment or educational opportunities including but not limited to working for general contractors, real-estate developers, sub-contractors, construction management and architectural/engineering firms, as well as advanced education and teaching options.

## **II. MSCM Assessment Plan**

The Assessment Plan includes the following:

- MSCM Program Goals
- MSCM Program Course Learning Outcomes (CLOs) Mapped to Required American Council for Construction Education (ACCE) Student Learning Outcomes (SLOs)
- MSCM Evaluation Methodology

### **Wentworth MSCM Program Goals**

To carry out the mission of the Master of Science in Construction Management program, the following program goals have been developed in order to prepare students academically for personal and professional success in the built environment. The attainment of goals is evaluated through the program's outcome assessment program:

- Present opportunities to develop metacognitive and life-long learning skills for students seeking increasingly complex management responsibilities, new leadership roles and overall career advancement
- Expose students to subject matter and industry experts and the latest technological and managerial/leadership advancements and their effects on the Construction Industry.
- Prepare and develop students from related disciplines to advance into the field of Construction Management.

### **Mapping of MSCM Program Course Learning Outcomes (CLOs) to American Council for Construction Education (ACCE) Student Learning Outcomes (SLO)**

The operation, academic integrity and improvement of the MSCM program is based on the relationship of MSCM Program Course Learning Outcomes to the American Council for Construction Educators (ACCE) Required Student Learning Outcomes (SLOs). The following verbs used in definition of all Learning Outcomes are consistent with Bloom's taxonomy when engaged for student assessment in the MSCM program:

- Create: students produce new ideas/products that integrate the knowledge they have gained,
- Apply: students put information learned into context, and
- Understand: students demonstrate they understand content by explaining, summarizing, classifying, or translating the information.



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All MSCM Course and Student Learning Outcomes relate to the ten (10) requirements set forth by the American Council for Construction Education (ACCE), as follows:

1. Effective and professional oral and written communications - MSCM students produce (create) effective and professional communication in written and oral formats
2. Critical thinking and creativity – MSCM students analyze and integrate (apply) information to conduct critical, reasoned arguments.
3. Problem solving and decision making - MSCM students design, evaluate, and implement (apply) strategies using advanced construction management concepts and practices.
4. Current issues in construction decision making - MSCM students demonstrate knowledge from industry experiences and keep up to date on developments, best practices, as well as tools and techniques in the field to deploy (apply) appropriate decisions related to encountered construction problems.
5. Research methods - MSCM students recognize and conduct (apply) valid, data-supported, and appropriate research in construction management.
6. Use of information and communication technology - MSCM students put into practice (apply) computer systems, productivity tools, software, and other information and communication technology.
7. Professional ethics including application to situations and choices - MSCM students identify ethical dilemmas in construction and apply practical skills to ethical situations.
8. Advanced construction management practices - MSCM students demonstrate and apply knowledge of contemporary construction industry methods and construction management principles and practices.
9. Complex project decision making and associated risk management - MSCM students recognize, weigh, and analyze (understand) risks associated with complex construction projects.
10. Principles of leadership in business and management - MSCM students understand and apply practical management decision-making tools and techniques and leadership best practices.

In addition, MSCM program students demonstrate mastery of the following direct ACCE SLOs, as defined in Document 103, Standard 3.2. Student Learning Outcomes:

1. Create effective and professional written communications
2. Apply critical thinking.
3. Apply problem solving techniques.
4. Apply decision making techniques.
5. Apply research methods.
6. Apply advanced communication technology.
7. Apply professional ethics.
8. Apply advanced construction management practices.
9. Understand risk management.
10. Understand the principles of leadership in business.

Refer to QIP attachment(s) at the back of this document for information related to mapping ACCE Student Learning Outcomes (SLOs) to MSCM Course Learning Outcomes (CLO) for MSCM/CONM courses.

### **MSCM Evaluation Methodology**

The following assessment tools are used by the CM Program Leader(s) to evaluate the MSCM degree program. Assessment results are analyzed, and all areas of “Concern” or “Weakness” are reviewed by the Dean, Associate Dean and/or Program Lead for recommendations related to immediate action items for incremental improvement and implementation. Specific areas of “Concern” or “Weakness” that appear in multiple assessment tools or over multiple assessment periods are scrutinized and may be the impetus for revisions to a specific course or courses and/or to the curriculum.



