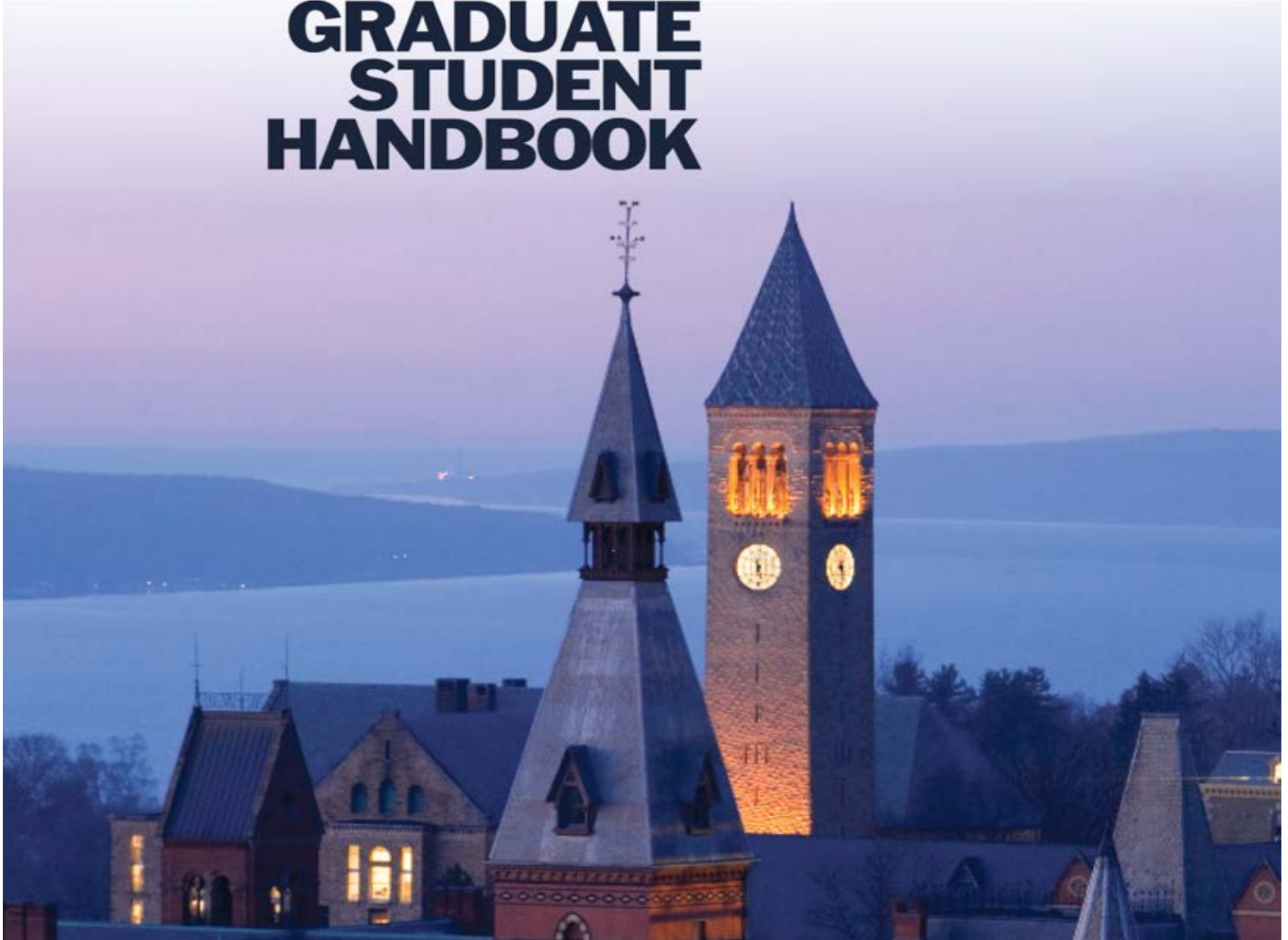


ENGINEERING MANAGEMENT

GRADUATE STUDENT HANDBOOK



Preface

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.

Equal Education and Employment Opportunity

Cornell University has an enduring commitment to support equality of education and employment opportunity by affirming the value of diversity and by promoting an environment free from discrimination.

Association with Cornell, either as a student, faculty, or staff member, involves participation in a free community where all people are recognized and rewarded on the basis of individual performance rather than personal convictions, appearance, preferences (including sexual or affectional orientation), or happenstance of birth.

Cornell University's history of diversity and inclusion encourages all students, faculty, and staff to support a diverse and inclusive university in which to work, study, teach, research, and serve.

No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally protected status or subjected to prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, marital status, citizenship, sex, sexual orientation, gender identity or expression, age, disability, or protected veteran status. Cornell University is an affirmative action/equal opportunity employer.

Concerns and complaints related to bias or equal opportunity in education and in employment based on aspects of diversity protected under federal, state, and local law should be directed to the Office of Inclusion & Workforce Diversity; 150 Day Hall, Ithaca, NY 14853; 607-255-3976 or the Office of Institutional Equity and Title IX; 150 Day Hall, Ithaca NY 14853; 607-255-2242.

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SECTION 1 - INTRODUCTION

Welcome to Cornell University and the Engineering Management Program. This handbook gives a comprehensive overview of our Master of Engineering degree and our policies. Additional information can be obtained from Tania Sharpsteen (tms235@cornell.edu, Hollister 215A).

1.1 The Engineering Management Program

The Engineering Management program at Cornell has been training technical leaders since 1988. Each year we attract top students from a variety of engineering fields including mechanical, biomedical, civil, electrical, computer science, industrial/operations research, chemical, applied and engineering physics, and environmental engineering. We have more than 1000 Engineering Management alumni who hold leading positions in engineering, product management, finance, consulting, research and development, manufacturing, sales, education, construction management, and government in the U.S. and around the world.

The Engineering Management program is housed in Hollister Hall, which is also home to the School of Civil & Environmental Engineering. [Appendix A](#) lists the Engineering Management program faculty and their particular specializations.

Program Leadership and Staff

Director, Engineering Management: Patrick Reed, 211 Hollister, patrick.reed@cornell.edu

Program Manager, Engineering Management: Lisa Gerber, 215 Hollister, img297@cornell.edu

Program Coordinator, Engineering Management: Tania Sharpsteen, 215A Hollister, tms235@cornell.edu

Other individuals involved in the administration of the degree include:

Director, School of Civil & Environmental Engineering: Linda Nozick, 311 Hollister

Director of Administration: Joe Rowe, 220 Hollister

Executive Assistant: Jeannette Little, 220 Hollister

Additional support staff:

Office Manager: Beth Korson, 220 Hollister

Communication Specialist: Charissa King-O'Brien, 220 Hollister

Finance Specialist: Stacey Shirk, 220 Hollister

Accounts Representative: Megan Covey, 220 Hollister

Equipment Technician: Paul Charles, B56 Hollister

IT Operations Manager: Cameron Willkens, 325 Hollister

For University resources, refer to [Appendix I](#).

