

VECELLIO CONSTRUCTION ENGINEERING AND MANAGEMENT PROGRAM GRADUATE STUDENT HANDBOOK

General Information

This handbook provides information regarding policies, practices and courses in the Vecellio Construction Engineering and Management Program (VCEMP) at Virginia Tech. This handbook supplements other graduate policy and information documents/resources to include:

- (1) Virginia Tech Graduate School's Catalog, available at: http://secure.graduateschool.vt.edu/graduate_catalog/
- (2) Via Department of Civil and Environmental Engineering (CEE) Graduate Policies and Procedures Manual, available at: https://cee.vt.edu/content/dam/cee_vt_edu/files/Graduate-Policies-and-Procedures-Manual-Departmental.pdf
- (3) Important forms are available from CEE Homepage at: https://cee.vt.edu/Graduate-menu/current_G_students.html → Click on "Graduate Information & Forms"
- (4) Timetable of classes at https://apps.es.vt.edu/ssb/HZSKVTSC.P_DispRequest or through Hokie SPA at <http://hokiespa.vt.edu>
- (5) VCEMP homepage at <https://cem.cee.vt.edu/> - also accessible from the CEE homepage

NOTE: Students who accept the offer of admission should complete all applicable requirements in the [New Student Checklist](#).

Program Overview

VCEMP is one of six disciplinary areas in the Via Department of Civil and Environmental Engineering at Virginia Tech. The construction engineering and management (CEM) disciplinary area was established in 1986. In 2001, the *Vecellio Family Foundation* endowed the program with a generous gift making it the first named CEM program in the United States. Since the program's founding, it has supported education and research in CEM at both the undergraduate and graduate levels. VCEMP has four foundational objectives: (1) develop and deliver undergraduate courses in the CEM specialty area, (2) provide a comprehensive graduate program in CEM, (3) advance and sustain the planning, delivery and management of infrastructure, and (4) prepare graduates for careers in industry, public agencies and academia.

We offer the following degrees:

- MS in Civil Engineering with a concentration in CEM (MSCE-CEM)
- PhD in Civil Engineering

MSCE-CEM degrees may be earned through one of three exit options: (1) coursework-only (CWO), (2) project & report (P&R), or (3) thesis. Each of these exit options is explained in more detail subsequently.

General Degree Requirements

Requirements for the degrees and exit options are explained below. A flowchart depicting MS degree requirements by exit option is shown in Appendix A:

- Master of Science Non-thesis, Coursework-Only Option: A minimum of 30 course credits (not including seminar credits) is required. Students may take a maximum of 6 credits of relevant 4000 level (upper undergraduate) courses and must take a minimum of 24 credits at the 5000 level (graduate) or higher (not including seminar credits). A student's plan of study must be approved by their advisory committee. A final exit exam (described subsequently) is required.
- Master of Science Non-thesis, Project & Report Option: A minimum of 27 course credits (not including seminar credits) and 3 credits of CEE 5904 Project and Report are required. Students may

take a maximum of 6 credits of relevant 4000 level (upper undergraduate) courses and must take a minimum of 21 credits at the 5000 level (graduate) or higher (not including seminar credits). A student's plan of study must be approved by their advisory committee. A final exit exam (described subsequently) is required.

- Master of Science Thesis Option: A minimum of 24 course credits (not including seminar credits) and 6 credits of CEE 5944 Research and Thesis are required. Students may take a maximum of 6 credits of relevant 4000 level (upper undergraduate) courses and must take a minimum of 18 credits at the 5000 level (graduate) or higher (not including seminar credits). A student's plan of study must be approved by their advisory committee. A final exit exam (described subsequently) is required.
- Ph.D. Program: A minimum of 90 semester credit hours (not including seminar credits) beyond the B.S. degree, a Qualifying Examination, a Preliminary Examination, and a Final Examination (Oral Defense of Dissertation) are required. The *VCEMP PhD Requirements* document describes VCEMP's Ph.D. program process and requirements. A student's plan of study must be approved by their advisory committee.