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The following assessment tools are deployed across the MSCM Program:

Indirect	Direct
Course End Survey	Capstone Project Direct Assessment Rubric
Alumni Survey	Industry Evaluation

**Course End Survey:**

An indirect assessment survey is conducted for MSCM/CONM courses. Questions are derived from the specific CONM student/course learning outcomes. This measurement for each CONM course asks identical questions to measure student perceptions of their skills and knowledge for each CONM course. The metric being used in the survey is a Likert rating scale having five (5) choices, for example:

I (MSCM student) have a complete understanding of how to recognize the role and responsibilities of construction managers within the framework of society and its natural environment.

1. Strongly Agree
2. Agree
3. Uncertain
4. Disagree
5. Strongly Disagree

The assessment target is for at least 80% of the students to “Strongly Agree” or “Agree” that they are able to meet each learning objective at the end of the course. If less than 80% of the students respond in these two categories, it is considered an area of “Concern.” If less than 70% of the students respond in these two categories, it is considered an area of “Weakness.”

MSCM Program Indirect Assessment Schedule:

- CONM7100 Modern Construction Delivery Methods – Indirect SLOs 1, 4, 7 and 10
- CONM7400 Advanced Project Controls – Indirect SLOs 2, 3, 5, 6, 8 and 9

**Wentworth Alumni Survey**

Wentworth alumni are surveyed every six (6) years. Data is collected and summarized by the Wentworth Alumni Office and reviewed by the MSCM Program Leader and associated Dean(s) of the school. The next Wentworth Alumni Survey will be at the end of the fall semester 2024.

**MSCM Capstone Assessment**

The MSCM Capstone is given as the final assessment target in the MSCM program, which is taken in the final semester. The direct assessment metric is for at least 80% of the students to demonstrate that they have mastered through their written project and presentation for each ACCE SLO. See CONM8000 syllabus and the listed presentation and final report rubrics which summarizes SLO attainment.

MSCM Program Direct Assessment Schedule:

- COMN8000 Capstone Project in CM – Direct SLOs 1, 2, 3, 4, 5, 6, 6, 7, 9 and 10



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**Industry Evaluation (ad hoc additional assessment)**

For the Capstone in the student’s final semester, the construction community helps evaluate the capstone reports and presentations (when available). Industry guests are invited to evaluate the overall knowledge and skills of a student, the CM capstone and the student’s readiness to enter in the construction industry. Additionally, the Wentworth Institute of Technology Construction Management Industry Advisory Board ([www.wentworthcmiab.com](http://www.wentworthcmiab.com)) has the opportunity to provide input into the MSCM program during annual review meetings.

**III. Assessment Implementation Plan Schedule**

**Exhibit II  
MSCM Evaluation and Assessment Implementation Plan Schedule**

<b>Evaluation</b>	<b>Frequency</b>	<b>Date</b>	<b>Conducted By</b>
MSCM Courses	Every semester	Fall/spring/summer semesters	Faculty and Institutional Research
Alumni Survey	Every six (6) years	Next survey 2024	Alumni Office
MSCM Capstone	Annually	Spring/summer semesters	MSCM Faculty
Industry Evaluation	Annually	As available	MSCM Faculty & CMIAB

## MSCM Program Findings and Changes (2015-2021) - Summary

- In each accredited year, the CONM8000 Capstone Research in CM, the ACCE and course SLOs were consistently met and appropriately assessed, thus finding that CONM8000 Capstone Research in CM requirements remained in place and no changes required.
- All CONM course SLOs were continually assessed and evaluated.
- The Director of Graduate Programs continually evaluated MSCM program pre-requisites for applicants and course curriculums for enrolled MSCM students to ensure graduates are prepared for the rigor of CONM8000 Capstone Research in CM in the final semester, for example students became familiar with proper citation (APA standards) prior to enrolling in capstone course.
- Continuous improvement of the ‘Capstone Guidelines’ document to clarify specific chapter requirements and avoid confusion over deliverable.
- In fall 2020 Wentworth 2 and 3-year MArch students accessed CONM courses to meet their graduate elective requirement, specifically,
  - CONM 7000 Executive Management for CM
  - CONM 7100 Modern Construction Delivery Methods
  - CONM 7200 Construction Law for CM
  - CONM 7300 Real Estate for CM
- Plan, develop and launch a new MSCM Graduate Certificate Program to increase CM enrollment, create a pathway into the MSCM program, meet a market demand/trend for “bite size” graduate courses, and create opportunities to develop new graduate courses and programs.