1.2 The Master of Engineering (M.Eng.) Degree in Engineering Management

The Master of Engineering (M.Eng.) degree gives students business skills while increasing their technical depth through coursework, team projects, and dynamic class discussions. The degree requires 30 credit hours consisting of coursework in major and supporting areas as well as a capstone project. Engineering Management students are also required to take two additional one-credit seminars (Professional and Leadership Development Series in the Fall and Project Management Seminar in the Spring) for a total of 32 credits minimum to graduate. The Master of Engineering degree can be completed in two semesters of intensive study, or in three semesters for students who want to include extra electives, make up deficiencies, or pursue coursework that departs

significantly from their undergraduate experience (also see section 2.7). Students opting for the three-semester program must meet the University requirement of at least 12 credits per semester. 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.

Our curriculum focuses on three main areas: leading people, advancing your business, and disrupting your field. Students learn to identify problems, analyze data, and interpret the results of analyses for managerial action. The business context of the issues and decisions is also important, and the program mixes courses from the Engineering College with courses from the Cornell Johnson College of Business and the School of Industrial and Labor Relations to provide that larger context.

| | | |
|--|---|---|
| <p>LEAD PEOPLE</p> <ul style="list-style-type: none"> • Engineering leadership • Project Management • Negotiations & Contracting • Systems Thinking • Communications & Presentation Skills | <p>ADVANCE YOUR BUSINESS</p> <ul style="list-style-type: none"> • Decision Framing & Analytics • Data Analytics for Managers • Risk Analysis & Management • Engineering Management Economics • Operations & Supply Chain Management | <p>DISRUPT YOUR FIELD</p> <ul style="list-style-type: none"> • Managing a Culture of Innovation & Entrepreneurial Thinking • Design Thinking for Complex Systems • Strategy Electives (Business, Product, or Technology Strategy) • Consumer Choice & Product Design |
|--|---|---|

By the end of your Engineering Management program, you will also develop strong competencies in the following areas:

| | | | | |
|--------------------|---------------------------------------|-------------------|------------------------|------------------------------|
| Project Leadership | Communication and Presentation Skills | Ethics | Business Savvy | Systems Thinking |
| Project Management | Sustainability / Triple Bottom Line | Analytical Skills | Working with Customers | Social and Technology Trends |

Because the program is designed to appeal to students from different disciplinary backgrounds with varying career goals, the core tools taught in the program are augmented by a set of specialization courses that allow students to develop expertise in particular application areas. [Appendix E](#) provides more details on how these various program elements are reflected in specific curricular requirements.

For some students (especially those whose career interests focus on engineering companies), the Master of Engineering degree in Engineering Management can be viewed as an effective alternative to an MBA degree because it is focused on the mix of technical skills and project management skills that are valued in many corporate environments. However, for other students, the combination of the M.Eng. degree *and* an MBA is attractive, and Cornell offers a joint program between the Engineering College and the Johnson School of Business leading to both degrees (usually after a total of five semesters). [Appendix B](#) provides additional details on M.Eng./MBA joint program.

1.2.1 Preparation in Probability and Statistics

Students from all fields of engineering are welcome in the Master of Engineering program in Engineering Management. The core elements of the program do not require specific knowledge from any particular engineering discipline. However, we require that all incoming students have a basic background in probability and statistics. This knowledge is generally obtained in a one-semester undergraduate class. At Cornell, the typical courses used by undergraduates to satisfy this requirement are ENGRD 2700, CEE 3040, or ECE 3100. [Appendix C](#) describes the material that you should understand to meet this background requirement and succeed in the program.

If you have not had a course in probability and statistics as an undergraduate, you may arrange to take such a course over the summer preceding enrollment as an M.Eng. student, or you will have to take such a course (as an overload) during the first semester of your M.Eng. program. The credits for this course do not count toward the 32 credits required to complete the degree. We strongly encourage students to satisfy this preparation requirement prior to entering the program because it is used in Fall courses, particularly the required course ENMGT 5930.

1.2.2 Major Program Requirements

Required Courses:

- ENMGT 5900 - Project Management (Fall or Spring, 4 credits)
- ENMGT 5910 - Engineering Management Project (Fall or Spring, 4 credits) *
- ENMGT 5930 - Data Analytics for Engineering Managers (Fall, 4 credits)
- ENMGT 5940 - Economics and Finance for Engineering Management (Fall, 4 credits)
- ENMGT 6090 - Professional Development and Leadership Series (Fall, 1 credit, non-graded)
- ENMGT 6091 - Project Management Seminar (Spring, 1 credit, non-graded)

One out of two of the following:

- ENMGT 5970 - Risk Analysis and Management (Spring, 3 credits), or
- ENMGT 5980 – Introduction to Decision Analysis (Fall, 3 credits)

*ENMGT 5910 may only be taken in the second semester of your program (or third semester for a three-semester program).

The information provided here should help you make decisions, but we encourage you to seek guidance from your advisor and other faculty members. An important aspect of the M.Eng. program is interaction between each student and his/her faculty advisor. Your advisor will work with you to develop a program consistent with your career goals and the intent of the M.Eng. program.

Capstone Project

All students must complete a capstone project and register for ENMG 5910 in their second or third semester. Management responsibilities in a technical environment (and increasingly in many business environments) are often focused on *projects*, where a combination of resources (people, equipment, money, etc.) must be brought together to achieve a specific outcome within both schedule and budget constraints. This importance of projects is reflected in this program through a strong focus on project management – the combination of “people skills” and “technical skills” necessary to make projects successful.

Project topics and sponsors are presented to students during the first class meeting for ENMG 5910. Students rank their preferences and assignments are made. Some project sponsors require students to sign Non-disclosure Agreements (NDAs), which may limit a student’s ability to communicate specific project results in the future.

SECTION 2 - PROGRAM PLANNING and POLICIES

2.1 Assignment of Advisor and Submitting the M.Eng. Proposal Form

You will have an advisor to help you design a program of study and assist you while at Cornell. Advisor assignments are made prior to orientation. You may request to change your advisor to another Engineering Management faculty member with the permission of the faculty member whom you would like to serve as your new advisor.

After orientation, set up an appointment with your advisor and take responsibility for registering for all required courses by the add/drop deadline. Your advisor will approve and sign off on the M.Eng. proposal form ([Appendix E](#)). You are responsible for submitting your completed proposal form to the Program Coordinator /Program Coordinator before the deadline. You are responsible for any changes and updates to your proposal (for example, any changes made to your courses at any time during your program).

2.2 Course Registration (Dates subject to change)

Graduate students must register for courses online by logging into Student Center with their NetID*. You can begin registering for classes for the Fall term at 8:00am on Tuesday, August 18, 2020. Courses may be **added** online until 11:59pm on Thursday, September 10, 2020. They may be **dropped** online (without a petition) until 11:59pm on Thursday, October 22, 2020.