Specific Degree Requirements

For VCEMP students, each student's Master's or Ph.D. program must include the following basic requirements:

- (1) Fulfill required background courses listed in the Graduate Policies and Procedures Manual of the Department of Civil and Environmental Engineering.
- (2) CEE 5944 Seminar, one supporting course credit.
- (3) Master's students must comply with the MSCE-CEM Check Sheet for the academic year of entry into the program. The MSCE Check Sheet for AY25-26 is available at this [web-link](#) and is provided in Appendix B. The courses tentatively scheduled for AY26-27 are also shown in Appendix B.
- (4) Master's students must comply with the Final Exam Guidelines shown in Appendix C.
- (5) Ph.D. student must comply with Ph.D. program requirements outlined in the current version of the *VCEMP PhD Requirements* document.

Additional Information

If a student fails to make satisfactory progress toward the degree, permission may be denied to continue in the program. Students whose cumulative GPA falls below 3.0 are placed on probation and become ineligible for assistantships.

The Graduate Honor Code establishes a standard of academic integrity. Compliance with the Graduate Honor Code requires that all graduate students exercise honesty and ethical behavior in all their academic pursuits at Virginia Tech. The Constitution of the Graduate Honor System is given in an Appendix of the Graduate Catalog, which can be accessed from the CEE web page.

Duties of students receiving assistantships are described in the letter giving the offer of aid and in the contract signed by the student, and by the supervising faculty member.

VCEMP Faculty

Michael Biscotte, PE, MBA, Assistant Professor of Practice

David N. Ford, PhD, PE, Vecellio Professor of Construction Engineering & Management

Michael J. Garvin, PhD, PE, David H. Burrows Professor of Construction Engineering

