

CIVIL AND ENVIRONMENTAL ENGINEERING

GRADUATE STUDENT HANDBOOK



2017-2018

Master of Engineering Program

CornellEngineering

Civil and Environmental Engineering



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It is the policy of Cornell University actively to support equality of education and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age, or handicap. The University is committed to the maintenance of affirmative-action programs that will assure the continuation of such equality of opportunity. Sexual harassment is an act of discrimination and, as such, will not be tolerated. Inquiries concerning the application of Title IX may be referred to Cornell's Title IX coordinator at the Office Workforce Diversity, Equity and Life Quality, 160 Day Hall, Ithaca, New York 14853-2801 (Telephone: 607-255-3976).

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SECTION 1 INTRODUCTION

Welcome to Cornell University and, in particular, to the School of Civil and Environmental Engineering. We hope your year here will be an academically rich and personally rewarding experience. This handbook has been prepared to simplify the orientation and registration process of new candidates for the Master of Engineering degree in Civil and Environmental Engineering.

1.1 The School of Civil and Environmental Engineering (CEE)

The School has a strong educational tradition and a supportive alumni network. Ranked as one of the top civil and environmental engineering departments in the United States, the School currently consists of twenty-seven active faculty members and other individuals who serve as lecturers, senior research associates, and other staff. The CEE faculty and their particular specializations are listed in Appendix A. In addition, we have several thousand alumni who hold important positions in engineering, construction, research and development, manufacturing, sales, education, consulting, and government in the U.S. and around the world.

The faculty and other individuals responsible for administering the School include:

Director, School of Civil & Environ. Engr.: Linda Nozick, 220 Hollister, 255-3690

Director of Administration: Joe Rowe, 220 Hollister, 255-0549

Administrative Assistant: Jeannette Little, 220 Hollister, 255-3690

Director of Graduate Studies: James J. Bisogni

Chair, Master of Engineering Program: James J. Bisogni

Graduate Program Coordinator: Tania Sharpsteen, 219 Hollister, 255-7560

Other Support Staff:

Administrative Assistant: Charissa King, 220 Hollister, 255-2542

Accounts Administrator: Christina Dovi, 220 Hollister, 255-3684

Accounts Coordinator: Megan Keene, 220 Hollister, 255-6192

Building Coordinator: Paul Charles, B56 Hollister, 351-6210

Computer Operations Manager: Cameron Willkens, B55 Hollister

1.2 The Master of Engineering Degree in Civil & Environmental Engineering

The Master of Engineering degree is a coursework and project-oriented graduate program. It requires thirty (30) credit hours consisting of coursework in the major and supporting areas, and a project. The Master of Engineering degree is normally completed in two semesters of intensive study, but for some students a third semester may be necessary.

Master of Engineering candidates in Civil and Environmental Engineering may elect to pursue one of the following majors:

- environmental engineering (with a specialty in one of the following subject areas)
 - environmental processes
 - environmental and water resource systems engineering
 - environmental fluid mechanics and hydrology
- geotechnical engineering
- structural mechanics and materials
- transportation systems engineering

In addition to coursework in a chosen major or specialty, students will also take courses in one or more supporting areas. Supporting areas can be chosen from many disciplines, including any of the specialty areas within CEE, or in microbiology, historic preservation, operations research, computer science, economics, materials science, architecture, and engineering management, to name just a few.

The School of Civil and Environmental Engineering also offers a Master of Engineering degree in Engineering Management. The program is aimed at engineers who want to stay in a technical environment, but advance into managerial roles. Students learn to identify problems, analyze data, formulate models to understand these problems, and interpret the results of analyses for managerial action. A number of students in the M.Eng program in Engineering Management elect to take courses in management offered by CEE, the Johnson Graduate School of Management, or the School of Industrial and Labor Relations. A joint Masters program in Public Administration is also available through the Cornell Institute for Public Affairs. Appendix C provides a short description of the program in Engineering Management and a list of typical electives. A separate handbook providing more details about the program is also available from the Graduate Program Coordinator.

1.2.1 Preparation

Students from all fields of engineering and the physical and natural sciences are welcome in the Master of Engineering programs offered by the CEE School. However, a student without adequate preparation may be required to take additional preparatory coursework, which will be determined by faculty in the student's chosen major. This preparatory work does not count toward the Master of Engineering graduation requirements. Any preparatory coursework that is required will be listed in a student's letter offering admission.

1.2.2 Major Program Requirements

A minimum of 30 credit hours of course and project work is required for the M.Eng degree in Civil & Environmental Engineering. This is typically the equivalent of ten 3-credit courses. Program requirements for each major concentration are given in Appendix D.

The information provided should help you develop a coursework proposal, but we encourage you to seek guidance from your advisor and other faculty members. Your advisor will work with you to develop a program consistent with your career goals and the intent of the M.Eng program.