Pre-enrollment for the Spring 2021 courses begins at 7:00am on Wednesday, October 28, 2020 and ends at 4:30pm on Friday, October 30, 2020.

For any additional courses to be **added** for the Spring 2021 semester after the pre-enrollment dates, you can begin registering for courses for the Spring term on Tuesday, January 19, 2021 at 8:00am. They may be **dropped** online (without a petition) until Tuesday, March 23, 2021 at 11:59pm.

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.

2.3 Planning Your M.Eng. Program

Please review the material in this handbook for both required courses and appropriate elective courses before meeting your advisor. You can also review the online course catalog (<https://classes.cornell.edu/>) to identify possible courses for both the Fall and Spring terms (the Spring roster will be available by mid-October) including course listings in the Johnson School of Business, 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 Engineering Management (see [Appendix E](#)). 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. Extra proposal forms can be obtained from the Program Coordinator.

2.4 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 Program Coordinator by **Friday, September 4th** for the Fall, 2020 term and **Friday, February 5th, 2021** for the Spring, 2021 term. It will then be forwarded to the Director of the Engineering Management 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 Program Coordinator.

2.5 Filing Your Course Program

You have approximately three weeks (until Thursday, September 10, 2020) to enroll online for Fall 2020 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.

2.6 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. Revised proposal forms must also be approved by your advisor and the Engineering Management Director.

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.

2.7 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. Petitions are considered by the Engineering Management Director. 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.

2.7.1 Leave of Absence

A leave of absence may be voluntary, health-related, or required. A description of each follows:

Voluntary Leave

Students sometimes find it necessary to suspend their studies. To do this, they must petition for a leave of absence for a specified period of time and receive written approval.

M.Eng. students request leaves through their department office. A leave of absence is granted for at least one semester and not more than one year. Students must obtain written approval to extend their leave before it has expired, or they will be considered withdrawn from the program and will be required to reapply for admission.

A leave of absence granted during a semester goes into effect on the day it is requested. If a leave is requested after the 57th day of a semester, the courses in which the student was registered at the time of the request are treated as having been dropped (i.e., a "W" will appear on the transcript for each course). Students are responsible for any outstanding tuition or other university charges owed through that date. On-campus housing and dining charges will have to be handled separately with those groups.

To rejoin from a leave of absence, students must (1) satisfy any conditions established at the time the leave was granted and (2) notify in writing the M.Eng. department office at least six weeks before the beginning of the semester of their intentions to rejoin and how they satisfied any conditions established as a time of the leave was granted.

Health Leave

Health leaves are granted by the college only upon recommendation by a physician or therapist from Cornell Health. Although circumstances may vary, such leaves are generally granted for at least one full academic year with the understanding that the student may return at the beginning of any semester after the medical condition in question has been resolved. Students must satisfy Cornell Health that the condition has been corrected before they may return. The student's academic standing will also be subject to review both at the time the leave is granted and upon the student's return.

Required Leave

A required leave of absence may be imposed by the department in cases in which a student fails to meet the requirements for good standing. Leaves are given when the probability of success is increased substantially by deferring the student's return by one semester (or, in unusual circumstances, one year). Required leaves take precedence over voluntary leaves.

Students wishing to rejoin the college should contact the Program Coordinator in the Systems Engineering department office to determine what materials will be required of them to be considered by the program. This must be done at least six weeks before the beginning of the semester in which the student wishes to return.

2.7.2 Withdrawal

A withdrawal from the College of Engineering may be voluntary or required. Following is a description of each:

Voluntary Withdrawal

Students who voluntarily withdraw from the college sever all connection with the college. M.Eng. students who wish to withdraw should do so through their department office.

A withdrawal granted during a semester goes into effect on the day it is requested. If a withdrawal is requested after the 57th day of a semester, the courses in which the student was registered at the time of the request are treated as having been dropped (i.e., a "W" will appear on the transcript for each course). Students are

responsible for any outstanding tuition or other university charges owed through that date. On-campus housing and dining charges will have to be handled separately with those groups.

Required withdrawal

A department may require a student to withdraw from the M.Eng. program only when their overall record indicates that they are either incapable of completing the program or not sufficiently motivated to do so. This action severs all connections with the program. This action withdraws them only from the M.Eng. program and does not, in and of itself, adversely affect their ability to transfer and complete a degree in another program at Cornell. Required withdrawals take precedence over voluntary withdrawals.

2.7.3 Three Semester Degree Option

A student who wishes to pursue a third semester of study in the Engineering Management on-campus program must notify the Director prior to the start of his or her second semester. At that time, the student must devise a suitable plan of study for the third semester and submit a proposal form reflecting this plan. The plan must consist of 12 or more credits in the third semester, at least 6 of which are program requirements. This plan must be approved by the student's advisor and the Director who will establish conditions for successful completion of the proposed program. The M.Eng. degree will not be awarded until these conditions are met. Under this option, the student is committing to a third semester of full tuition. International students should make arrangements to extend their visa through the end of their program.

2.7.4 Transfer Credits

Students may transfer up to nine credit hours of Master's-level coursework if they have not been used toward a conferred degree and upon program approval. Transfer requests must be submitted and approved within 30 days from enrollment in your first academic semester of your M.Eng. program. Students must submit a formal general petition, transcript, a course description, and a syllabus for any credit hours to be considered. Transfer credits are only accepted by accredited institutions/universities. In addition, a grade equivalent of 2.50 or above is required for each course transferred from outside Cornell. The Director approves all transfer requests and reserves the right to accept or reject any credits, or other degree requirements, they see appropriate toward a student's degree.

2.8 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. MEng students typically serve as graders, prepare class materials, etc. The faculty generally make assistantship assignments during the first two weeks of classes.

Renewal of financial support each semester is contingent upon academic performance constituting good standing by meeting the minimum 2.50 GPA in the program.

2.9 Grade Requirements

The College requires a minimum grade point average of 2.50 for graduation from the Master of Engineering program. Students who are admitted on a Provisional Basis must achieve a 3.00 average during their first term in the M.Eng. program in order to continue in the second term. 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 but these courses are included in calculating grade point averages.

2.10 Office Space and Building Access

The Engineering Management students have space allocated in 404 Hollister. This space includes:

- Individual study carrels (first come first serve on a daily basis)
- Group study areas
- Sixteen computer workstations (first come first serve on a daily basis)
- Thirty-two individual lockers for storage of books, etc.
- Storage areas above study carrels and computer workstations (first come first serve on a daily basis)
- Laptop charging table
- Printers (available via wireless access from your laptops or directly from the workstations)

We do not recommend leaving valuable items in the lockers or storage space above the workstations as there is no way to lock them.

Entrance into the M.Eng. office is via your ID card. Your ID will also open outside doors to Hollister Hall and the Graduate Student lounge in Hollister Hall.

