The rules and regulations stated in this handbook are for information only and in no way constitute a contract between the student and Cornell University. The University reserves the right to change any regulations or requirements at any time.

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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## APPENDICES

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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 Jenkins
Chair, Master of Engineering Program: James Jenkins
Chair, Master of Engineering Program in Engineering Management: Patrick Reed
Graduate Program Coordinator: Tania Sharpsteen, 219 Hollister, 255-7560

Other Support Staff:
Administrative Assistant: Carl Cornell, 220 Hollister, 255-2542
Accounts Administrator: Christina Dovi, 220 Hollister, 255-3684
Accounts Coordinator: Alita Howard, 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 change your advisor with the permission of the faculty member who you would like to serve as your new advisor.

You should set up an appointment with your advisor shortly after arriving on campus. Please do not wait until the last few days before classes begin. The beginning of the semester is busy for everyone, and your advisor may also be also be responsible for a number of undergraduate and other graduate students. It is your responsibility to establish a relationship with your advisor, who must approve the M.Eng. program that you propose, as well as any changes you may wish to make at a later date.

2.2 Orientations and Registration

Registration at Cornell is a two-stage process. First, you must enroll with the Graduate School and second, you must enroll in courses. The former is on a fixed schedule, while the latter is accomplished over the first three weeks of each semester.

**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.

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 Monday, August 15, 2016. Courses may be **added** online until September 9th. They may be **dropped** online until October 20th.

Any changes in your course registration after the deadlines (i.e., adds/drops, credit hour changes) submission of a Course Enrollment Petition to the 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/FA16) 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, Cornell Institute for Public Affairs, and various other departments within engineering.

Program planning is done with the aid of the M.Eng. Proposal Form appropriate for a student’s major (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 GPC by September 9th for the fall, 2016 term and February 3, 2017 for the spring, 2017 term. It will then be forwarded to the Director of the 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 GPC.

2.6 Filing Your Course Program

You have approximately three (3) weeks after classes begin (until September 9, 2016) to enroll online for Fall 2016 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 3, 2017.

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 Assignments, Room access, etc.

You will receive your room assignment with your Welcome Packet at check-in.

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 Engineering Co-op and Career Services Office (201 Carpenter Hall) offers an extensive recruitment program with many interviewers coming to campus each year. You should visit this office early in the fall term and take advantage of the excellent opportunities it offers. The University Career Services Office has a series of special lectures on how to approach the job market, how to prepare resumes, how to take interviews, etc. Announcements of these lectures and meetings will be posted throughout Hollister Hall.

Many opportunities also are available with private engineering companies, industries, and agencies that do not routinely interview on campuses, because they are relatively small. Do not hesitate to ask faculty with whom you work for advice on jobs. Some of the faculty in your major area will have excellent connections to professional firms and will be happy to pass along notices they receive about jobs or to help you identify potential employers.

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

Each spring, Engineering News-Record (ENR) publishes its ranked lists of the 500 largest engineering design firms and the 400 largest construction contractors in the U.S. These listings may give you some
good ideas about potential employers. It should be pointed out that not all firms are included in ENR because the information is based on a voluntary response to a questionnaire.

2.14 Professional Registration

Engineers are licensed (by examination and experience) to practice engineering in each state of the U.S. and in most international jurisdictions. Registration is very important for civil engineers because they are responsible for public safety in much of their work. Virtually all authorities require a registered professional engineer to give final approval to all plans and specifications for engineering projects. If you hold an ABET-accredited undergraduate engineering degree, you are eligible to take Part I of the examination. Successful completion earns you the title “Intern Engineer” (often called Engineer-in-Training). Because Part I emphasizes theoretical knowledge, there is a comparative advantage in taking this exam while still in school. Success or failure of this examination has no bearing on your academic standing at Cornell or elsewhere.

Many M.Eng. students will already have taken the Part I examination. If you qualify and have not taken the exam, you are encouraged to do so. The Undergraduate Programs and Student Services Office in 242 Carpenter Hall has application forms for the New York State Part I exam. You can also obtain information and an application from: http://www.op.nysed.gov/home.html. Historically, application deadlines have been November 1 for the Spring (April) exam and May 1 for the Fall (October) exam. The Student Chapter of ASCE usually coordinates the application process and sponsors review sessions for the Spring exam.

Part II of the examination can be taken after four years of suitable engineering experience beyond the accredited undergraduate degree. Successful completion of Part II will give you the title “Professional Engineer” in the state where you took the exam. Registration in other states usually can be obtained by reciprocity, rather than by taking additional examinations. There are a few exceptions to this general policy, such as the additional required experience and separate examinations after the P.E. for licensing as a structural or geotechnical engineer (S.E. or G.E.) in California.

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 THEIR INTERESTS
(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.

Paul G. Carr
315 Hollister Hall, pge3
Adjunct Associate Professor (Ph.D. Virginia Tech): construction engineering and management.