SECTION 2 PLANNING and REGISTERING for the M.Eng (CEE) PROGRAM

Enrolling in the M.Eng program will take relatively little time for most of you. You will find the process a little more informal than undergraduate registration, with more freedom to change courses easily during the first three weeks of classes of each semester. The major steps in the process are described in the following sections.

2.1 Assignment of Advisor

You will have an advisor in your major area of concentration to help you design a program of study and generally to assist and advise you during your stay at Cornell. Advisor assignments are done within each major concentration area. You may also request to change your advisor to another faculty member within the same concentration upon permission of the faculty member whom you would like to serve as your new advisor.

2.3 Course Registration

Graduate students must register for courses online by logging into you Student Center with your NetID*. You can begin registering for classes for the fall term on Wednesday, August 16, 2017. Courses may be **added** online until Wednesday, September 6th. They may be **dropped** online until Wednesday, October 18th.

Any changes in your course registration after the deadlines (i.e., adds/drops, credit hour changes) requires submission of a Course Enrollment Petition to the Engineering Registrar's office within the College of Engineering. The petition must be signed by both your advisor and the instructor of the course. Please note that petitions are not automatically approved.

**NetID: You should have received your NetID and information from Cornell Information Technologies (CIT) over the summer. If you did not, please contact the CIT Office at HelpDesk@cornell.edu. Please be sure to check your Cornell e-mail regularly.*

2.4 Planning Your M.Eng Program

Please study the pertinent material in this handbook for both required courses and appropriate elective courses before seeing your advisor. It would be worthwhile to spend some time with the online course catalog (<https://classes.cornell.edu/browse/roster/FA17>) to identify possible courses for both the Fall and Spring terms (the spring roster will be available by mid-October). In addition, students will want to consult the course listing in the Johnson Graduate School of Management, the School of Industrial and Labor Relations, and various other departments within engineering.

Program planning is done with the aid of the M.Eng. Proposal Form for M.Eng students (see Appendix D). You will fill this form out with the help of your advisor, who must also sign the form showing his/her approval of your program.

A maximum of two credit hours graded on an S/U basis, such as seminar or their equivalent, may be included provided they are participatory in nature.

2.5 Approval of Your Course Program

After a "final" program of courses for the entire year is agreed upon with your advisor, please submit your Proposal Form to the Graduate Field Assistant by **Friday, September 8th** for the Fall, 2017 term and **Friday, February 9th, 2018** for the spring, 2018 term. It will then be forwarded to the Chair of the M.Eng Program for final approval. A copy of the approved program is returned to both you and your faculty advisor. Original forms stay on file with the Graduate Program Coordinator.

2.6 Filing Your Course Program

You have approximately three (3) weeks (until Wednesday, September 6, 2017) to enroll online for Fall 2017 classes. This time period allows you to sit in on an extra course or two, if you wish, for a couple of weeks to assist you in making up your mind about your exact program for the term.

2.7 Program Changes

Students often propose changes to their program at the start of their second semester that reflect changes in interests and/or course availability. All changes to your approved M.Eng program must take the form of a revised proposal. All revised proposal forms must be approved by your advisor and turned into the GPC.

It is important that any changes in your program be approved promptly because the current version of your proposal form that is on file serves as a check-list for determining compliance with graduation requirements. Program changes made after the Fall term to take effect in the Spring term should be submitted by February 9, 2018.

2.8 Petitions

Cornell University has a long-standing tradition of considering petitions from students relative to special situations or circumstances that could justify exceptions to the normal rules or requirements. Most petitions are considered by the Engineering Management Director; others must be submitted to the College Master of Engineering Committee for a decision. The College Committee may also review petitions that are submitted to the Engineering Management Director that are not resolved to the satisfaction of the student. While we are not encouraging use of the petition route to get around requirements, we do want to point out the existence of this process. It gives everyone the opportunity of stating his/her case for special consideration, and therefore it is a very important part of the operational procedures for students attending Cornell University.

2.9 Financial Aid and Work Obligation

Financial aid administered by the College or School can be in the form of fellowships or half-time assistantships. If you have the latter, you will be given eight hours per week of teaching assistant-related duties. M.Eng students typically serve as graders, hold office hours, prepare labs, etc. The faculty will make assistantship assignments during the first two weeks of classes.

2.10 Grade Requirements

The College requires a minimum grade point average of 2.50 for graduation from the Master of Engineering program. Students admitted on a Provisional Basis must achieve a 3.00 average during their first term in the M.Eng program to continue in the second term. Typical graduate student grade point averages are much higher than this. At Cornell decimal grade points are assigned to grades with (+) or (-), i.e., A+ = 4.3, A = 4, A- = 3.7, B+ = 3.3, etc.