2.11 Job Placement

We are confident that the background you receive in your M.Eng. program in Engineering Management will prepare you for your job search and lead to new career opportunities. The following five career pathways are most common among our recent graduates but do not reflect all of the potential successful career pathways from our graduates.

| | |
|---|---|
| Consulting and Finance | • Example companies: Goldman Sachs, Accenture, Deloitte |
| Data Analyst/Business Analyst | • Example companies: DIA Associates, Capitol One, ZS Associates |
| Engineering Leadership Development/Rotational Program | • Example companies: Northrop Grumman, GE |
| Tech: Product Manager, Entrepreneur | • Example companies: Wayfair, Intel, Microsoft |
| Real Estate and Construction Management | • Example: Skanska, Clark Construction |

Advisors, faculty, and staff are available to discuss your career goals and assist you. During the Engineering Management Professional Development and Leadership series, students work with faculty and advisors to prepare for your career search. There are a number of opportunities, workshops, and resources available on campus.

The College of Engineering also supports career development for M.Eng. students. To discuss job search strategies, networking, job offer negotiations, or other general career questions, please visit their office in 201 Carpenter Hall or review resources on their website:

<https://www.engineering.cornell.edu/students/graduate-students/mengmps-students/career-resources-mengmps-students>.

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.

Academic misconduct includes any act that violates the standards of integrity in the conduct of scholarly and scientific research and communication. This includes, but is not limited to, plagiarizing the work of others, i.e., intentionally or knowingly representing other people's words or ideas as one's own; deliberately falsifying or fabricating data, citations, or information; forging academic documents; abusing the confidentiality of information obtained from colleagues or other persons; intentionally or knowingly helping another to commit an act of academic misconduct, or otherwise facilitating such acts; or other practices that seriously deviate from ethical standards that are commonly accepted within the scientific and scholarly communities for proposing, conducting, or reporting research. Academic misconduct also includes any form of retaliation against a person who, while acting in good faith, provides information about suspected or alleged misconduct.

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. 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.

3.2 Persons with Special Needs

Cornell University is committed to assisting those who have special needs. Information 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.

APPENDICES

A Engineering Management Program Faculty and Their Interests

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

Huaizhu "Oliver" Gao, Associate Professor (Ph.D. California/Davis): systems engineering, statistical modeling, transportation and air quality.

Andrea Ippolito, Lecturer: Engineering Management, entrepreneurship, innovation, product management, healthcare systems.

Robert Newman, Senior Lecturer: Engineering Management, business development, organizational and team development, engineering management, emotional intelligence, entrepreneurship.

Linda K. Nozick, Professor (Ph.D. Pennsylvania): Systems engineering, transportation and logistics, engineering management.

Patrick M. Reed, Professor (Ph.D. Illinois): Environmental and water resources systems; multi-objective planning and management, evolutionary computation; high-performance computing; decision making under uncertainty.

Samitha Samaranayake, Assistant Professor (Ph.D. University of California, Berkeley): Systems engineering and transportation

Jery R. Stedinger, Professor (NAE, Ph.D. Harvard): Stochastic hydrology; water resource systems planning and operations; risk analysis and management.

Francis M. Vanek, Senior Lecturer (Ph.D. Pennsylvania): Energy, environment, and transportation.

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 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.

Please review the following steps if you are interested in this program, (the following dates are based on Fall enrollment):

1. If you have been admitted to or are attending the M.Eng. program, 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 JGSM 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.
2. If you have not already done so, apply to take the GMAT or GRE (either acceptable) and is required by JGSM. January of your M.Eng. year is your last possible test date. Have the scores directed to JGSM.
3. 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:

<https://www.engineering.cornell.edu/admissions/graduate-admissions/admissions-meng-students/knight-scholarship-program>

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

C Masters in Public Administration (M.P.A.) from the Cornell Institute for Public Affairs

After the award of the M. Eng. degree, Engineering Management 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 (MEng and M.P.A.) have separate admission processes. You may apply to the Accelerated M.P.A. program upon completion of your first semester in the M.Eng program. Those 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 C.I.P.A. Office at 607-255-8018 or cipa@cornell.edu to set up an appointment. More information is available on the CIPA website at <http://www.cipa.cornell.edu>.

D Prerequisite Skills in Probability and Statistics

Engineering Management requires that an engineer deal with variation, variability and uncertainty. Illustrative issues of concern include estimates of the time to complete tasks in project planning and scheduling; the prices for goods and services; the demand for goods and services; and the performance of a range of systems and other forces that effect an organization. Therefore, Engineering Management students need to know how to use the language of probability to describe variability and uncertainty, and to help resolve the challenges faced by their organization. They need to understand how statistical concepts help them resolve what information can be extracted from available data, and how to determine and describe the precision of estimated quantities.

Our Engineering Management courses provide examples of these issues and reinforce and advance these skills. But we depend upon all the Engineering Management students to begin the program with a basic understanding of probability and statistics, consistent with what would be included in an undergraduate treatment of the subject. Specific concepts and ideas students should have when entering the program include the basic concepts and methods of probability, along with an understanding of the idea of statistical estimation, construction of confidence intervals, hypothesis testing, and linear regression analysis. If the student does not complete a course with this material prior to entering, they will be required to take a course while in the program. This course will require additional course work beyond the 30 credit hours required and may delay completion of the program.

Specifically, we expect the following. [For clarification we provide references to sections in Jay L. Devore, *Probability and Statistics for Engineering and the Sciences*, 9th edition, Duxbury, Belmont, CA, 2015. See also <http://allpsych.com/stats/index.html>]

1. Students should know the 3 *basic axioms for probability*. [Devore §2.1-2.2]
{ $P(A) \geq 0$; $P(S) = 1$; for A and B disjoint, $P[A \cup B] = P[A] + P[B]$ }
2. Students should know how to *calculate the probability* of events consisting of unions $[A \cup B]$, intersections $[A \cap B]$, and complements $[A' = S - A]$, of events of known probability. They should be able to use the Total Probability Theorem and Bayes Theorem to calculate probabilities and conditional probabilities of different events $[P(A|B) = P(A \cap B)/P(B)]$. [Devore §2.2-2.5]
3. Students should know definitions of the cumulative distribution function (cdf) $F_X(x)$ and probability density function (pdf) $f_X(x)$ for continuous univariate random variables; the properties of each; and how to use these functions to calculate the probabilities for events such as $P\{a \leq X \leq b\}$. [Devore §4.1-4.2]
4. Students should know the definitions and properties of the mean μ , variance s^2 , and correlations r ; how to compute the univariate "*moments*" given a pdf; and how to compute the mean and variance for linear functions and linear combinations of random variables. [Devore §5.1-5.2, 5.5]
5. Students should know the some properties of a *Normal distribution*, the form of the pdf, and how to calculate quantiles and the probability of events such as $a \leq X \leq b$ for $X \sim N[\mu, \sigma^2]$. Students should be able to state the *Central Limit Theorem* and know when it applies. [Devore §4.3, 5.4]
6. Students should know the mean, variance and probability mass function for the discrete *binomial* and the *Poisson* distributions, and be able to use those relationships to compute probabilities for a range of events. [Devore §3.1-3.4, 3.6]