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, pid38
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.

James T. Jenkins  
117 Hollister Hall, jti2  

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.

Leonard W. Lion  
263 Hollister Hall, lwl3  
Professor (Ph.D. Stanford): environmental engineering, aquatic chemistry, biogeochemical fate of toxic pollutants, interfacial reactions of pollutants in aqueous systems.

Philip L-F. Liu  
107 Hollister Hall, pll3  
Class of 1912 Professor in Engineering (Sc.D. MIT): fluid mechanics, wave hydrodynamics, coastal engineering, and numerical methods.

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 Samaranayake
317 Hollister Hall, ss3496
Assistant Professor (Ph.D. California/Berkeley): transportation systems modeling and optimization, network algorithms, decision making under uncertainty, operations research.

Christine A. Shoemaker
210 Hollister Hall, cas12
Joseph P. Ripley Professor of Engineering (Ph.D. Southern California): modeling groundwater contamination and remediation, pesticide source reduction, optimization algorithms, supercomputing.

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 (PhD. 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, 222 Carpenter Hall, Cornell University, Ithaca, New York 14853 (607-255-7413; 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

Environmental Engineering
   Environmental Fluid Mechanics & Hydrology
   Environmental Processes
   Environmental & Water Resource Systems Engineering

Geotechnical Engineering
Structural Mechanics and Materials
Transportation Systems Engineering
School of Civil & Environmental Engineering - MEng Proposal Form – EP/EFM-H/EWRS

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:  ______________________________

Choose one of the following TRACKS:  ____ Environmental Processes (EP)
                                          ____ Environmental Fluid Mechanics-Hydrology (EFM-H)
                                          ____ Environmental and Water Resource Systems (EWRS)

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)

| Cr.  | Fall  | Spr.  | Comments |
|      |       |       |          |
|      |       |       |          |

ADDITIONAL ENVIRONMENTAL ENGINEERING COURSES (2 required)

| Cr.  | Fall  | Spr.  | Comments |
|      |       |       |          |
|      |       |       |          |

SUPPORTING ELECTIVES (3 or 4 required, depending on whether project is 3 or 6 credits)

| Cr.  | Fall  | Spr.  | Comments |
|      |       |       |          |
|      |       |       |          |
|      |       |       |          |

SEMINARS (Indicate if Participatory or Non-Participatory)

| Cr.  | Fall  | Spr.  | Comments |
|      |       |       |          |
| CEE 6020 Environmental Seminar (Non-Participatory) | |

ALL OTHER COURSES

| Cr.  | Fall  | Spr.  | Comments |
|      |       |       |          |
|      |       |       |          |

Total Credits for all Fall & Spring Courses _____ _____

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

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

* Not offered during this academic year, 2016-17

- 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: ___________________________

<table>
<thead>
<tr>
<th>MAJOR AREA ELECTIVES (Minimum of 15 credits)</th>
<th>Cr.</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 6400 Foundation Engineering</td>
<td>3</td>
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<td>X</td>
</tr>
<tr>
<td>CEE 7400 Engineering Behavior of Soils</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>CEE 5041 Project in Geotechnical Engineering</td>
<td>3</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>CEE 5042 Project in Geotechnical Engineering</td>
<td>3</td>
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<td>X</td>
</tr>
<tr>
<td>CEE 6410 Retaining Structures and Slopes</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEE 7450 Soil Dynamics</td>
<td>3</td>
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<td></td>
</tr>
</tbody>
</table>

SUPPORT ELECTIVES (Maximum of 6 credits)$^2$

<table>
<thead>
<tr>
<th>ALL OTHER COURSES</th>
</tr>
</thead>
</table>

Cr. Fall Winter Spring

Total Credits for all Fall & Spring Courses$^3$  ____  ____

**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:

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 (Spring)
- **EAS 4320**  Exploration Geophysics (Fall)*
- **MAE 4700**  Finite Element Analysis for Mechanical and Aero (Fall)
- **CEE 4710**  Fundamentals of Structural Mechanics (Fall)
- **CEE 4770:**  Composite Materials (Fall)*
- **BEE 4810:**  LRFD – Based Engineering of Wood Structures (Spring)
- **MAE 5010:**  Future Energy Systems (Fall)*
- **CEE 5950**  Construction Planning and Operations (Fall)
- **CEE 6000:**  Numerical Methods for Engineers (Fall)
- **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 7740:**  Advanced Structural Concrete (Spring)

*course not offered during the fall 2016 semester*

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: ________

SUPPORTING AREA: __________________________________________

Term: 20_______ Expected Graduation Date: ___________________________

<table>
<thead>
<tr>
<th>MAJOR AREA ELECTIVES (Minimum of 15 credits) \</th>
<th>Cr.</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 4700 Finite Element Analysis for Mechanical and Aero.</td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEE 3720 Intermediate Solid Mechanics</td>
<td>4</td>
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<td></td>
<td></td>
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<tr>
<td>CEE 5071 Professional Experience in Structural Mechanics</td>
<td>3</td>
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<td>X</td>
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</table>

