# **COLLEGE OF ENGINEERING**

## **Overview**

This is a most exciting time to be in the College of Engineering at Cornell, with twenty-first century engineering is at the epicenter of an explosion in new knowledge. Revolutionary discoveries in science, engineering, medicine, mathematics, and the social sciences have not only changed the way we interact with the world around us but have blurred the boundaries between academic disciplines. Engineering is the catalyst for bringing disciplines together and pushing forward the amazing advances made possible by those collaborations.

This interdisciplinary approach requires depth and breadth that is intrinsic to Cornell and unparalleled at other institutions. Cornell Engineering is one of a constellation of Cornell colleges and schools that make up a world-class research university. Engineering draws from, and contributes to, the university's strengths in fields as diverse as medicine, veterinary sciences, and the life sciences, and we leverage that excellence through twelve academic units within engineering.

The impact of first-rate research on the educational enterprise is immeasurable. Our engineering students, immersed in this atmosphere of collaborative discovery, learn from and work with faculty members who are pioneering new knowledge at the forefront of their fields. Participation in this research-enhanced environment opens a world of possibilities for students and produces inspired individuals: critical thinkers and creative leaders to address the opportunities and challenges of tomorrow.

Ezra Cornell sought to found an institution where "any person can find instruction in any study." Cornell Engineering is a showcase of his vision; the breadth of our program is nationally unique.

Centers, facilities and programs of particular interest to the engineering community can be found at one of our many Engineering web pages.

Website: engineering.cornell.edu (https://www.engineering.cornell.edu/)

# **General Information**

## Administration

- Lynden Archer, Dean, engineering\_dean@cornell.edu
- Hadas Kress-Gazit, Associate Dean for Diversity and Academic Affairs, academic\_affairs@engineering.cornell.edu
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- Stephen Smith, Associate Dean for Alumni Affairs and Development, sjs422@cornell.edu
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- Kathryn Caggiano, Associate Dean of Masters Engineering Programs, kec4@cornell.edu

• Erica Dawson, Assistant Dean and Director of the Selander Center of Engineering Leadership, erica.dawson@cornell.edu

## **Engineering Advising**

180 Rhodes Hall, (607) 255-7414, Engineering Advising Website (https:// www.engineering.cornell.edu/advising/)

Engineering Advising promotes a collaborative advising process of expansive inquiry, critical thought, and personal responsibility, thereby empowering the individual student to make informed decisions regarding their academic and career goals.

Engineering Advising strives to:

- Ensure that students have the information, counsel, and resources to succeed;
- Offer multiple modes of access for students to connect with professional academic advisors;
- Provide accurate and current information to current Engineering undergraduate students, prospective Engineering undergraduate students, and other interested students regarding major, College, and University degree requirements, policies, procedures, rules, and regulations;
- Work in partnership with Engineering faculty advisors, peer advisors, administration and staff, as well as faculty from other Cornell colleges and schools and various other University entities, in order to promote student success within the College;
- Work with students in an environment emphasizing the developmental process of student growth and success;
- Keep abreast of relevant academic advising, student development, and related research and literature to constantly improve our services to students;
- Promote the shared responsibility of academic advising between the student and the advisor;
- · Evaluate and assess our programs and services.

Professional Academic Advisor responsibilities:

- Supplement advising provided by faculty advisors and major departments;
- Focus on first- and second-year unaffiliated students, with continued access for upper-class students;
- Focus primarily on issues related to the Engineering Common Curriculum and successfully affiliating with a major;
- · Provide specialty advising for.
  - Liberal Studies
  - · Study abroad/international experiences;
  - Pre-health careers and how to integrate requirements into the curriculum;
  - · Transferring internally (between colleges) within Cornell;
  - · Student disability services;
  - Major exploration including the Independent Major and the affiliation process;
  - Minors, double majors;
  - · Transfer credit, petitions, and curricular substitutions;
  - · The criteria for good academic standing;
  - Voluntary, required, and health leaves of absence and withdrawals.

- Coordinate the Academic Concerns program; supporting students having academic or personal difficulties and referring students to appropriate campus resources;
- Provide case management for students who are in need of academic consideration and/or in distress;
- · Protect the privacy of student education records as per FERPA.

Engineering Advising implements the academic policies of the College Curriculum Governing Board (CCGB). The professional academic advisors provide a variety of advising services and programs to assist students in achieving their undergraduate academic and personal goals. Engineering Advising and CCGB evaluates good academic standing for unaffiliated students at the end of each semester and supports students through the affiliation process during sophomore year.

## **Engineering Registrar**

170 Rhodes Hall, (607) 255-7140, Engineering Registrar Website (https://www.engineering.cornell.edu/registrar/)

The Engineering Registrar's Office is the main repository of all engineering undergraduate and Master of Engineering student records.

The Registrar's Office oversees all course enrollment, grading, course scheduling, room assignments, and examination scheduling for the College of Engineering. It is responsible for maintaining current student information on the university's student data systems, including all grade, enrollment, affiliation and transfer credit changes. Additionally, the office manages diploma ordering and official degree posting for all graduating engineering students, ensuring that all requirements are satisfied for the Bachelor of Science degree and the Master of Engineering degree. The office also provides student verification letters, Dean's List posting, petition processing, and assistance with other student registration issues. Official documents relating to academic matters are filed as part of each student's permanent record and held there.

Students seeking an official transcript, unofficial transcript, or certifications of enrollment or degree, may obtain them through their Student Center account or by visiting the Office of the University Registrar (https://registrar.cornell.edu/) in 245 Day Hall.