7. Students should know the concept of *an estimator*, and the sampling properties of the sample mean \bar{X} for a set of data. [Devore §5.4, 6.1-6.2]
8. Students should know how to *construct confidence intervals* for the mean of a Normal distribution with small samples. [Devore §7.1-7.3]
9. Students know how to structure a *statistical decision problem* as a choice between two hypotheses and how that choice relates to probabilities of type I (denoted α) and II (denoted β) errors; students should know how to perform a simple one-sample or two-sample t test. [Devore §8.1-8.2]
10. Students should know why statisticians sometimes summarize results by a *P-value*, as well as what a P-value is, and how to calculate it. [Devore §8.4]
11. Students should understand the form of and assumptions employed with the *basic linear model* $Y = \alpha + \beta x + \varepsilon$, with independent additive normal errors ε . [Devore §12.1]
12. Students should be able to calculate *least-squares estimators* of the two coefficients α and β , and construct hypothesis tests on the parameters. Students should know the *definition of R^2* , what it represents, and how to calculate it. Students should know the definition and meaning of the *correlation coefficient*, and be able to calculate its estimator r . [Devore §12.2-12.5]

E Program Requirements, Link to Proposal Form for M.Eng. Degree in Engineering Management, and Track Specialization Electives

Below is the link to the EM Proposal form that you must complete and add to your Cornell Box folder that you recently received access to for advisor approval. Please note that any changes made to your proposal form must be approved by your advisor along with an updated copy of your proposal form.

Link to Proposal Form on Box:

<https://cornell.box.com/s/ygbj5lvb7edbkyc8lxk4lb6p99m2qv2z>

Additional requirements:

- One course (minimum 3 credits) in individual and/or organizational behavior
- 9 credits (minimum) of track specialization elective courses
- One course (minimum 3 credits) in finance/accounting

Please review detailed information about courses used to satisfy degree requirements in [Appendix E](#). [Appendix E](#) provides course descriptions for the required courses and the most popular choices of courses in accounting/finance and organizational behavior.

One course (minimum 3 credits) in individual and/or organizational behavior (NCC 5530 – Marketing Management; NCC 5540 – Mgmt. and Leading in Organizations; NBA 6630 – Managerial Decision Making; or ILROB 5200 – Organizational Behavior & Analysis; other courses are also possible.)

Meeting the minimum 3-credit requirement: The program requires that courses chosen to satisfy the finance/accounting and behavior requirements are for a minimum of 3 credits each. You cannot take a half-semester course (e.g., 1.5- or 2-credit) to meet this requirement. In other colleges, instructors may divide a 3-credit course into two 1.5-credit segments, in which case you can meet the 3-credit requirement as long as you take both segments. For the Track Specialization requirement, you are allowed to take courses 1.5-credits or higher.

The information provided here should help you make decisions, but we encourage you to seek guidance from your advisor and other faculty members. An important aspect of the M.Eng. program is interaction between each student and his/her faculty advisor. Your advisor will work with you to develop a program consistent with your career goals and the intent of the M.Eng. program.

Suggested Individual and/or Organizational Behavior courses include:

- ENGMT 5000 Entrepreneurship and Private Equity
- ENMGT 6000 Entrepreneurship for Scientists and Engineers
- ENMGT 6020 Managing a Culture of Innovation
- HADM 6110 Negotiations in the Hospitality Industry
- ILROB 5200 Organizational Behavior & Analysis (Note: Must be admitted in person by prof)
- NBA 5150 Leadership Theory and Practice (Note: This is an intensive, 1-week course that meets before the semester starts, so if you choose to take it you would need to make travel plans accordingly. We highly recommend you take it in the Fall semester because the Spring semester typically is very popular and has a wait list).
- NBA 6090 Digital Marketing
- NBA 6200 Marketing Research

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| NBA 6540 | Power and Politics in Organizations (Note: You must take both the first and second 7-week sections of this course to meet the 3-credit requirement) |
| NBA 6620 | Product Marketing Insights |
| NBA 6630 | Managerial Decision Making |
| NCC 5530 | Marketing Management |
| NCC 5540 | Management & Organizations |
| PADM 5570 | Corporate Responsibility |

9-credits in Engineering Management Track Specialization elective courses are required

Each student’s program must include at least 9-credits worth of electives selected to provide a track area of specialization. Students can combine two 1.5 or higher credit behavior courses, as long as they meet or exceed 3 credits. We have put together six track areas of specialization below tied to common career paths of Engineering Management degree graduates. Any 5000 or 6000-level College of Engineering non-seminar technical 3 credits or higher course is acceptable. Courses outside of the College of Engineering and not listed below must be approved by the Director of the Engineering Management program via a course petition. The course petition must include a detailed syllabus of the technical content to be covered. Students are also welcome to mix and match courses from different headings or choose courses aligned with their own interests to best serve their professional goals.



Track areas of specialization for electives

You will need to get your specialization track and classes approved by your faculty advisor.

Some additional things to think about when selecting your specialization track electives:

1. Make sure to review the course catalog because it is regularly updated
2. Make sure to check the prerequisites. If you don’t have the prerequisites, you will need to email the instructor to get permission. Also don’t be afraid to show up on the first day of classes too (along with emailing them).
3. Many Johnson school courses are only 1.5 credits, which allows you to take more, but make sure that you meet the requirement of 9 credits worth of specialization electives.
4. Make sure to double check when courses are offered because many courses are only offered in the Fall or Spring, but not both.
5. For your specialization electives, courses should be above the 5000 level, which means that they are at the graduate level. 4000 level engineering courses may be acceptable if there is no course on the same topic at a higher level; ask your advisor.