A grade of less than C- in a course will result in no credit being granted toward satisfaction of the 30-hour minimum requirement. However, these courses are included in calculating grade point averages.

2.11 Facilities

Most of the facilities for the CEE School are housed in Hollister Hall, except for the large-scale infrastructure testing labs in the George Winter Lab (Thurston Hall). Each Master of Engineering student will have a workstation equipped with a computer in a room with other students participating on the same project.

2.12 Room access, etc.

Entrance to the M.Eng offices is via your ID card. Your ID will also open outside doors to Hollister Hall and all student lounges within Hollister Hall.

2.13 Job Placement

We are confident that the background you receive in your M.Eng program will be of great assistance to you in the job market. Employers have always been enthusiastic about Cornell graduates with M.Eng degrees.

The Career Services Office (201 Carpenter Hall) offers an extensive recruitment program with many interviewers coming to campus each year. You will receive information from the Career Services Office regarding events they host throughout the academic year.

There are many routes to explore in seeking the right engineering position; the key point to remember is that you must take the initiative.

SECTION 3 PROFESSIONAL CONDUCT and SPECIAL NEEDS

3.1 Academic Integrity and Plagiarism

Absolute integrity is expected of every Cornell student in all academic undertakings. Integrity entails a firm adherence to values most essential to an academic community, including honesty with respect to the intellectual efforts of oneself and others. Both students and faculty at Cornell assume the responsibility of maintaining and furthering these values. However, a Cornell student's submission of work for academic credit indicates that the work is their own. All outside assistance should be acknowledged, and the student's academic position should be reported truthfully at all times. In addition, Cornell students have the right to expect academic integrity from each of their peers. It is plagiarism for anyone to represent another's work as their own. As stated in the University Code of Academic Integrity, "The maintenance of an atmosphere of academic honor ... is the responsibility of the student and faculty ..."

Gray areas sometimes exist when students study and work together. It is important that faculty make clear what is expected and that students understand what authorship citations an instructor expects. To become better acquainted with academic integrity responsibilities, each student should have a copy of the *Policy Notebook for Students, Faculty and Staff* (available in the Dean of Student's Office). Also, a copy of the "University Code of Academic Integrity" is included in the *Handbook of Engineering Students* available from the Engineering College's Office of Admissions and Undergraduate Programs located near the north entrance of Hollister Hall, or on line at <http://cuinfo.cornell.edu/aic.cfm>.

3.2 Persons With Special Needs

Cornell University is committed to assisting those persons with disabilities who have special needs. A brochure describing services for persons with disabilities may be obtained from the Office of Equal Opportunity, Cornell University, 234 Day Hall, Ithaca, New York 14853-2801. Other questions or requests for special assistance also should be directed to that office.

APPENDIX A
SCHOOL OF CEE FACULTY and SENIOR LECTURERS
(does not include retired/emeritus faculty)

[John D. Albertson](#)

113 Hollister Hall, [jda59](#)

Professor (Ph.D. California/Davis): hydrology, boundary layer meteorology, land-atmosphere interaction, turbulent transport process, wind energy.

[Edwin A. Cowen](#)

119 Hollister Hall, [eac20](#)

Professor (Ph.D. Stanford): environmental fluid mechanics, wave hydrodynamics, coupled air-water transfer processes, mixing and transport processes in the environment, experimental methods.

[Ricardo A. Daziano](#)

305 Hollister Hall, [rad77](#)

Assistant Professor, (Ph.D. Laval, Quebec): pro-environmental preferences, sustainable travel behavior, renewable energy, environmentally-friendly energy sources.

[Peter Diamessis](#)

105 Hollister Hall, [pjd38](#)

Associate Professor (Ph.D, California/San Diego): environmental fluid mechanics, hydrodynamics of the coastal/open ocean and lakes, turbulence modeling, hydrodynamic instability theory, spectral methods in scientific and engineering computation, high performance parallel scientific computing.

[Christopher J. Earls](#)

365 Hollister Hall, [cje23](#)

Professor (Ph.D. Minnesota): Structural stability, computational and structural mechanics, behavior and design of metal structures.

[Huaizhu Gao](#)

313 Hollister Hall, [hg55](#)

Associate Professor (Ph.D. California/Davis): transportation systems analysis, transportation and environment planning, urban traffic management.

[Mircea D. Grigoriu](#)

363 Hollister Hall, [mdg12](#)

Professor (Ph.D. MIT): structural engineering, structural reliability, structural dynamics, random vibration, stochastic mechanics.

[Damian E. Helbling](#)

273 Hollister Hall, [deh262](#)

Assistant Professor (Ph.D. Carnegie Mellon): water quality, chemical and biological processes, transport and fate of emerging contaminants, sustainable water and wastewater treatment technologies.