<b>ACCE Accreditation Timeline &amp; Overview</b>	
First ACCE Accreditation Visit	March 2014
Follow-up ACCE Accreditation Team Visit	March 2015
ACCE Accreditation	July 2015
ACCE Annual Assessment Report 1st Year	May 2016
ACCE Annual Assessment Report 2nd Year	May 2017
ACCE Annual Assessment Report 3rd Year	May 2018
ACCE Annual Assessment Report 4th Year	May 2019
ACCE Annual Assessment Report 5th Year	May 2020
ACCE Annual Assessment Report 6th Year	May 2021
ACCE Re-accreditation Self-Study Report	November 1, 2021
Next ACCE Accreditation Visit	February 2022
ACCE Re-Accreditation Final Decision	July 2022





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**Attachment I  
ACCE SLOs and Assessment Method  
Direct (D) and Indirect (I)**

**Assessment Tracking**

<b>MSCM Assessment Indirect and Direct  ACCE Student Learning Outcomes (SLO)</b>	CONM7000 Executive Management for CM	CONM7050 Research Methodology for CM	CONM7100 Modern Construction Delivery Methods	CONM7200 Construction Law for CM	CONM7250 Conflict Resolution and Negotiation for CM	CONM7300 Real Estate for CM	CONM7400 Advanced Project Controls	CONM7500 International Construction for CM	CONM8000 Capstone Research in CM	CONM8900 CM Thesis	MGMT7000 Business Relations & HR Management	MGMT7050 Business Finance and Investments	MGMT7150 Business Operations and Process	MGMT7300 Economics and International Business
1. Create effective and professional written communications			I						D					
2. Apply critical thinking							I		D					
3. Apply problem solving techniques							I		D					
4. Apply decision making techniques			I						D					
5. Apply research methods							I		D					
6. Apply advanced communication technology and the principles of leadership in business							I		D					
7. Apply professional ethics.			I						D					
8. Apply advanced construction management practices							I		D					
9. Understand risk management.							I		D					
10. Understand the principles of leadership in business			I						D					



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## Attachment II

### MSCM Baseline Program and Course Learning Outcomes & Related Assessment Methods/Tools

#### CONM7000 Executive Management for Construction Management

Develop a basic understanding of the general principals of the development and growth of project management	weekly assignments, class discussion, final group project, on-line learning modules, exams, projects & presentations See rubric in syllabus
Demonstrate the importance of understanding – challenges, opportunities for success, and excellence in project management	online learning modules, class deliverables, exams, papers, projects, presentations
Demonstrate depth in understanding strategic planning to achieve excellence in managing projects.	online learning modules, class deliverables, projects, presentations
Demonstrate an understanding of Portfolio Project Management.	online learning modules, class deliverables, exams, papers, projects, presentations
Develop an understanding of the process of office operations.	online learning modules, class deliverables
Demonstrate an understanding of the integration of the different principles of and processes in managing projects	exams, papers, projects, presentations
Illustrate proficiency of the different principles governing corporate culture.	papers, projects, presentations

#### CONM7100 Modern Construction Delivery Methods

Identify and describe modern construction delivery methods.	weekly assignments, class discussion, final group project, on-line learning modules, exams, papers, projects & presentations See rubric in syllabus
Compare and contrast advantages and challenges of implementing each method.	weekly assignments, in class discussion, weekly assignments
Track and plan for the company resources required to implement each method.	weekly assignments, in class discussion, weekly assignments final group project
Outline the project organization required to implement each method.	weekly assignments, in class discussion, weekly assignments and exams
Articulate the influence each method has had on the AEC industry.	weekly assignments, in class discussion, weekly assignments final group project

#### CONM7200 Construction Law

Identify critical legal issues and concepts arising on a construction project.	weekly assignments, in-class discussions, on-line learning modules, exams, papers, projects & presentations See rubric in syllabus
Demonstrate a working knowledge and understanding of industry standard construction contract documents.	discussions, on-line learning modules, exams



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Assess the respective roles of the parties involved in the design and construction process.	weekly discussions, on-line learning modules, exams, papers
Allocate risk among the various parties to a construction project (owner, contractor, construction manager, designer, subcontractor, etc.) as determined through contract provisions and case law.	in-class discussions, on-line learning modules, exams, papers, projects
Analyze and interpret key construction contract provisions and the legal implications of each in the context of potential claims or changes to a construction contract.	discussions, on-line learning modules, exams, papers, projects & presentations
Use the provisions of the construction contract to advocate and defend changes or claims to a construction project.	discussions, on-line learning modules, exams, papers, projects & presentations
Use alternative dispute resolution options to resolve construction disputes.	discussions, on-line learning modules, exams, papers, projects & presentations