Farrokh Jazizadeh, PhD, Associate Professor

Frederick Paige, PhD, Assistant Professor

Rachel Pearson, PhD, Research Assistant Professor

Christin Salley, PhD, Research Assistant Professor

Tripp Shealy, PhD, Associate Professor

Sunil Sinha, PhD, Professor

Hongrui Yu, PhD, Assistant Professor

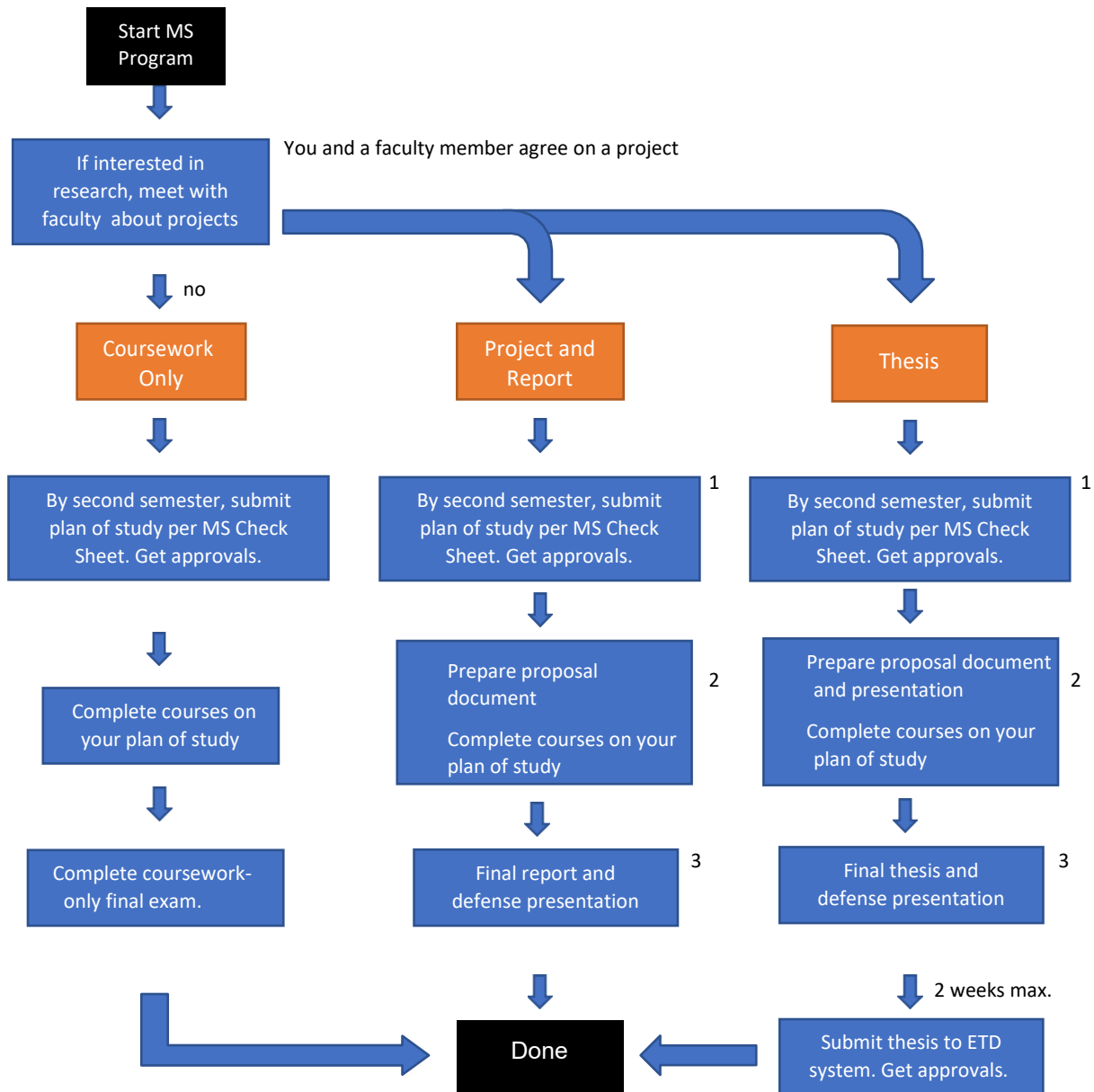
VCEMP Emeritus Faculty

Jesus de la Garza, PhD, PE

Michael C. Vorster, PhD, PE

APPENDIX A

Flowchart for the VCEMP MS Program Depicting Exit Options



Notes:

1. The faculty advising you on your P&R or thesis is your advisor. Coordinate with your advisor about your classes and who should be on your committee.
2. Prepare a written proposal for your P&R or thesis under guidance of your advisor. A presentation of the proposal to your committee is required for a thesis; the proposal document should be provided to your committee at least one week prior to the presentation.
3. Schedule the defense with your committee and submit date/location/time in the graduate school approval system at least two weeks prior to your defense. Provide your final document to your committee at least two weeks before your defense. Present your final research to your committee.

APPENDIX B

MSCE Check Sheet

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Vecellio Construction Engineering and Management Program
2025-2026 MSCE in CEM Course Requirements Check Sheet

