

CornellEngineering Systems Engineering

Master of Engineering Student Handbook

Revised February 2019

Table of Contents

Welcome.....	4
Letter from the Director	4
Academic Leadership and Staff.....	4
Degree Requirements.....	5
Probability and Statistics.....	5
Computer Programming	6
On-Campus Program.....	6
Degree Requirements	6
Required Courses.....	6
Elective Courses	7
Specializations.....	7
On-campus – Three Semester Degree Option	8
Distance Learning (DL) Program	8
Degree Requirements	8
Required Courses.....	8
Elective Courses	8
Exam Proctoring.....	9
Transferring from the On-Campus Program to the Distance Learning Program	10
Projects	10
Systems Engineering Content of the Project Report	11
Systems Engineering Report Draft.....	11
Submission of Your Final Report.....	11
Policies and Procedures.....	12
Academic Advisors.....	12
Petitioning.....	12
Transfer Credits.....	12
Academic Standards	12
Academic Misconduct.....	13
Good Standing	13
Completion of Degree Requirements	13

Leave of Absence	13
Voluntary leave	13
Health leave	14
Required leave	14
Withdrawal	14
Voluntary withdrawal	14
Required withdrawal	14
Tuition and Financial Aid.....	15
Financial Aid.....	15
On-Campus GTS (Grader) Appointments.....	15
Distance Learning Tuition and Billing.....	15
Other Campus Resources.....	15
ISSO.....	15
One-Year MBA Program.....	15
Career Services	16
Student Support.....	16
Cornell Health	16
Empathy, Assistance and Referral Service	17
Appendices	17
Appendix A. Cornell University ENGRD 2700 Basic Probability and Statistics for Engineers.....	17
Appendix B. Forms	19
Appendix C. Systems Engineering Project Requirement	23

Welcome

Letter from the Director

Systems Engineering is the process by which we understand a complex need and then develop, test, and deploy elegant and harmonious solutions to meet that need. A solution is elegant when it appears simpler than the need that it fills. It is harmonious when it works well with all other systems in the context of that need. Whether you are designing a toy to bring to market or tackling a grand global challenge such as food safety, systems engineering has the analytical, design, and leadership tools you need to be successful.

We created the Systems Engineering Program in 1999 in response to pleas from industry for engineers who not only had depth in a particular undergraduate discipline but who could also rise above disciplinary boundaries and take leadership from a systems perspective.

As the products and services that support our society increase in complexity, systems engineering skills have become increasingly vital.

The Cornell Systems Engineering Program is designed to develop the skills in our students necessary to effectively undertake Systems Engineering activities throughout an organization and to prepare them for leadership positions as their careers unfold. Our program is designed to build these skills in students wishing to pursue employment across a range of systems engineering application areas including aerospace and defense systems, manufacturing and logistics, transportation and automotive, energy systems, health systems, embedded systems, and information systems.

Based on continued feedback and input from industry, our course content and curriculum continue to evolve and are designed to be highly responsive to industry needs.

“At Cornell, Systems Engineering is about the real world—the complicated and messy real world. Yes, you learn the methodologies for design and analysis. You also learn the unwritten rules. That everything connects to everything. That every choice has a ripple effect. That every decision has a price—and you have to trade off until the price is right.”

—H. Oliver Gao

Director, Systems Engineering

Associate Professor of Civil and Environmental Engineering

Academic Leadership and Staff

Academic Leadership:

- H. Oliver Gao, Director
- Albert R. George, Director of Graduate Studies
- David R. Schneider, Director of M.Eng. Studies

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Degree Requirements

The degree requirements are nearly identical between the on-campus and the distance learning program with small adjustments made to accommodate the need to deliver some course content to the distance learning students during two one-week modules held on campus. The distance learning versions of the otherwise identical courses are offered synchronously to both distance learning and on-campus students using identical course materials by the same instructor(s).