<table>
<thead>
<tr>
<th>SUPPORT ELECTIVES (Maximum of 6 credits) \</th>
<th>Cr.</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>ALL OTHER COURSES</th>
<th>Cr.</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

Total Credits for all Fall & Spring Courses: ______ ______

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) (Silberstein)
- CEE 4770: Composite Materials (Fall) (not offered Fall 2016)*
- BEE 4810: LRFD – Based Engineering of Wood Structures (Spring) (Gebremedhin)
- CS 3220: Introduction to Scientific Computation (Spring) (Weatherpoon)
- CS 4210: Numerical Analysis and Differential Equations (Fall) (Vladimirsky)
- CEE6000: Numerical Methods for Engineers (Fall)
- CEE 6730: Design of Concrete Structures (Fall) (Hover)
- CEE 6750: Concrete Materials and Construction (Spring) (Hover)
- CEE 6780: Structural Dynamics and Earthquake Engineering (Spring) (Grigoriu)
- CEE 7750: Nonlinear Finite Element Analysis: Solids (Spring) (Warner)
- CEE 7790: Nonlinear Finite Element Analysis: Structures (Fall) (not offered Fall 2016)*
- CEE 7710: Stochastic Problems Engineering and Science (Fall) (not offered Fall 2016)*
- CEE 7740: Advanced Structural Concrete (Spring) (Hover)
- MAE 6810: Methods of Applied Mathematics I (Fall, Spring) (Hui)
- MSE 6020: Elasticity, Plasticity, and Fracture (Spring) (not offered Fall 2016)*
- CEE 6760/MAE-MSE/6550: Advanced Composite Materials (Spring) (Phoenix)
- MAE 5010: Future Energy Systems (Fall) (not offered Fall 2016)*
- MAE 6640: Mechanics of Bone (Spring) (not offered Spring 2017)*
- BME 5810: Soft Tissue Biomechanics (Spring) (not offered Spring 2017)*

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, 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.

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  MEng Proposal Form – Transportation Systems

<table>
<thead>
<tr>
<th>NAME:</th>
<th>DATE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>___________________________</td>
<td>___________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STUDENT ID:</th>
<th>ADVISOR:</th>
</tr>
</thead>
<tbody>
<tr>
<td>___________________________</td>
<td>___________________________</td>
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</tbody>
</table>

Term: 20_______  Expected Graduation Date: ___________________________

### PROJECT COURSES (minimum of 3 credits)

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Fall</th>
<th>Spr.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 5061</td>
<td>Project (Fall)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEE 5062</td>
<td>Project (Spring)</td>
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</tbody>
</table>

### TRANSPORTATION CORE COURSES (3 required)

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Fall</th>
<th>Spr.</th>
<th>Comments</th>
</tr>
</thead>
</table>

### SUPPORTING ELECTIVES (6 required)

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Fall</th>
<th>Spr.</th>
<th>Comments</th>
</tr>
</thead>
</table>

### SEMINARS (Indicate if Participatory or Non-Participatory)

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Fall</th>
<th>Spr.</th>
<th>Comments</th>
</tr>
</thead>
</table>

### ALL OTHER COURSES

<table>
<thead>
<tr>
<th>Cr.</th>
<th>Fall</th>
<th>Spr.</th>
<th>Comments</th>
</tr>
</thead>
</table>

Total Credits for all Fall & Spring Courses: ______

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.

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 (Stedinger)
- CEE 6930 Public Systems Modeling (Loucks)
- CRP 5040 Urban Economics (Brooks)
- CRP 5080 Introduction to Geographic Information Systems (Schmidt)
- CRP 5170 Economic Development*
- CRP 5190 Urban Theory and Spatial Development (Campanella)
- CRP 5520 Land Use Planning*
- CRP 5840 Green Cities (Schmidt)
- CRP 6090 Urban and Regional Theory *
- CRP 6860 Planning for Sustainable Transportation*
- ECON 3540 Economics of Regulation*
- ECON 6090 Microeconomic Theory I (Easley)
- NBA 6410 Supply Chain Management (Thomas)
- ORIE 5300 Optimization I (Renegar)
- ORIE 5310 Optimization II (Renegar)
- ORIE 5510 Introduction to Stochastic Processes (Dai)
- ORIE 4580 Simulation Modeling & Analysis (Henderson)

*course not offered during this academic year

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.

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.
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/FA16/subject/CEE
(please note that the CEE spring 2017 course roster will be available by mid-September.

All other course listings/rosters for the Fall 2016 term can be found at
https://classes.cornell.edu/browse/roster/FA16 with the spring courses being available by mid-September