						Credit Hours	Semester Offered	
I - VCEMP Core Courses (15 credit hours required) ¹				Indicate Semester Taken				
CEE 5024	Contract Administration & Claims Resolution					3	F	
CEE 5054	Project Control of Built Infrastructure					3	S	
CEE 5060	Built Environment Information Modeling & Processes					3	F	
CEE 5080	Infrastructure Asset Management					3	S	
CEE 5984	Topics in Advanced Construction Technologies					3	S	
CNST 5074	Construction Professional Competencies ²					3	F	
CNST 5114	Leadership in Arch/Engineer/Const					3	F	
II - Track-Specific Requirements								
Non-Thesis Track (0 or 3 credit hours required)				OR	Thesis Track (10 credit hours required)			
CEE 5904	Project and Report ³	3	F, S		CNST 5084	Methods in Const Research ⁴	3	S
					CNST 5424	Construction Research Present ⁵	1	F, S
					CEE 5994	Research and Thesis	6	F, S
III - CEE Directed Electives (Minimum 6 credit hours)				Indicate Semester Taken				
CEE 5014	Facility Delivery & Financing Strategies					3	S	
CEE 5020	Infrastructure Policy					3	S	
CEE 5034	Smart Sustainable Infrastructure					3	S	
CEE 5064	Construction Project Dynamics					3	Not Offered	
CEE 5074	Global Virtual Design & Construction					3	S	
CEE 5084	Information Technology in Infrastructure					3	F	
CEE 5974	Independent Study ⁶					1-3	F, S	
IV - General Electives (Minimum 0 credit hours required)				Indicate Semester Taken				
CEE 4014	Estimating, Productivity and Cost Engineering ⁷					3	F, S	
CEE 4024	Construction Control Techniques ⁷					3	F	
CEE 4074	Construction Means & Methods ⁷					3	F, S	
CEE 5004	Adaptive Reuse and Redevelopment					3	Not Offered	
CNST 5214	Construction Company Management					3	S	
Any 4000 or 5000 courses in the areas of Construction, Engineering, Business or Policy approved by advisor						3+	F, S	
V - Required Supporting Courses (Required for graduation; taken P/F)								
CEE 5944	Seminar: Construction					1	F	
ENGE 5304	Graduate Student Success in Multicultural Environments					1	F, S	

¹ Students without a sufficient background in CEM fundamentals may be required to take background supporting courses.

² Fall entrants should enroll in first semester, spring entrants should enroll in second semester.

³ Not required for coursework-only exit option; enroll for 3 credits for P&R exit option.

⁴ Thesis students must take CNST 5084 or an approved substitute.

⁵ Pass/Fail option only, taken in final semester.

⁶ Approval of supervising faculty required; must submit independent study form in accordance with departmental policy.

⁷ Approval of supervising faculty required; student will need to request a force-add.

A PLAN OF STUDY must be submitted before completion of 15 hours of graduate coursework. Class waivers or variations from the Course Requirements must be approved by the Program

Version: 6/20/2025

MSCE in CEM (VCEMP)
Tentative Graduate Courses for AY26-27

Course No.	Title	Credits	Semester	Instructor	Notes
VCEMP Core Courses (Minimum of 15 credit hours)					
CEE 5024	Contract Administration	3	F	Garvin	Fall entrants take first semester
CEE 5054	Project Control of Built Infrastructure	3	S	Ford	
CEE 5060	Built Environment Information Modeling & Processes	3	F	Jazizadeh	
CEE 5080	Infrastructure Asset Management	3	S	Sinha	
CEE 5984	Topics in Advanced Construction Technologies	3	S	Yu	
CNST 5074	Construction Professional Competencies	3	F	Iorio	
CNST 5114	Leadership in AEC	3	F	Iorio	
CEE Directed Electives (Minimum of 6 credit hours)					
CEE 5014	Facility Delivery and Financing Strategies	3	S	Garvin	Not Offered (Next - FA 2027)
CEE 5020	Infrastructure Policy	3	S	Paige	
CEE 5034	Smart Sustainable Infrastructure	3	F	Shealy	
CEE 5064	Construction Project Dynamics	3	F	Ford	Not Offered (Next - SP 2028) Not Offered (Next - FA 2027)
CEE 5074	Global Virtual Design	3	S	Paige	
CEE 5084	IT for Infrastructure	3	F	Sinha	
General Electives (Minimum of 0 credit hours)					
CEE 4014	Estimating, Productivity & Cost Engineering	3	F,S	Biscotte	
CEE 4024	Construction Control Techniques	3	F	Yu	
CEE 4074	Construction Means & Methods	3	F,S	TBD	
CEE 5004	Adaptive Reuse and Redevelopment	3	S	Shealy	
CNST 5214	Construction Company Management	3	S	TBD	
Required Supporting Courses					
CEE 5944	Seminar	1	F	Team	
ENGE 5304	Grad Stud Success in Multi Env	1	F,S	TBD	

APPENDIX C

Final Exam Guidelines for MS Students

These guidelines describe the process to prepare for and complete a final exam for MS students.