All students are required to complete 30 credit hours of coursework, including 3 required core courses. The content of these core courses is the same for both groups with the inclusion of the two on-campus modules for distance learning students. All students must submit a [proposal form \(PDF\)](#), signed by their academic advisor, **to the GFA at the start of their program and provide updates** as needed to ensure that students are satisfying their degree requirements and meeting the timeline for completion. Details on requirements that the proposal must meet and additional associated degree requirements, including the required MEng project and its report, are outlined in the sections below.

Every MEng student nearing the completion of his or her degree is required to complete the mandatory MEng Exit Survey administered by the College of Engineering. This survey must be completed in order for a student to receive his or her MEng degree.

Probability and Statistics

The Systems Engineering program requires an undergraduate level Probability and Statistics prerequisite for students enrolling in the M.Eng. Program. We have identified the material that is a necessary prerequisite for our classes. This information is a guideline for the probability and statistics concepts that we feel every student should understand in order to be successful in our courses.

The key question in determining the suitability of your knowledge from having taken or planning to take a particular course is partially summed by the following quote from a report from the American Statistical Association (Guidelines for Assessment and Instruction in Statistics Education or GAISE):

“Some people teach courses that are heavily slanted toward teaching students to become statistically literate and wise consumers of data; this is somewhat similar to an art appreciation course. Some teach courses more heavily slanted toward teaching students to become producers of statistical analyses; this is analogous to the studio art course.”

What you will need for Cornell Master of Engineering classes is the latter, analogous to the studio course.

Cornell classes that we consider the appropriate preparation are [ENGRD 2700](#) and [CEE 3040](#). For your reference, the items covered in ENGRD 2700 are listed below in Appendix A. We also feel that the textbook [Devore, J., *Probability and Statistics for Engineering and the Sciences*](#) (any edition) is at the level that is needed for our classes. Thus, if you are getting ready to take our classes, you might want to review that book ensure that you feel comfortable with material at the appropriate level.

If you are interested in taking a suitable distance learning course, there are a number of these available from various universities, however, you should have the course approved in advance of completing it to ensure that it will be accepted. One distance-learning course that we are familiar with and has proved satisfactory in the past is Math 217 from Indiana University of Pennsylvania.

If you must complete a probability and/or statistics course as a condition of your admission, it should be taken before or during the fall term and earn a grade of a B or higher. A transcript of this course must be submitted to the Systems Engineering program office.

Computer Programming

Some courses, including some required core courses, may require students to perform some basic computer programming. In particular, you are expected 1) to be fluent in the use of procedural statements, including assignments, conditional statements, loops, function calls, and arrays, and 2) to be able to design, code, and test small computer programs, in a language of your choice, that meets requirements expressed in English. Cornell classes that we consider the appropriate preparation are CS 1110 and CS 1112. The materials for these two courses are available here: [CS 1110 \(Spring 2019\)](#) and [CS 1112 \(Spring 2019\)](#).

Some elective courses may have additional pre-requisites, and students should always consider any course's pre-requisites before taking a course, but knowledge in computer programming beyond that stated above is not needed to successfully complete the Systems Engineering MEng degree.

On-Campus Program

Degree Requirements

Required Courses

The following courses are required for the M.Eng. degree in Systems Engineering:

SYSEN 5100	Model Based Systems Engineering	(Fall, 4 credits)
SYSEN 5200	Systems Analysis, Behavior, & Optimization	(Spring, 3 credits)

SYSEN 5900	Systems Engineering Project	(Spring and Fall, 6 to 8 credits total)
CEE 5900	Project Management	(Spring or Fall, 4 credits)
Total credits for required courses		17 to 19

Elective Courses

Since a minimum of 30 credits are required for the M.Eng. degree, 11 to 13 credits of electives will be needed. A list of [pre-approved on-campus electives](#) is available on the [Systems Engineering website](#). Other courses that have systems content can be approved by submitting a [Systems Engineering General Petition](#).