[Kenneth C. Hover](#)

302A Hollister Hall, [kch7](#)

Professor (Ph.D. Cornell): concrete material properties and construction techniques, durability of construction materials.

[David S. Kammer](#)

371 Hollister Hall, [dsk262](#)

Assistant Professor (Ph.D. Ecole Polytechnique Federale de Lausanne): computational mechanics, fracture mechanics, friction and interface mechanics, high-performance computing, mechanics of materials, dynamic failure of solids.

Gregory C. McLaskey

369 Hollister Hall, [gcm8](#)

Assistant Professor (Ph.D. California/Berkeley): earthquake mechanics, friction and interfaces, nondestructive testing, piezoelectric sensor calibration, the method of acoustic emission, wave propagation, seismology and earthquake scaling.

Linda K. Nozick

311 Hollister Hall, [lkn3](#)

Professor (Ph.D. Pennsylvania): engineering management, transportation systems analysis, systems engineering.

Thomas D. O'Rourke

323 Hollister Hall, [tdo1](#)

Thomas R. Briggs Professor of Engineering (Ph.D. Illinois): earthquake engineering, geotechnical engineering and analysis, lifeline systems, soil-structure interaction, underground technologies.

William D. Philpot

453 Hollister Hall, [wdp2](#)

Professor (Ph.D. Delaware): remote sensing, digital image processing, radiative transfer.

Patrick M. Reed

211 Hollister Hall, [pmr82](#)

Professor (Ph.D. Illinois): environmental and water resources systems; planning and management, evolutionary computation; high-performance computing; uncertainty in decision making.

Matthew C. Reid

267 Hollister Hall, [mcr239](#)

Assistant Professor (Ph.D. Princeton): environmental biogeochemistry; coupled biological and physiochemical processes in soil-water systems; engineered ecosystems for sustainable water quality improvement.

Ruth E. Richardson

271 Hollister Hall, [rer26](#)

Associate Professor (Ph.D. California/Berkeley): microbiology, application of molecular techniques to understand microbial activities, environmental microbiology of water and soil systems, bioremediation of subsurface contaminants, fate and transport of microbial and chemical contaminants, Civil & Environmental Engineering.

Samitha Samaranyake

317 Hollister Hall, [ss3496](#)

Assistant Professor (Ph.D. California/Berkeley): transportation systems modeling and optimization, network algorithms, decision making under uncertainty, operations research.

Jery R. Stedinger

213 Hollister Hall, [jrs5](#)

Dwight C. Baum Professor of Engineering (Ph.D. Harvard): stochastic hydrology, water resource systems operations and planning, risk analysis.

Harry E. Stewart

324 Hollister Hall, [hes1](#)

Associate Professor (Ph.D. Massachusetts): geotechnical engineering, dynamic behavior of soils, instrumentation.

Francis M. Vanek

307 Hollister Hall, [fmv3](#)

Senior Lecturer and Research Associate (Ph.D. Pennsylvania): environmental impact of freight transportation, transportation energy, energy efficiency and renewable energy, green building, systems engineering process applied to commercial product development.

Derek H. Warner

373 Hollister Hall, [dhw52](#)

Associate Professor (Ph.D. Johns Hopkins): computational solid mechanics, deformation and fracture mechanisms, nanostructured materials and thin films, dynamic failure and fragmentation, massively parallel and multi-scale computing.

Monroe Weber-Shirk

265 Hollister Hall, [mw24](#)

Senior Lecturer and Research Associate (Ph.D. Cornell): environmental engineering, hydraulics, slow sand filtration, LabVIEW data acquisitions/control.

APPENDIX B FIVE SEMESTER M.ENG/MBA PROGRAM

What is it?

A joint venture between the College of Engineering and the Johnson Graduate School of Management (JGSM) that allows students to acquire a Master of Engineering degree and an MBA degree in 5 semesters (usually based on Fall admission to the M.Eng program). The dual-degree program consists of 75 credit hours, 30 of which comprise the regular two-semester M.Eng program. For those admitted to the MBA program, the JGSM allows some (occasionally all) of these M.Eng credits to be transferred to the MBA program, usually resulting in saving one semester's time over taking the M.Eng and MBA degree programs separately.

What are the requirements?

Applicants must have already earned a baccalaureate degree in engineering, applied science, or equivalent from Cornell or elsewhere and be accepted for admission or presently enrolled in the M.Eng program. **The two programs require separate application forms and review processes, and materials submitted to one program are not available to the other.** The JGSM places great emphasis on relevant work experience, and this will be taken into consideration when evaluating applications. All requirements of the Master of Engineering (CEE) program are to be completed. No credit toward the M.Eng degree is allowed for coursework done outside Cornell. All requirements of the Master of Business Administration curriculum are to be completed. Coursework done outside Cornell normally will not be credited toward the MBA degree.