1. MS students will follow the non-thesis coursework-only exit option unless a qualified faculty member agrees to supervise a project & report or thesis for the MS student. Not later than the start of the student's second semester of enrollment, the student will notify the VCEMP program coordinator of their exit option; in the case of a project & report or thesis, the consent of the supervising faculty member is also required.
2. Regardless of the exit option, MS students must comply with CEE and Graduate School policies and requirements for MS committees and final examinations.
3. MS coursework only students will have their committee chair and two committee members assigned by the VCEMP Program Coordinator.
 - a. In the semester of graduation, MS coursework only students are required to:
 - i. Select three CEE elective courses from the VCEMP check sheet* and receive approval of their selection from their committee chair;
 - ii. Prepare a 15-minute presentation; there is no specific template for the presentation, but students should demonstrate effective communication skills learned throughout the program;
 - iii. The presentation should include the following:
 1. An introduction covering the student's background and rationale for attending the program
 2. For each course:
 - a. Discuss three key topics covered in the course; the discussion should demonstrate the student's understanding of the topics and explain how they may be applicable to the student's career
 - b. Identify one strength and one weakness of the course
 3. A summative assessment of the student's experience in the program
 4. A conclusion to include the student's future plans and career goals
 - iv. Record the presentation and post it to the designated site not later than the second Friday of November or April in the semester of graduation;
 - b. The program will identify dates, times and locations for the student's final exam in December or May; students must register for a date, time and location as directed.
 - c. Once the date, time and location are confirmed, students must schedule a final exam with the Graduate School at least two weeks in advance of the date.
4. MS project & report students are required to:
 - a. Consult with their advisor to establish a committee in accordance with the CEE Graduate Policies and Procedures Manual;
 - b. Prepare a proposal for the project & report;
 - c. Submit the project & report proposal to their committee for feedback; the written proposal should be delivered to the committee at least three months in advance of the planned P&R presentation and final exam (see Item 4g);
 - d. Complete the project & report in accordance with any feedback provided by the committee;

- e. Identify a date for the final exam in consultation with their advisor and committee;
 - f. Schedule a final exam with the Graduate School at least two weeks in advance of this date; deliver the project & report document to the committee at least one week in advance;
 - g. Present the project & report results to their committee during the scheduled final exam.
5. MS thesis students are required to:
- a. Consult with their advisor to establish a committee in accordance with the CEE Graduate Policies and Procedures Manual;
 - b. Prepare a proposal for the thesis;
 - c. Schedule a presentation of the thesis proposal with their committee; the written proposal should be delivered to the committee at least 1-week in advance of the scheduled proposal presentation;
 - d. Complete the thesis research in accordance with any feedback provided by the committee;
 - e. Schedule a pre-defense with their advisor and committee. Deliver the thesis to the committee at least 1-week in advance of the scheduled pre-defense date;
 - f. Present the thesis results to their committee during the scheduled pre-defense;
 - g. Make any revisions or improvements to the thesis identified during the pre-defense meeting;
 - h. Identify a date for the final exam with their advisor and committee;
 - i. Schedule a final exam with the Graduate School at least two weeks in advance of this date. Deliver the thesis document to the committee at least two weeks in advance;
 - j. Present and defend the thesis results to their committee during the scheduled final exam;
 - k. Comply with CEE and Graduate School policies and requirements for MS thesis content and deposit.
6. For any of the exit options, if a student fails the final exam, then they must follow Graduate School policy for retaking the final exam, which currently requires that one full semester (a minimum of 15 weeks) must elapse before the second examination is scheduled.

*The student should use the check sheet of record for the academic year in which they started their studies at Virginia Tech.