The electives are grouped into the following categories with the requirements described:

Group	Requirement/Restriction
Modeling and Analysis	At least one course must be taken from this group (3 to 4 credits)
Applications	At least one course must be taken from this group (3 to 4 credits)
Management	No more than one course may be taken from this group
Seminar	No more than one course each semester may be taken from this group, for a maximum of two courses in total

Your advisor, and then the GFA and Director of MEng Studies, must approve the electives you select to ensure a well-rounded program of study.

A complete list of all current course offerings and descriptions may be found at the [Cornell Class Roster](#). Information on how to petition to have non-preapproved courses count towards your graduation requirements can be found in the Policies and Procedures section below. Please keep in mind that **certain courses may not be offered every year**. The Class Roster will list each semester's offerings along with the scheduled time, location, and instructor.

Specializations

The Systems Engineering program has devised recommendations for two-semester degree plans that combine coursework in systems engineering with electives chosen to emphasize different application domains. These sample programs are illustrative only, and seeking a specialization is an **optional** means of targeting your coursework to suit a specific interest, i.e. students are not required to have a specialization nor follow any of the recommendations below and specializations do not show up on official transcripts. Additionally, there are many possible elective courses that are not included in any of these samples. These are just examples that students may want to consider in pursuing some of their specialization interests.

As illustrations, however, these sample programs provide an idea of the range of applications that are possible within the overall program. Please be advised that some courses offerings or pre-requisites may vary from year to year and the best recommendation is that you work with your academic advisor to develop a program that satisfies the degree requirements and meets your academic and career goals. Please review these course offerings on [our website](#).

On-campus – Three Semester Degree Option

The M.Eng. is a professional degree with a planned program timeframe. On-campus students are expected to complete their degree requirements in two semesters. If the student is pursuing a particular concentration or minoring in another field, it may be difficult for the student to complete all the requirements for the Systems Engineering degree and related fields because of gaps in the student's background or difficulties in sequencing courses with pre-requisites. In such cases, the Systems Engineering Program allows an M.Eng. student to pursue a third semester of study, provided certain conditions are met.

A student who wishes to pursue a third semester of study in the Systems Engineering on-campus program must notify the Director of M. Eng. Studies **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 \(PDF\)](#) reflecting this plan**. The plan must consist of **12 or more credit hours in the third semester**, at least 3 of which are to be taken for a letter grade in approved engineering electives. This plan must be approved by the student's advisor and the Director of M.Eng. Studies 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.

Distance Learning (DL) Program

The distance learning program is designed to be completed within 2-3 years, however, a student may take up to 6 years to complete the program.

Degree Requirements

Required Courses

The following courses are required for the M.Eng. DL degree in Systems Engineering:

SYSEN 5100	Model Based Systems Engineering	(Fall, 4 credits)
SYSEN 5200	Systems Analysis Behavior Optimization	(Spring, 3 credits)
SYSEN 5900	Systems Engineering Project	(Fall and Spring, 6 to 8 credits total)
CEE 6910	Principles of Project Leadership	(Spring, 3 credits)
SYSEN 5920	Sys Eng Management for Virtual Teams	(Fall, 1 credit)
SYSEN 5940	Creativity/Innovation within Sys. Eng.	(Spring, 1 credit)

Total credits for required courses		18 to 20
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Elective Courses

Since a minimum of **30** credits are required for the M.Eng. Degree, **10 to 12** credits of electives will be needed, and a list of pre-approved distance learning electives is available on the [Systems Engineering website](#).

The electives are grouped into the following categories with the requirements described:

Group	Requirement/Restriction
Modeling and Analysis	At least one course must be taken from this group (3 to 4 credits)
Applications	At least one course must be taken from this group (3 to 4 credits)
Management	No more than one course may be taken from this group
Seminar	No more than one course each semester may be taken from this group, for a maximum of two courses in total

Your advisor **must** approve the electives you select to ensure a well-rounded program of study. We will also allow up to 9 transfer credits to be used towards your degree if they have not been used for any other degree and upon program approval.