- a. If you have been admitted to or are attending the M.Eng program, you must formally apply to the Johnson Graduate School of Management by the second semester of your M.Eng program at the latest. You must fill out a separate JGMS application form and pay their application fee. You should also notify your M.Eng advisor of your intention to do the MBA program so your advisor can take this into consideration when planning your M.Eng program schedule.
- b. If you have not already done so, you must apply to take the GMAT, which is required by JGSM, using January of your M.Eng year as your last possible test date and have the scores directed to JGSM.

If you are admitted to the JGSM, your Master of Engineering degree will be awarded when all requirements of that degree are completed (usually after 2 semesters), and the Master of Business Administration degree will be awarded when all requirements of that degree are completed (usually after 3 more semesters). The two degrees cannot be awarded simultaneously.

In general, financial aid is not awarded to those doing the MBA portion of the program except through the Knight Joint Degree Scholarship Program, which has very strict requirements. Information and an application to the Scholarship Program is available on the web at:

http://www.engineering.cornell.edu/academics/graduate/financial_aid/meng/scholarship.cfm

Questions about this Scholarship Program should be directed to the Office of Research and Graduate Studies, engr_grad@cornell.edu.

APPENDIX C

MASTERS IN PUBLIC ADMINISTRATION (M.P.A.) FROM THE CORNELL INSTITUTE FOR PUBLIC AFFAIRS (CIPA)

After the award of the M.Eng degree, CEE M.Eng students who aspire to a leadership or management position in formulating, implementing or evaluating public policies can benefit from a program that offers an accelerated path to a Masters in Public Administration (M.P.A.) from the Cornell Institute for Public Affairs (CIPA). CIPA offers a flexible and challenging two-year program of graduate professional studies in public affairs that prepares degree recipients for careers in public affairs, public administration, and public policy.

Concentration areas offered in CIPA include Environmental Policy; Science, Technology and Infrastructure Policy; Economic and Financial Policy; International Development; and Public and Nonprofit Management.

The two degree programs (M.Eng and M.P.A.) have separate admission processes; so you may apply to the Accelerated M.P.A. program upon completion of your first semester in the M.Eng program. The M.Eng students who possess an M.Eng can obtain the M.P.A. degree in three additional semesters. Applicants should plan on meeting with the CIPA Director of Graduate Studies to discuss which M.Eng credits would be transferable for the MPA program.

Please contact the CIPA. Office at 607-255-8018 or cipa@cornell.edu to set up an appointment. More information is available on the CIPA website at www.cipa.cornell.edu.

**APPENDIX D
MAJOR PROGRAM REQUIREMENTS AND FORMS**

School of Civil & Environmental Engineering - MEng Proposal Form – Environmental Engineering

This proposal form should be signed by your advisor and submitted to the Graduate Field Coordinator (219 Hollister Hall) before the end of the 3rd week of classes. Students must submit a new form for approval anytime program changes are proposed.

NAME: _____ DATE: _____

STUDENT ID: _____ ADVISOR: _____

Term: 20_____ Expected Graduation Date: _____

PROJECT COURSES (3 and 6 credit projects available)		Cr.	Fall	Spr.	Comments
CEE _____	Project	3			
CEE _____	Project	3			

COURSES in TRACK (3 required) ¹		Cr.	Fall	Spr.	Comments

ADDITIONAL ENVIRONMENTAL ENGINEERING COURSES (2 required) ²		Cr.	Fall	Spr.	Comments

SUPPORTING ELECTIVES (3 or 4 required, depending on whether project is 3 or 6 credits) ³		Cr.	Fall	Spr.	Comments

SEMINARS (Indicate if Participatory or Non-Participatory) ⁴		Cr.	Fall	Spr.	Comments
CEE 6020	Environmental Seminar (Non-Participatory)				

ALL OTHER COURSES		Cr.	Fall	Spr.	Comments

Total Credits for all Fall & Spring Courses⁵ _____

TOTAL M.Eng PROGRAM CREDIT HOURS: _____ (must equal or exceed 30)

APPROVALS: Advisor _____ Date: _____
MEng Chair _____ Date: _____

*** Course number will depend on your specific concentration and occasionally the specific project. Please consult with your advisor and the Graduate Field Coordinator to make sure you sign up for the correct class.

Updated proposals should identify the specific changes that are proposed and briefly give the reason for the change.

A revised form should be submitted before the end of the third week of classes if changes are made in the second semester.