6. You can mix and match across track specializations or build your own track

The breakdown of the pre-approved electives for each track are below. Please note that course offerings change from semester to semester. The full Cornell course catalog is available here:

<https://classes.cornell.edu/>

Consulting

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| CEE 5970 | Risk Analysis & Management (If not used as a core course) |
| CEE 6640 | Microeconomics of Discrete Choice |
| ENMGT 5960 | Negotiations and Contracts for Engineering Management |
| ENMGT 5980 | Intro to Decision Analysis (If not used as a core course) |
| NBA 5000 | Intermediate Accounting |
| NBA 5020 | Managerial Accounting and Reporting |
| NBA 5061 | Comprehensive Financial Statement Analysis |
| NBA 5090 | Advanced Financial Statement Analysis (1.5 credits) |
| NBA 5110 | Financial Modeling (1.5 credits) |
| NBA 5120 | Applied Portfolio Management (1.5 credits) |
| NBA 5130 | International Finance Cases (1.5 credits) |
| NBA 5140 | Ethics and Corporate Culture (1.5 credits) |
| NBA 5200 | Retail Operations (1.5 credits) |
| NBA 5245 | Introduction to Macroeconomics |
| NBA 5270 | Applied Economic Analysis |
| NBA 5305 | Entrepreneurial Finance (1.5 credits) |
| NBA 5420 | Investment and Portfolio Management |
| NBA 5260 | Leaders in Emerging Markets (1 credit) |
| NBA 5360 | Investment Banking Essentials (1.5 credits) |
| NBA 5550 | Fixed Income Securities and Interest Rate Options |
| NBA 5911 | Risk Management in Emerging Markets |
| NBA 5980 | Behavioral Finance (1.5 credits) |
| NBA 6090 | Digital Marketing (1.5 credits) |
| NBA 6200 | Marketing Research |
| NBA 6220 | Marketing Strategy (1.5 credits) |
| NBA 6250 | International Marketing (1.5 credits) |
| NBA 6390 | Data-Driven Marketing (1.5 credits) |
| NBA 6430 | Managerial Spreadsheet Modeling (1.5 credits) |
| NBA 6560 | Valuation Principles (1.5 credits) |
| NBA 6630 | Managerial Decision Making |
| NBA 6650 | Strategic Management of Technology and Innovation |
| NBA 6730 | Derivatives Securities Part I (1.5 credits) |
| NBA 6740 | Derivatives Securities Part II (1.5 credits) |
| NBA 6780 | Advanced Private Equity - Negotiations and Structuring (2 credits) |
| NBA 6410 | Supply Chain Management |
| NBA 6820 | Negotiation 1: Negotiation Essentials (1.5 credits) |
| NBA 6880 | Financial Distress, Bankruptcy and Restructuring (1.5 credits) |
| NBA 6930 | Strategy and Tactics of Pricing (1.5 credits) |
| NCC 5000 | Financial Accounting (2.5 credits, if not using for Finance requirement) |
| NCC 5530 | Marketing Management (if not using for Org Behavior requirement) |

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| NCC 5560 | Managerial Finance (if did not take already for finance requirement) |
| NCC 5580 | Managing Operations |
| PADM 5755 | Infrastructure financing |

Product Management and Entrepreneurship

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| AEM 6385 | Entrepreneurial Strategy |
| AEM 6395 | Technology Strategy |
| ENMGT 5070 | Entrepreneurship for Engineers and Scientists |
| ENMGT 5920 | Product Management |
| ENMGT 6020 | Managing a Culture of Innovation and Entrepreneurship |
| ENMGT 5960 | Negotiations and Contracts for Engineering Management |
| HADM 6130 | Entrepreneurial Management |
| HADM 6211 | Entrepreneurial Finance |
| HADM 6800 | Law for Entrepreneurs |
| LAW 6335 | Emerging Growth Companies and Venture Capital Financing |
| NBA 5100 | Social Entrepreneurship (1.5 credits) |
| NBA 5180 | Design and Innovation (1.5 credits) |
| NBA 5305 | Entrepreneurial Finance (1.5 credits) |
| NBA 5590 | The Venture Capital Industry and Private Equity Markets (0.5 credits) |
| NBA 5630 | The IPO & Mergers & Acquisitions Process |
| NBA 6029 | Leading Agile Innovation (1.5 credits) |
| NBA 6090 | Digital Marketing (1.5 credits) |
| NBA 6230 | eLab |
| NBA 6390 | Data-Driven Marketing (1.5 credits) |
| NBA 6560 | Valuation Principles (1.5 credits) |
| NBA 6570 | Entrepreneurial Marketing (1.5 credits) |
| NBA 6620 | Product Marketing Insights |
| NBA 6650 | Strategic Management of Technology and Innovation |
| NBA 6820 | Negotiation 1: Negotiation Essentials (1.5 credits) |
| NBA 6930 | Strategy and Tactics of Pricing (1.5 credits) |
| NCC 5530 | Marketing Management |

Real Estate and Construction Management

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| CEE 5950 | Construction Planning and Operations |
| CEE 6730 | Design of Concrete Structures |
| CRP 5320 | Real Estate Development Process I (1.5 credits each, must take part II) |
| CRP 5321 | Real Estate Development Process II (1.5 credits each, must take part I first) |
| CRP 5560 | Creating the Built Environment |
| CRP 5530 | Concepts and Methods of Land Use Planning |
| CRP 5590 | Legal Aspects of Land Use Planning |
| ENMGT 5960 | Negotiations and Contracts for Engineering Management |
| HADM 6200 | Principles of Real Estate |
| HADM 6211 | Entrepreneurial finance |
| HADM 6280 | Real Estate Finance and Investments |
| HADM 6500 | Sustainable Development |
| HADM 6570 | Project Mgt for Real Estate Development |
| HADM 6580 | Advanced project management for real estate development |

PADM 5755 Infrastructure financing
SYSEN 5740 Design Thinking for Complex Systems

Engineering Leadership

General

ENMGT 5960 Negotiations and Contracts for Engineering Management
HADM 6155 Women in Leadership
HADM 6835 Leading and Managing Teams
ILRHR 7451 Leadership Assessment for Managers
NBA 5150 Leadership Theory and Practice (take in Fall)
NBA 6410 Supply Chain Management
NBA 6630 Managerial Decision Making
NBA 6650 Strategic Management of Technology and Innovation
NBA 6700 Leadership, Ethics and Organizations (1.5 credits)
NBA 6820 Negotiation 1: Negotiation Essentials (1.5 credits)
NCC 5580 Managing Operations
ORIE 5100 Design of Manufacturing Systems
ORIE 5122 Inventory Management
ORIE 5140 Model based systems engineering
ORIE 5300 Optimization I
ORIE 5380 Optimization Methods
ORIE 5580 Simulation Modeling and Analysis
ORIE 5581 Monte Carlo Simulation
ORIE 6741 Bayesian Machine Learning

Healthcare/Biomedical

BME 5310 Machine Learning with Biomedical Data
BME 5390 Biomedical Materials & Devices for Human Body Repair
BME 6210 Engineering Principles for Drug Delivery
BME 6650 Principles of Tissue Engineering
BME 7310 Advanced Biomedical Engineering Analysis of Biological Systems

Analytics

This is a popular track to do if you are interested in supply chain management too.