SYSEN 5920 – Systems Engineering Management for Virtual Teams

SYSEN 5920 is the first one-week, on-campus module for Distance Learning students. It is held typically during the first week of class in the Fall semester.

SYSEN 5940 – Creativity and Innovation within Systems Engineering

SYSEN 5940 is the second one-week, on-campus module for Distance Learning students. It's typically held the first full business week after Memorial Day weekend, but the date may vary.

Exam Proctoring

Exam proctoring is the process in which guidelines are put in place for the Systems Engineering Distance Learning students to complete the program/ course(s) exams from their current locations (not on Cornell Campus in Ithaca, NY) while still adhering to the accreditation standards.

The student is asked to select a 3rd party to supervise the administration of each of their exams. The position of Proctor is not a paid employee position although it may be carried out by Cornell employees as part of their position duties. Past Cornell students are encouraged to become Proctors but Proctors cannot be currently taking any courses at Cornell. Proctors also may not be relatives, employees, or under the working supervision of the students. The same person may be a Proctor for several students and for several courses provided that there is no overlap in the examination times for the exams that the Proctor is overseeing. Students are asked to submit their selected proctor at least 48 hours prior to each of the exam dates. The Systems Engineering Program Faculty or Staff reserves the right to reject any potential Proctor for any student or course, if a Proctor is rejected, the course instructor and the affected students(s) will work closely with the Distance Learning Coordinator to establish an acceptable Proctor for the student as soon as possible and prior to the examination time.

Exams for distance learning students are required to be completed within 24 hours of the on-campus schedule exam timeframe. An electronic copy of the exam, the proctor verification form, and any exam restrictions and/or instructions is emailed to the proctor. Both the student and the proctor are required to sign the "[Exam Proctoring Verification Form](#)" attesting to the [Cornell Code of Academic Integrity](#) was upheld.

Immediately upon completion, the SAME DAY, the proctor will return the finalized exam and signed proctor verification form electronically or by fax and will place the hard copy of the completed exam and all accompanying documentation in the mail to the attention of the Systems Engineering office, 204/ 206 Rhodes Hall. The exams are both shared with the faculty and teaching assistants for grading and kept on file for the duration that adheres to the Cornell University Record Retention policy. To ensure that there are no copies of the exam in anyone else's possession, students are prohibited from keeping any exams or leftover exam materials – destroy any leftover exam materials, electronic and/ or hard copies.

Graded exams are returned to the student electronically or can be found through the course Black board site. The grading criteria are identical for distance learning students as for on-campus students.

Transferring from the On-Campus Program to the Distance Learning Program

Students who wish to transfer from the on-campus program to the distance learning program who have not yet completed SYSEN 5100 will be required to participate in SYSEN 5920. Students who have not yet completed CEE 5900 and their project will be required to participate in SYSEN 5940. Other student's situations will have to be examined on a case by case basis. When transferring from OC to DL a student will also need to submit a General Petition for approval to waive the on-campus modules (SYSEN 5920 & SYSEN 5940). Approval will be granted by the Director of MEng Studies

Students must complete at least one semester in full time status as an M.Eng. student before switching to the DL program. A Cornell early admit student may begin their M.Eng. coursework in their final semester as an undergraduate student, but they must complete one full semester as an M.Eng. student alone before they would be eligible to transfer to the DL program. Students will not be able to transfer back to on-campus once they've transferred from OC to DL

A [Systems Engineering General Petition \(PDF\)](#) must be submitted to switch between the on campus and the distance learning program.