NOTES:

¹ The below table shows key courses for each of the three tracks: EP / EFM-H / EWRS

EP	EFM-H	EWRS
CEE 4510* (Richardson)	CEE 4360*	CEE 5930 (Nozick)
CEE 4530*	CEE 6310*	CEE 5970 (Stedinger)
CEE 4540 (Weber-Shirk)	CEE 6350*	CEE 5980 (Reed)
CEE 6530 (Lion)	CEE 6360 (Cowen)	CEE 6200 (Reed)
CEE 6560 (Helbling)	CEE 6370*	CEE 6320 (Albertson)
CEE 6570 (Reid)	CEE 6550 (Albertson)	CEE 6550 (Albertson)
CEE 6580*	MAE 6010 (Desjardins)	CEE 6650* (Gao)
	CEE 6320 (Albertson)	BEE 4730 (Walter)
	CEE 6025 (Reed or Stedinger)	BEE 6880 (Anderson)

- Students electing the Environmental Processes (EP) track are required to take CEE 6530, CEE 6560, and CEE 6570.
- Students electing the Environmental Fluid Mechanics and Hydrology (EFM-H) track are required to take CEE 6550 and two additional courses from the EFM-H column in the table.
- Students electing the Environmental and Water Resource Systems (EWRS) track are required to take CEE 5930 and two additional courses from the EWRS column in the table. CEE 5970, CEE 5980 and CEE 6200 are strongly recommended.

- EP,EFM/H,EWRSE students generally take CEE 5910, CEE 5621, CEE 5022 CEE 5031, CEE 5032 or CEE 5051 or 5052 for the required MEng project. This choice should be made in consultation with your advisor.

² A student must take two additional courses from among all those listed in the table.

³ A student may select his or her supporting electives from engineering and non-engineering subject areas related to environmental engineering, including biology, chemistry, toxicology, law, policy, economics, operations research, computer science, engineering mathematics, systems engineering, and city and regional planning.

⁴ Credit for seminars count toward the MEng degree only if the format of the seminar is “participatory” (i.e. requires more than attendance). Students are expected to take CEE 6020 Environmental Seminar (non-participatory) in the Fall and CEE 6021, or 6051 in the Spring (non-participatory).

⁵ No more than 20 credits per semester (MEng and non-MEng) may be taken except by petition to the College Master of Engineering Committee. All courses should be listed whether or not they count in the MEng program.

This proposal form should be signed by your advisor and submitted to the Graduate Field Coordinator (219 Hollister Hall) before the end of the 3rd week of classes. Students must submit a new form for approval anytime program changes are proposed.

School of Civil & Environmental Engineering M.Eng Proposal Form – *Geotechnical Engineering*
 (a new form must be submitted when changes are made)

NAME: _____ ADVISOR: _____ DATE: _____

SUPPORTING AREA: _____

Term: 20_____ Expected Graduation Date: _____

		Cr.	Fall	Winter	Spring
MAJOR AREA ELECTIVES (Minimum of 15 credits)					
CEE 6400	Foundation Engineering	3	X		
CEE 7400	Engineering Behavior of Soils	3	X		
CEE 5041	Project in Geotechnical Engineering	3	X		
CEE 6410	Retaining Structures and Slopes	3			X
CEE 5042	Project in Geotechnical Engineering	3			X
CEE 7450	Soil Dynamics	3			X
		Cr.	Fall	Winter	Spring
SUPPORT ELECTIVES (Maximum of 6 credits)²					
		Cr.	Fall	Winter	Spring
ALL OTHER COURSES					

Total Credits for all Fall & Spring Courses³ _____

TOTAL M.Eng PROGRAM CREDIT HOURS: _____ (must equal or exceed 30)

APPROVALS: Advisor _____ Date _____

MEng Chair _____ Date _____

See notes on back.

This proposal form should be signed by your advisor and submitted to the Graduate Field Coordinator (219 Hollister Hall) before the end of the 3rd week of classes. Students must submit a new form for approval anytime program changes are proposed.

NOTES:

Typical additional major courses for the M.Eng in *Geotechnical Engineering* are drawn from the following list (actual availability depends on staffing in each given semester):

PLSCS 4200	Geographic Information Systems
EAS 4320	Exploration Geophysics
MAE 4700	Finite Element Analysis for Mechanical and Aero
CEE 4710	Fundamentals of Structural Mechanics
CEE 4770:	Composite Materials
BEE 4810:	LRFD – Based Engineering of Wood Structures
MAE 5010:	Future Energy Systems
CEE 5950	Construction Planning and Operations
CEE 6000:	Numerical Methods for Engineers
CEE 6730:	Design of Concrete Structures
CEE 6750:	Concrete Materials and Construction
CEE 6780:	Structural Dynamics and Earthquake Engineering
CEE 6790:	Time Series Data Analysis for Civil, Mechanical, and Geophysical Applications (
CEE 7740:	Advanced Structural Concrete

² Support areas may include any engineering or non-engineering subject area that can be reasonably justified as supporting the major area, a well-defined career objective, or plans for a PhD. Typical supporting areas include geological sciences, construction, theoretical and applied mechanics, engineering management, computer science, fluid mechanics, material science, and business.