CEE 5970 Risk Analysis & Management (If not used as a core course)
CEE 6000 Numerical Techniques for Engineers
CEE 6620 Networks
CRP 5080 Introduction to Geographic Information Systems for planners
CS 5320 Introduction to Database Systems
CS 5150 Software Engineering
CS 5320 Introduction to Database Systems
CS 5780 Machine Learning
ENMGT 5980 Intro to Decision Analysis (If not used as a core course)
FDSC 4210 Food Engineering Principles (*popular course for students interested in Food Product Supply Chain Management*)
INFO 5306 Crowdsourcing and Human Computation

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| INFO 6113 | Technology and Law Colloquium |
| INFO 6120 | Ubiquitous Computing |
| INFO 6220 | Networks II |
| INFO 6260 | Networks, Crowds, and Markets |
| INFO 6420 | Human Robot Interaction - Research and Design |
| M&AE 4780 | Feedback Control Systems |
| NBA 5301 | Intermediate Design and Programming for Web |
| NBA 6010 | Electronic Commerce |
| NBA 6340 | Customer Strategy and Analytics (1.5 credits) |
| NBA 6390 | Data-Driven Marketing (1.5 credits) |
| NBA 6410 | Supply Chain Management |
| NBA 6430 | Managerial Spreadsheet Modeling (1.5 credits) |
| NBA 6550 | Introduction to Statistical Programming and SQL (1.5 credits) |
| NBA 6920 | Advanced Data Analytics Applications and Methods (1.5 credits) |
| NCC 5530 | Marketing Management |
| NCC 5580 | Managing Operations |
| ORIE 5100 | Design of Manufacturing Systems |
| ORIE 5122 | Inventory Management |
| ORIE 5126 | Principles of Supply Chain Management |
| SYSEN 5200 | Systems Analysis Behavior and Optimization |
| SYSEN 5220 | Systems Dynamics |
| SYSEN 5240 | Search and Optimization with Metaheuristics |
| SYSEN 5300 | Systems Engineering and Six Sigma for the Design and Operation of Reliable Systems |
| SYSEN 5400 | Theory and Practice of Systems Architecture |
| SYSEN 5500 | Systems Modeling Language: Fundamentals and Practice |
| SYSEN 5740 | Design Thinking for Complex Systems |
| SYSEN 5940 | Creativity and Innovation within Systems Engineering |
| SYSEN 6410 | Multiobjective Systems Engineering Under Uncertainty |
| SYSEN 6880 | Industrial Big Data Analytics and Machine Learning |
| SYSEN 5200 | Systems Dynamics |
| SYSEN 5300 | Systems Engineering and Six Sigma for the Design and Operation of Rel Syst |
| SYSEN 5400 | Design & Operation of Rel Syst Theory & practice of systems architecture |
| SYSEN 5400 | Theory and Practice of Systems Architecture |

Sustainability and Renewable Energy

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| A&EP 4840 | Controlled Fusion |
| AEP 5500 | Physics of Renewable Energy |
| BEE 4010 | Renewable Energy Systems |
| BEE 4750 | Environmental Systems Analysis |
| BEE 4870 | Sustainable bioenergy systems |
| CEE 6530 | Water Chemistry for Environmental Engineering |
| CEE 6550 | Transport, Mixing and Transformation in the Environment |
| CEE 6560 | Physical/Chemical Processes |
| CEE 6570 | Biological Processes |
| CEE 6930 | Public Systems Modeling |
| CEE 6200 | Water Resource Systems Engineering |
| ChemE 6610 | Air Pollution Control |

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| ChemE 6640 | Energy Economics |
| ChemE 6650 | Energy Engineering |
| ChemE 6610 | Air Pollution Control Manufacturing Management |
| ChemE 6660 | Analysis of Sustainable Energy Systems |
| ECE 4510 | Electric Power Systems I |
| ECE 4520 | Electric Power Systems II |
| MAE 5010 | Future Energy Systems |
| MAE 5020 | Wind Power |
| MAE 5430 | Combustion processes |
| MSE 5150 | Structures & materials for sustainable energy systems |
| MSE 5330 | Materials for energy production, storage, conversion, and distribution |

F 2020-21 Courses of study for ENMGT 59XX series and other key courses

ENMGT 5900: Project Management

Fall & Spring, 4 credits.

Prerequisite: permission of instructor.

Core graduate course in project management for people who will manage technical or engineering projects. Focuses both on the “technical” tools of project management (e.g., methods for planning, scheduling, and control) and the “human” side (e.g., forming a project team, managing performance, resolving conflicts), with somewhat greater emphasis on the latter.

ENMGT 5910: Engineering Management Project

Fall and Spring, 4 credits.

Prerequisite: permission of instructor.

As Engineering Managers, you need to embrace both technical and business skills to tackle complex, sociotechnical challenges, while staying on top of the current pace of technological change. In this Engineering Management project course, we are bridging from your coursework to your role as an engineering manager. To get there, you will practice the tools, themes, and techniques learned in your Engineering Management coursework through the scaffolding of a large project. In ENMGT 5910, you will work in teams to participate in a project in collaboration with an industry partner. You will perform an intensive evaluation of some mixture of the technological and management aspects of a major engineering project or system, conducted with a team of students. This project typically incorporates some combination of economic and financial analysis, integration of components into a large-scale system, or technology feasibility.

ENMGT 5920 Product Management

Spring, 3 credits.

Product Management is one of the fastest growing careers in engineering and technology-based industries. In this course, you will learn the foundations of product management including (i) preparing for success as a product manager, (ii) identifying and targeting customer needs, (iii) prioritizing your project needs, and (iv) designing, developing, and deploying your product across the product life cycle. Using skills developed through course lectures and discussions, you will complete in a project where you will practice the sprint model utilized in most product teams. This course is for students interested in pursuing a career as a product manager in engineering or technology-based companies, learning about the product management competency, or working in a non-traditional tech setting to apply these skills on complex systems.

ENMGTT 5930: Engineering Management Methods: Data, Information, and Modeling

Fall, 4 credits.

Prerequisites: CEE 3040 or equivalent.

Methods for managing data and transforming data into information. Modeling as a means to synthesize information into knowledge that can form the basis for decisions and actions. Application of statistical methods and optimization to managerial problems in project design, scheduling, operations, forecasting, and resource allocation.

ENMGTT 5940: Economics and Finance for Engineering Management

Fall, 4 credits.

An engineering case-based exploration of economic models and methods used in analysis, comparisons, and decision making by engineers and engineering teams. Emphasis will be placed not only on the important calculations, but also on understanding, communicating, and recording their findings, related assumptions, risks, external considerations and situational awareness.

ENMGTT 5960 Negotiations and Contracts for Engineering Management

Spring, 3 credits.

An exploration of Negotiation types, skills, and tactics relevant to Engineers and Engineering Managers, and a study in contract types, details, and clauses common to engineering fields. Studies will include human factors and behavior in negotiations, understanding and managing the end game, and legal terminology engineers should know.

ENMGTT 5970: Risk Analysis and Management

Spring, 3 credits.

Prerequisite: introduction to probability and statistics (e.g. CEE 3040, ENGRD 2700, ILRST 2100, or AEM 2100); two semesters of calculus; senior or graduate standing, or permission of instructor J.R. Stedinger.

Develops a working knowledge of risk terminology and reliability engineering, analytic tools and models used to analyze environmental and technological risks, and social and psychological risk issues. Discussions address life risks in the United States historical accidents, natural hazards, threat assessment, transportation risks, industrial accidents, waste incineration, air pollution modeling, public health, regulatory policy, risk communication, and risk management.