Projects

M.Eng. students must complete a project as part of their degree requirements. Unlike courses, projects must typically be applied to before a student may enroll in the project. Details on how to apply for a specific project can be found either via MEng Project Repository or via the contact person listed on project's Portal listing. Once accepted to a particular project, students typically enroll in that project as an actual class over two semesters. At the end of their project, the student must complete and submit a project report to both their project class instructor for grading, and to our program office (for review by the Director of M.Eng. Studies) to ensure that it satisfies the Systems Engineering project requirement as outlined in the Systems Engineering Project Requirements.

This document specifies required content, deadlines, formats, and submission procedures for the M. Eng. in Systems Engineering project report as a requirement for graduation. Keep in mind that this report must be completed in addition to whatever submission your project advisor requires to satisfy your grade for their class. If allowed by the project advisor, project reports may be submitted as group reports.

Systems Engineering Content of the Project Report

The M. Eng. Systems Engineering project report must demonstrate how your project has met the Systems Engineering Project Requirements (See Appendix C).

For most projects' reports, there will naturally be sections on customer and the context analysis, requirements analysis, consideration of alternatives, analysis, a management plan, risk analysis, and so on. In the rare case that your project does not follow this pattern, you can demonstrate you have met the System Engineering Project Requirement by including in your report a supplement summary of your systems engineering work. This summary must be a minimum of 5 pages (1.5 spaced, 12 point font), excluding figures and tables, and be of interest to an audience of systems engineers. For example, you could describe how you tailored the systems engineering process (SYSEN 5100) to meet the needs of your project or provide a review of specific systems engineering techniques (SYSEN 5200) which you applied.

Systems Engineering Report Draft

If your project is one of the pre-approved projects directly run under the Systems Engineering program (i.e., your project course number is SYSEN 5900), then the draft requirement is waived.

If your project is not one of the pre-approved projects directly run under the Systems Engineering program you must submit a draft outline by the first day of classes after Spring Break. The draft outline should be at least 3 pages (1.5 spaced, 12 point font, excluding tables & figures) and indicate what kinds of topics and tools will be addressed in the final report. The purpose of this draft outline is to help ensure that the systems engineering content of your report is likely to meet the Systems Engineering Program's graduation requirements.

Additionally, if your project is not one of the pre-approved projects directly run under the Systems Engineering program, in your final report you must highlight or clearly indicate which pages or sections of the report you believe satisfy the Systems Engineering content requirement as this will enable the reviewer to make a rapid decision in your favor. Failure on your part to clearly identify the systems engineering content may result in the rejection of your report.

Submission of Your Final Report

The Systems Engineering program reserves the right to consider the quality of any report and supplements in their determination of a student's eligibility to graduate.

Submit a PDF version of your final report to the Systems Engineering program office via the Graduate Field Assistant. If you have concerns about satisfying this requirement, you may contact us but we cannot guarantee that other arrangements can be made. A team representing one project may submit a single report for our purposes, however, keep in mind that it is up to the faculty member as to whether they will accept one report or separate reports from the team for their grade for the course.

Policies and Procedures

Academic Advisors

Students will be assigned an academic advisor from the Systems Engineering field. New students must meet with their assigned academic advisor within the first two weeks of class to review their course selections and receive their signed approval on the student's proposal form, although it is highly recommended that students make every effort to meet with their academic advisor as soon as possible during their first week.

Open to all Systems Engineering students, general advising hours with Systems Engineering faculty are also available throughout the first week of classes. Although students are also highly welcome to use these advising hours, these meeting cannot take the place of the required meeting with the official academic advisor, unless under special circumstances approved by the program.

Student's official academic advisors are also required to sign any general petitions submitted to the Systems Engineering program for the program's further review.

Petitioning

Students may submit a Systems Engineering General Petition to request to take a class which is not on the pre-approved elective list and count it toward their degree requirements.

Student must submit a [Systems Engineering General Petition \(PDF\)](#) to switch from the on campus to the distance learning program.