³ All courses should be listed whether or not they count in the MEng program. No more than 20 credits per semester (MEng and non-MEng) may be taken except by petition to the College Master of Engineering Committee.

This proposal form should be signed by your advisor and submitted to the Graduate Field Coordinator (219 Hollister Hall) before the end of the 3rd week of classes. Students must submit a new form for approval anytime program changes are proposed.

School of Civil & Env. Engineering M.Eng Proposal Form – *Structural Mechanics and Materials*
 (a new form must be submitted when changes are made)

NAME: _____ ADVISOR: _____ DATE: _____

STUDENT ID#: _____

		Cr.	Fall	Winter	Spring
MAJOR AREA ELECTIVES (Minimum of 15 credits)¹					
CEE 5720	Introductory Finite Element Analysis with Appl.	3	X		
CEE 3720	Intermediate Solid Mechanics	4	X		
CEE 5071	Professional Experience in Structural Mechanics	3		X	
		Cr.	Fall	Winter	Spring
SUPPORT ELECTIVES (Maximum of 6 credits)²					
		Cr.	Fall	Winter	Spring
ALL OTHER COURSES					

Total Credits for all Fall, Winter, & Spring Courses³ _____

TOTAL M.Eng. PROGRAM CREDIT HOURS: _____ (must equal or exceed 30)

APPROVALS: Advisor _____ Date _____

MEng Chair _____ Date _____

See notes on back. Updated proposals should identify what changes were made and why.

NOTES:

¹ CEE 3720 and MAE 4700 are required courses, to be taken in fall term. Project course CEE5071 is required during winter term: no exceptions.

Typical additional major courses for the M.Eng. in *Structural Mechanics and Materials* are drawn from the following list (actual availability depends on staffing in each given semester):

MAE 6110:	Foundations of Solid Mechanics (Fall)
MAE 6010:	Foundations of Fluid Mechanics (Fall)
CEE 4770:	Natural Hazards, Reliability, and Insurance (Fall)
MAE 4131:	Mechanics of Composite Structures (Fall)
MAE 4730:	Intermediate Dynamics and Vibrations (Fall)
BEE 4810:	LRFD – Based Engineering of Wood Structures (Spring)
CS 3220:	Introduction to Scientific Computation (Spring)
CS 4210:	Numerical Analysis and Differential Equations (Fall)
CEE6000:	Numerical Methods for Engineers (Fall)
CEE 6725:	3D Printing Parts that Don't Break: From Processing to Performance (Spring)
CEE 6730:	Design of Concrete Structures (Fall)
CEE 6750:	Concrete Materials and Construction (Spring)
CEE 6780:	Structural Dynamics and Earthquake Engineering (Spring)
CEE 6790:	Time Series Data Analysis for Civil, Mechanical, and Geophysical Applications (Fall)
CEE 7710:	Stochastic Problems Engineering and Science (Fall)
CEE 7740:	Advanced Structural Concrete (Spring)
MAE 6810:	Methods of Applied Mathematics I (Fall)
MAE 6780:	Methods of Applied Mathematics II (Spring)
MSE 6020:	Elasticity, Plasticity, and Fracture (Spring)
MAE 6160:	Advanced Composite Materials (Spring)
TAM 6680:	Elastic Waves in Solids with Applications
MAE 5010:	Future Energy Systems (Fall)
MAE 6640:	Mechanics of Bone (Spring)
BME 5810:	Soft Tissue Biomechanics (Spring)
CEE6 400:	Foundation Engineering (Fall)
CEE 6410:	Retaining Structures and Slopes (Spring)
MAE 5130:	Mechanical Properties of Thin Films (Spring)
MAE 5790:	Nonlinear Dynamics and Chaos (Spring)

² Support areas may include any engineering or non-engineering subject area that can be reasonably justified as supporting the major area, a well-defined career objective, or plans for a PhD. Typical supporting areas include theoretical and applied mechanics, applied mathematics, computer science, fluid mechanics, material science, geotechnical engineering and engineering management.

³ All courses should be listed whether or not they count in the MEng program. No more than 20 credits per semester (MEng and non-MEng) may be taken except by petition to the College Master of Engineering Committee.

Masters of Engineering in *Structural Mechanics and Materials*

The Master of Engineering Program in Structural Mechanics and Materials at Cornell University is a forward looking educational curriculum that affords its students with an opportunity to gain a firm foundation in solid mechanics, applied mathematics, computational mechanics, uncertainty quantification, and scientific computing. The program is aimed at educating highly qualified and well prepared engineers, with a firm grasp of the state-of-the-art and emerging techniques in structural engineering and structural mechanics, to support advanced practice within leading firms, national laboratories, and government agencies.