ENMGTT 5980: Introduction to Decision Analysis

Fall, 3 credits.

Prerequisite: introduction to probability and statistics course such as CEE 3040, ENGRD 2700, ILRST 2100, BTRY 3010, or AEM 2100. Enrollment is limited to seniors and graduate students; or permission of instructor.

Framework to structure the way we think about decision situations that are complicated by uncertainty, complexity, and competing objectives. Specific decision analysis concepts and tools, such as decision trees, sensitivity analysis, value of information, and utility theory. Applications to all areas of engineering and life. Includes a group project to analyze a real-world decision.

ENMGTT 6020 Managing a Culture of Innovation

Fall, 3 credits.

Innovation is not just ideas but getting the ideas to measurable impact for your customers or employees. While the word "innovation" is pervasive throughout engineering and business, developing and managing a culture of innovation has only been mastered by few organizations. In fact, no company has remained on the Dow Jones Industrial Average since its inception. Why? Because implementing a culture of innovation is very difficult and is mired by a lack of understanding of proven innovation strategies, competencies, and tools. In this course, you will learn a systematic approach for developing and managing a culture of innovation. You will learn how to develop an innovation strategy to better meet your organizations goals and customer needs. In addition, we will take time to dive into innovation competencies, such as design thinking, lean start-up, and making, along with learn several innovation tools including hackathons, open innovation challenges and competitions, and corporate venture arms. Lastly, we will discuss how to implement and scale your innovation strategies to deliver impact for your customers and organization.

ENMGT 6090: Professional Development and Leadership Series

In the Professional and Leadership Development Course, Engineering Management Master of Engineering students will identify the goals for their career and engage in several career development support services, such as networking, interviewing, resume and cover letter writing, and negotiation workshops. In addition, they will engage in a leadership development series to help them further build their engineering management and leadership competencies. Through a variety of tools, one-on-one coaching, workshops, events, and other resources, this course will help students develop and practice critical career management skills, along with build their confidence to find a career opportunity best suited to their interests and needs.

ENMGT 6091: Project Management Seminar

Weekly seminar aimed at M.Eng. students, in particular in the engineering management program. Weekly speaker will come from different engineering applications and discuss insights into project management.

G Professional Experience Program and Independent Study

Our Professional Experience Program provides real world training and work experience for select Engineering Management students by connecting them with industry including local start-up companies in the [Praxis Center for Venture Development](#).

Alumni connections and cross-campus collaborations result in unique opportunities for students each year. This program takes place either over the summer or winter break during the school year. Students in the program will have the opportunity to build their resume while applying their Engineering Management skills to practice. It is ideal for students who would like to complete a 3-semester M.Eng. program and stay in Ithaca over the summer.

We host an information session for interested students and facilitate matching with companies seeking interns. Internships are flexible and for independent study credit.

Independent Study: CEE 6095

Students who would like to complete an independent study need to identify a faculty member to oversee the project and agree to provide continuing supervision of the work. An independent study can be for one, two, or three credits and does not count toward program requirements.

To submit an independent study request, work with the faculty advisor to come up with a 30 character or less subtitle that is unique to the project and will appear on the transcript. You must also create a syllabus with a list of deliverables and milestones. These requests are processed by the Undergraduate Coordinator in CEE and requests are due no later than the last day of the add period of the semester the study will take place.

H Johnson Immersion Programs

The SC Johnson College of Business offers several unique immersion programs. Each program is an intense, hands-on semester of integrated course and field work in a specific industry or career interest.

Students interested in any of the Johnson Immersion Programs should first talk to their advisor and then contact the Johnson School for more detailed information regarding the specific Immersion program you are interested in.

For those that are accepted into an Immersion program, ENMGT 5910 & ENMGT 6091 requirements are both waived as you will be similar courses will be covered within the Immersion program.

Johnson Immersion Offerings:

- Investment Research and Asset Management
- Digital Technology
- Investment Banking
- Corporate Finance
- Semester in Strategic Operations
- Strategic Product and Marketing
- Sustainable Global Enterprise
- Customized Immersion

I Advanced Communication for Engineers (ACE)

Summer Program for International Graduate Students

The ACE Program builds international students' awareness of aspects of the North American engineering industry and key tasks they'll face as they prepare for a career and search for jobs. ACE participants become more confident with communication strategies for navigating academic and professional life and networking with people in their field.

The program is open to the first 30 students who apply and enrollment in the program requires additional fees.

Program dates: Four weeks from mid-July to mid-August

Eligibility: Incoming international students accepted into all Cornell M.Eng. programs are eligible to participate.

Visa information: Participants will be issued an I-20 with a summer start date so that they can apply for a visa and arrive early.

The standard ACE program fee is approximately \$4,000 USD. Note that the program fee does not include room and board or student health insurance.

More information is available on the ACE Program website:

<https://www.engineering.cornell.edu/admissions/graduate-admissions/admissions-meng-students/advanced-communication-engineers-ace>

J Cornell University Resources

Student Services

[Cornell University Graduate School](#), Caldwell Hall, 607-255-5820, gradstudserv@cornell.edu

[University Registrar](#), B07 Day Hall, 607.255.6262, univreg@cornell.edu

[Office of the Bursar](#), 260 Day Hall, 607.255.2336, bursar@cornell.edu

[Financial Aid and Student Employment](#), 203 Day Hall, 607.255.5145, finaid@cornell.edu

[Cornell Housing](#), 1501 Dickson Hall, 607.255.5533, housing@cornell.edu

[Cornell Dining](#), 1508 Clara Dickson Hall, 607.255.5952, dining@cornell.edu

[Women's Resource Center](#), 209 Willard Straight Hall, 607.255.0015, wrc@cornell.edu

[LGBT Resource Center](#), 626 Thurston Ave L3, 607.254.4987, lgbtrc@cornell.edu

[Office of Global Learning](#), 300 Caldwell Hall, 607.255.5243, international@cornell.edu

Academic Resources and Support

[Cornell Research](#)

[Center for Real Estate and Finance](#), 607.255.6025

[Cornell Library](#)

[Cornell IT](#), 607.255.5500, itservicedesk@cornell.edu

Health, Wellness, and Safety

[Cornell Police](#), 117 Statler Drive G2 Barton Hall, 607.255.1111

[Cornell Health](#), 110 Ho Plaza, 607.255.5155

[Student Disability Services](#), 110 Ho Plaza L5 Cornell Health, 607.254.4545, sds_cu@cornell.edu

Additional Resources

[Cornell Career Services](#), 103 Barnes Hall, 607.255.5221, career@cornell.edu

[Office of Alumni Affairs](#), 130 E. Seneca Street, 607.254.7150, alumniaffairs@cornell.edu

Office of the Judicial Administrator, 120 Day Hall, 607.255.4680, judadmin@cornell.edu