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. Students must complete a [College of Engineering Petition](#), submit an official transcript for these credit hours to be considered and a course description and syllabus which will be used by the MEng Director to approve. Transfer creds are only accepted by accredited institute/university. In addition, a grade equivalent to 2.50 or above is required for each course transferred from outside of Cornell which counts for credit towards the degree. The program reserves the right to accept or reject any credits, or other degree requirements, they see appropriate towards a student's degree. Except under clearly established extenuating circumstances, credit toward the Master of Engineering degree will not be awarded for any course in which the candidate received a grade below C-. Additional criteria for completing degree requirements may be established by the department.

Academic Standards

The intellectual accomplishments required for the M.Eng. degree are not measured solely through the satisfaction of routine requirements. Standards are defined and maintained through the formally constituted departments of the faculty. All students are expected to adhere to the provisions of Cornell's [Code of Academic Integrity](#) and all other university policies. Regarding their academic programs, students should particularly review [University Policy 1.2](#) on Academic Misconduct and [University Policy 4.6](#) on Standards of Ethical Conduct.

Academic Misconduct

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.

Good Standing

A grade-point average of 2.50 or above is required for all Cornell courses which count for credit towards the degree.

Completion of Degree Requirements

A grade-point average of not less than 2.50 is required for all courses which count for credit towards the degree (noting that this includes courses transferred from outside of Cornell). Except under clearly established extenuating circumstances, credit toward the Master of Engineering degree will not be awarded for any course in which the candidate received a grade below C-. Additional criteria for completing degree requirements may be established by the department.

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 Gannett Health Center. 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 the Gannett Health Center 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 GFA 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.

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.

Tuition and Financial Aid

Financial Aid

Financial aid awards offered through our program are only available to on-campus students and are quite limited. Financial aid awards offered by the College of Engineering are made in the spring, so students must apply by February 1st to be considered for these awards. Distance learning students are only eligible for the Knight Scholarship.

On-Campus GTS (Grader) Appointments

All TA appointments are offered exclusively to Ph.D. students in the College of Engineering. The only option for an M.Eng. student is to be appointed in a GTS (Graduate Teaching Assistant) position (AKA a “grader”). These appointments are only available to on-campus students. The program may identify highly qualified students to serve as a grader in advance of the start of each semester.

Distance Learning Tuition and Billing

Distance learning students are charged tuition based on the number of credit hours in which they enroll each semester. Thus, their bill is generated at the time they register for classes. The exact rate per credit hour may vary each year based on the tuition rate set by the Cornell Board of Trustees. For international DL students, the total to certify should be the amount that the students need to certify for their entire program. This means that the tuition would be the per credit charge times the number of credits (30) they will take over the duration of their program.

Please refer to [the billing deadlines website from the Office of the Bursar](#) to determine when their bill will be generated and due.

Other Campus Resources

ISSO

The International Students and Scholars Office (ISSO) assists international students, academic staff and their families by advising on US federal immigration, tax and labor regulations, by providing counseling on personal, academic and cultural matters, and by promoting cross-cultural awareness in the Cornell community.

Visit their [website](#) for information on student visas, working in the US, travel, and inviting family to attend commencement events.

One-Year MBA Program

The Master of Engineering is a professional degree, designed to give engineers more advanced engineering skills along with teamwork and communication skills that enable them to move into engineering careers at a higher level. The MBA adds knowledge and skill in all the business functions along with a general management perspective. The combination of these degrees prepares engineers to advance through product development and engineering management roles to higher levels of business leadership.

The MBA/MEng is a sequential degree program. Students complete their MEng degree in the first year. Then they join the One-Year MBA class for three semesters (Summer, Fall, and Spring) of coursework at the Johnson College of Business.

Cornell University offers the Lester B. Knight M.Eng./MBA Scholarship to a selected applicants pursuing the M.Eng./MBA Sequential Degree Program. This scholarship is the result of a generous gift by Mr. Lester B. Knight and the continued support of his family. Both domestic and international students are eligible to apply for this scholarship, and students must apply as part of their application for admission to either program.