A comprehensive professional experience, involving: a real-world problem, an industry adviser, integrating technical course work, and resulting in a final written report is a program requirement during Winter Session. Representative themes for the practice experience include: forensic engineering studies and failure investigations; design of signature buildings or bridges; structural condition assessment and prognosis studies; etc. An additional professional component comprises professional seminars, given throughout the academic year by leading practitioners in the field. The seminar series is run by the students; thus affording them an opportunity to interact directly with industry leaders.

In the Structural Mechanics and Materials Masters of Engineering Program, the coursework focuses on the fundamentals of technical themes, in order to position the graduate well for a career at the frontiers of an evolving practice. At the same time, the comprehensive team-based professional experience immerses the students in current best practices, and serves to inspire and motivate the student during their technical course work. The combination of depth in the technical fundamentals, and an exposure to the professional challenges accompanying practice at the highest levels, makes this program unique.

School of Civil & Environmental Engineering MEng Proposal Form – Transportation Systems

NAME: _____ DATE: _____

STUDENT ID: _____ ADVISOR: _____

Expected Graduation Date: _____

PROJECT COURSES (minimum of 3 credits) ¹		Cr.	Fall	Spr.	Comments
CEE 5061	Project (Fall)				
CEE 5062	Project (Spring)				

TRANSPORTATION CORE COURSES (3 required) ²		Cr.	Fall	Spr.	Comments

SUPPORTING ELECTIVES (6 required) ³		Cr.	Fall	Spr.	Comments

SEMINARS (Indicate if Participatory or Non-Participatory) ⁴		Cr.	Fall	Spr.	Comments

ALL OTHER COURSES		Cr.	Fall	Spr.	Comments

Total Credits for all Fall & Spring Courses⁵ _____

TOTAL M.Eng PROGRAM CREDIT HOURS: _____ (must equal or exceed 30)

APPROVALS: Advisor _____ Date _____

M.Eng Chair _____ Date _____

See notes. Updated proposals should identify the specific changes that are proposed and briefly give the reason for the change.

This proposal form should be signed by your advisor and submitted to the Graduate Field Coordinator (219 Hollister Hall) before the end of the 3rd week of classes. Students must submit a new form for approval anytime program changes are proposed.

NOTES:

¹ A project of at least 3 credits is required. In some cases, specific projects may be defined whose scope justifies more than 3 credits.

² Transportation Systems courses include CEE 4630 Future Transportation Technologies Systems, CEE 6620 [Urban Transportation Network Design & Anal.](#), CEE 6650 Environment/Energy and Transportation Planning, and CEE 6640 Microeconomics of Discrete Choice. CEE 6065 Special Topics in Transportation can be used to pursue an independent study on a particular transportation topic if you and your advisor agree that this is appropriate. The selection of appropriate transportation core courses will depend on your background, and will be determined in discussion with your advisor.

³ Supporting electives should be selected from one or more related areas. Typical areas include Operations Research, Economics, City and Regional Planning, Johnson School of Management, and other areas of CEE. Some commonly chosen courses include:

AEM 4170 Decision Models for Small and Large Businesses
AEM 4320 Public Private Sector Economics Linkages
AEM 6330 Devolution, Privatization, & the New Public Management

CEE 5290 Heuristic Methods for Optimization
CEE 5900 Project Management
CEE 5970 Risk Analysis and Management
CEE 6930 Public Systems Modeling

CRP 5040 Urban Economics
CRP 5080 Introduction to Geographic Information Systems
CRP 5170 Economic Development
CRP 5190 Urban Theory and Spatial Development
CRP 5520 Land Use Planning
CRP 5840 Green Cities
CRP 6090 Urban and Regional Theory
CRP 6860 Planning for Sustainable Transportation

ECON 3540 Economics of Regulation
ECON 6090 Microeconomic Theory I

NBA 6410 Supply Chain Management

ORIE 5300 Optimization I
ORIE 5310 Optimization II
ORIE 5510 Introduction to Stochastic Processes
ORIE 4580 Simulation Modeling & Analysis

⁴ Credit for seminars count toward the MEng degree only if the format of the seminar is “participatory” (i.e. requires more than attendance).

4 All courses should be listed whether or not they count in the MEng program. No more than 20 credits per semester (MEng and non-MEng) may be taken except by petition to the College Master of Engineering Committee.

APPENDIX E

OVERALL LISTING OF CEE COURSE INFORMATION:

For an up to date listing of all CEE courses, please visit:

<https://classes.cornell.edu/browse/roster/FA17/subject/CEE>

(please note that the CEE Spring 2018 course roster will be available by mid-September)

All other course listings/rosters for the Fall 2017 term can be found at:

<https://classes.cornell.edu/browse/roster/FA17>

(Spring courses being available by mid-October)