**CONM7250 Negotiation and Conflict Resolution**

Develop working knowledge of the major dispute avoidance and resolution techniques.	discussions, on-line learning modules, projects & presentations, exams, papers, projects & presentations See rubric in syllabus
Demonstrate basic negotiation skills.	discussions, on-line learning modules, exams, class deliverables
Understand the basic legal framework surrounding construction dispute resolution.	on-line learning modules, exams
Understand the steps of dispute resolution within the context of risk management.	on-line learning modules, exams, papers, projects & presentations, class deliverables
Analyze the appropriateness of particular ADR systems in the context of a particular project delivery system.	discussions, on-line learning modules, exams, papers, projects & presentations class deliverables

**CONM7300 Real Estate Development**

Apply an understanding of financial feasibility analysis as it relates to real estate development	weekly assignments, in class discussion, quiz, group project, case study and weekly research See rubric in syllabus
Demonstrate knowledge of the various participants in the real estate profession and their unique perspectives	weekly assignments, in class discussion, quiz
Discuss "real world" development deals through case studies	weekly assignments, case study, in class discussion, group project, quiz
Differentiate the major property types, their unique attributes and their supply and demand characteristics	weekly assignments, in class discussion, group project, quiz
Analyze a real estate development opportunity to determine its relative value through residual analysis.	weekly assignments, in class discussion, case study , group project, quiz

**CONM7400 Advanced Project Controls**

Create a project schedule using Microsoft Project or Primavera P6 as a tool for generating and maintaining the schedule	discussions, on-line learning modules, exams, papers, projects & presentations class deliverables
Evaluate risks and uncertainties associated with construction projects	See rubric in syllabus



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Apply proper tools and techniques to quantify project risks	
Evaluate different types of contracts, project delivery methods, legal structures, and organizational structures for construction projects	
Analyze construction project costs and apply different types of estimating methods	
Evaluate different types of schedules and apply PERT method	
Apply schedule compression and analyze time-cost trade-off	
Evaluate construction cost accounts and code structure	
Analyze various costs of owning and operating equipment	

**CONM8000 Capstone Project in Construction Management**

	weekly assignments, project, on-line learning modules, class deliverables, final project & presentation See rubric in syllabus
Analyze and integrate information to conduct critical, reasoned arguments.	Capstone in CM Project Report– Introduction Letter Chapter 2 Business Plan Chapter 3 Project Financing and Contracts Chapter 4 Project Operations, Process Management and Site Logistics Chapter 6 Construction Delivery Method Chapter 8 Applied Research
Design, evaluate, and implement strategies using advanced construction management concepts and practices.	Capstone in CM Project Report– Chapter 2 Business Plan Chapter 4 Project Operations, Process Management and Site Logistics
Produce effective and professional communication in written and oral formats.	Capstone in CM Oral Presentation Capstone in CM Project Report
Put into practice computer systems, productivity tools, software, and other information and communication technology.	Capstone in CM Project Report– Chapter 4 Project Operations, Process Management and Site Logistics Chapter 5 Project Budget and Schedule Chapter 7 Risk Management
Apply practical management decision-making tools and techniques and leadership best practices.	Capstone in CM Project Report– Introduction Letter Chapter 1 Firm Organization and Operations Chapter 2 Business Plan
Demonstrate knowledge from industry experiences and keep up to date on developments, best practices, as well as tools and techniques in the field.	Capstone in CM Project Report– Chapter 1 Firm Organization and Operations Chapter 3 Project Financing and Contracts Chapter 4 Project Operations, Process Management and Site Logistics Chapter 6 Construction Delivery Method
Recognize, weigh, and analyze risks associated with complex construction projects.	Capstone in CM Project Report– Chapter 2 Business Plan



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	Chapter 7 Risk Management
Identify ethical dilemmas in construction and apply practical skills to ethical situations.	Capstone in CM Project Report– Chapter 1 Firm Organization and Operations Chapter 3 Financing and Contracts
Examine, evaluate and articulate innovation in construction in an organized and coherent manner	Capstone in CM Project Report– Chapter 1 Firm Organization and Operations Chapter 8 Applied Research
Develop and conduct valid, data-supported, and appropriate research in construction management.	Capstone in CM Project Report– Chapter 8 Applied Research Chapter 9 References