Career Services

Cornell Engineering Career Center serves students in the College of Engineering by providing resources for career exploration, development, and planning.

To discuss job search strategies, networking, job offer negotiation, or other general career questions, please visit their office in 201 Carpenter Hall. To get started on your job search, begin working through the [Applications & Interviews Workbook \(docx\)](#), and [Personal Networking Strategy Workbook \(docx\)](#), available on the [Cornell Engineering Career Center website](#).

Student Support

Cornell is a caring community where you'll find people and organizations that can help you work through problems big and small, and support you in cultivating your physical and emotional health and well-being. Learn more at the [Caring Community website](#).

Cornell Health

Cornell Health provides medical care, counseling and pharmacy services for undergraduate, graduate and professional students on Cornell's Ithaca campus.

Furthermore, Cornell Health's Counseling and Psychological Services staff provides professional counseling (individual and group), psychological care, support, consultation, and referrals to more than 3,000 students each year. Counselors also offer informal walk-in consultation at various locations around campus through its popular "Let's Talk" service.

Visit the [Cornell Health website](#) or visit their office on campus at 110 Ho Plaza for more information about:

- Counseling and psychiatry services
- How to make an appointment
- Hours
- Cost for Service
- Confidentiality
- Peer-to-Peer Support

Empathy, Assistance and Referral Service

EARS (Empathy, Assistance and Referral Service) offers nonjudgmental, short-term counseling by skilled student volunteers who have undergone extensive training and have passed through a rigorous selection process. EARS counselors can provide referrals for services within the Cornell and Ithaca communities. Learn more at [EARS website](#).

Students can also contact the Office of Graduate Student Life for any of the following reasons: resources for academic support, assistance in navigating their educational program, referrals to campus services, support for personal development, and any other concerns that are impacting your ability to succeed.

Appendices

Appendix A. Cornell University ENGRD 2700 Basic Probability and Statistics for Engineers Contents

- 1. Introduction and Motivation**
 - a. Intro, What the course is about, Overview
- 2. Exploratory Data Analysis: Describing Sample Data**
 - a. Graphical Displays
 - b. Numerical summaries
- 3. Counting and Probability**
 - a. Counting: Product rule, sampling with replacement, without, combs, practice problems
 - b. Probability: Elements, Events, Probability functions, specifying, properties, equal probs, hypergeometric
- 4. Conditional Probability, Bayes' Rule and Independence**
 - a. Cond Prob, Law of total prob, Bayes rule, independence
- 5. Random Variables**
 - a. Definition, Probability mass function, Cumulative distribution function, expectation, variance
- 6. Special Discrete Random Variables**
 - a. Bernoulli, binomial, Poisson, geometric, hypergeometric
- 7. Continuous Random Variables**
 - a. Density, cumulative distribution function, percentiles, expectation, variance,
- 8. Special Continuous Random Variables**
 - a. Uniform, exponential, Weibull, beta, gamma, normal, lognormal
- 9. Probability Plots**
- 10. Multiple Random Variables**
 - a. Definition, independence, conditional distrib, more than two
- 11. Covariance and Correlation**
 - a. Expectation, covariance, correlation
- 12. Sampling Distributions**
 - a. Inference, sampling, sums and averages, CLT
- 13. Interval Estimation**

- a. +Confidence intervals for mean, for proportion, two indep samples, two props, paired samples, CIs for variance

14. Hypothesis Tests

- a. Normal means, Type I and II errors, relation to confidence intervals, two populations

15. Regression

- a. Simple linear confidence intervals and testing for β_1

16. More Regression

- a. Transformation of vars
- b. Multiple linear
- c. Logistic regression

Appendix B. Forms

Proposal Form – On-Campus

Proposal Form – Distance Learning

Systems Engineering General Petition Form

**Systems Engineering M. Eng. – On Campus
PROPOSAL FORM**

Student Name _____ Net ID _____

Expected Graduation Date _____ Date Submitted _____

Fall Semester				
Course #	Name	Credits	Group	Comments

Spring Semester				
Course #	Name	Credits	Group	Comments

Total Fall Credit Hours _____

Total Spring Credit Hours _____

Total Credit Hours ____ *(total credits should be greater than or equal to 30)*

APPROVAL (to be obtained by student): **Faculty Advisor** _____ **Date** _____

Return to Systems Engineering Program Office, 202 Rhodes Hall

APPROVAL (upon submission): **Director of M.Eng. Studies** _____ **Date** _____

Systems Engineering M. Eng. – Distance Learning

PROPOSAL FORM

Student Name _____ Net ID _____

Expected Graduation Date _____ Date Submitted _____

Fall Semester				
Course #	Name	Credits	Group	Comments

Spring Semester				
Course #	Name	Credits	Group	Comments

Fall Semester				
Course #	Name	Credits	Group	Comments

Spring Semester				
Course #	Name	Credits	Group	Comments

Total Fall Credit Hours _____

Total Spring Credit Hours _____

Total Credit Hours _____ *(total credits should be greater than or equal to 30)*

APPROVAL (to be obtained by student): Faculty Advisor _____ Date _____



Cornell University
College of Engineering
Systems Engineering Program

General Petition

Name _____

Date _____

Expected Grad Date _____

Advisor _____

Requested Action:

Reason:

Advisor approval _____

Date _____

DGS approval _____

Date _____

Please return completed form to SE GFA, 202 Rhodes Hall

Master of Engineering Systems Engineering

Project Report Requirements

SPRING 2017

This document specifies required content, deadlines, formats, and submission procedures for the M. Eng. in Systems Engineering project report as a requirement for graduation. Keep in mind that this report must be completed in addition to whatever submission your project advisor requires to satisfy your grade for their class.

Systems Engineering Content of the Project Report

The M. Eng. Systems Engineering project report must meet *a systems engineering content requirement*. As a standard to ensure you can demonstrate you have met this requirement, your report must include *a supplement summary of your systems engineering work* that is at least three pages, excluding figures and tables (double spaced, 12 point font) and be of interest to an audience of systems engineers.

If your project report follows the systems engineering process, there will naturally be sections on customer analysis, requirements analysis, a management plan, risk analysis, and so on. In that case, you would not need to provide this additional supplement. However, not all project reports follow this pattern; thus, for the “Systems” designation, you may need to provide the supplement. For example, you could describe how you tailored the systems engineering process (SYSEN 5100) to meet the needs of your project or provide a review of specific systems engineering techniques (SYSEN 5200) which you applied.

Draft Approval and Submission

The systems engineering content of your report must be reviewed by the Systems Engineering program in a draft prior to submission of your final report.

If your project is one of the pre-approved Systems Engineering projects (i.e., your project course number is SYSEN 5900/5960/5700), then the draft requirement is waived. Otherwise, you must highlight or clearly indicate which pages or sections of the report you believe satisfy the Systems Engineering content requirement as this will enable the reviewer to make a rapid decision in your favor. Failure on your part to clearly identify the systems engineering content may result in the rejection of your report. The Systems Engineering program reserves the right to consider the quality of any report and supplements in their determination of a student’s eligibility to graduate.

Submit the draft the Systems Engineering program office Marcella Purcell, GFA, at mk594@cornell.edu **at least three (3) business days prior** to submission of the final report. If you have concerns about satisfying this requirement, you may contact us to make arrangements. A team representing one project may submit a single report for our purposes, however, keep in mind that it is up to the faculty member as to whether they will accept one report or separate reports from the team for their grade for the course.

Final Report Submission

Submit a PDF version of your final M. Eng. report to the Systems Engineering program office via Marcella Purcell, GFA, at mk594@cornell.edu **no later than May 23rd**.