## **Engineering Communications Program**

463 Hollister Hall, (607) 255-7196, Engineering Communications Program Website (https://www.engineering.cornell.edu/engineeringcommunications-program/)

The Engineering Communications Program (ECP) provides instruction in engineering, technical, and non-technical communication, oral presentation, the use of visuals, communication ethics, and group and/or team interactions.

ECP believes that communication is an important way of acting in the world. And, because that world is constantly changing, professionals in engineering must be prepared throughout their career to learn how to communicate. Consequently, the most important objective is to enable undergraduate engineering students to develop strategies for learning to learn how to act effectively and efficiently as communicators.

Enrollment in ECP courses is typically around 25 students per section. Courses taught by the ECP are discussion classes. Students' work and participation receives abundant response, iterative cycles for improvement, and conferences are frequent. Almost every course offered by ECP (which are designated as ENGRC) will involve student teams. ECP members are available to consult with the faculty teaching communication-intensive courses, and anyone else interested in including communication instruction in their courses.

## **Office of Inclusive Excellence**

102 Hollister, (607) 255-6403, Office of Inclusive Excellence (https://www.engineering.cornell.edu/office-of-inclusive-excellence/)

The Office of Inclusive Excellence advances Cornell Engineering's core values by fostering an inclusive learning environment where all students feel welcomed, supported, and empowered to reach their full potential. We strive to attract and sustain a diverse community of scholars and provide student-centered, collaborative experiences that enhance learning, self-efficacy, and belonging. Through evidence-based programs, strategic partnerships, and continual assessment, we equip engineers to thrive in diverse teams and to innovate solutions to pressing problems, including humanity's grandest challenges. Committed to innovation and knowledge-sharing, we also offer consultation on inclusive practices to strengthen college communities at Cornell and beyond.

We also advise/co-advise six affinity professional engineering student organizations:

- American Indian Science & Engineering Society (https://aises.org/ chapters/) (AISES)
- National Society of Black Engineers (https:// nsbe.engineering.cornell.edu/) (NSBE)
- Society of the Advancement of Chicano/Hispanic & Native American Scientists (https://www.facebook.com/CornellSACNAS/) (SACNAS)
- Society of Asian Scientists and Engineers (https:// cornellu.wixsite.com/sase/) (SASE)
- Society of Hispanic Professional Engineers (https:// www.shpe.cornell.edu/) (SHPE)
- · Society of Women Engineers (https://swe.cornell.edu/) (SWE)

Academic Excellence Workshops are taken in conjunction with core engineering courses including math, computer science, and chemistry. The 1-credit AEWs are weekly two-hour collaborative learning sessions. Designed to enhance student understanding, they feature peer-facilitated group work on problems at or above the level of course material.

The Office of Inclusive Excellence promotes equitable access to high quality, mentored research experiences that prepare Cornell Engineering students for impactful careers by offering workshops to empower students to successfully engage in research, providing funding for undergraduate research experiences, and supporting research mentors. The office's Undergraduate Research Grants facilitate paid opportunities for students to obtain hands-on research experience with a faculty mentor. Students and faculty may apply for funding to cover student wages and expense costs for the fall, spring, and summer terms.

*Tutors-on-Call*, offered through the Office of Inclusive Excellence provides free one-on-one peer tutoring for engineering students in many core courses, including math, chemistry, physics, computer science, statistics, and some distribution and upper-level courses.

*Engineering Teaching Assistant Development Program* provides training sessions, development resources, and a midterm evaluation process for both graduate and undergraduate teaching assistants in Cornell Engineering.

## **Engineering Career Center**

201 Carpenter Hall, (607) 255-5006, Engineering Career Center Website (https://www.engineering.cornell.edu/career-center/)

At the Cornell Engineering Career Center, we're dedicated to empowering students at every stage of their academic journey to achieve lifelong career success. Whether you're a first-year undergraduate or a Ph.D. candidate, we're here to support you in exploring your interests, honing your skills, and navigating your career path in the field of engineering.

#### Our Services:

- Personalized Career Advising: Our experienced career advisors are here to guide you through every step of your career development journey, from exploring your interests and talents to preparing for interviews and negotiating job offers.
- Professional Development Opportunities: Take advantage of Cornell's wide range of career workshops, employer information sessions, and networking events designed to enhance your professional skills and expand your industry knowledge.
- Job Search Resources: Access our comprehensive career planning tools and resources, including job postings in Cornell Handshake, resume reviews, and interview preparation assistance, to help you secure a career-relevant experience, internship/co-op, or full-time position
- Employer Relations: We collaborate with Cornell Career Services to build and maintain relationships with employers seeking to recruit Cornell Engineering talent.

#### Specialized Support:

- For Master of Engineering (M.Eng.) Students: Meet with the M.Eng career advisors (https://www.engineering.cornell.edu/career-center/ meng-career-resources/) who offer tailored support and resources specifically for M.Eng. students, including the opportunity to enroll in ENGRG 5351: Professional Development for M.Eng. Students.
- For Doctor of Philosophy (Ph.D.) Students: The Cornell Graduate School (https://gradschool.cornell.edu/) offers additional professional development for future faculty and academic careers as well as careers outside of academia.
- For Cornell Tech Students: Utilize the services provided by Career Management (https://tech.cornell.edu/career-management/) at Cornell Tech to access career support tailored to your program and career goals.

#### Co-operative Education Experiences:

With department and college approval, eligible undergraduate students may participate in an engineering co-op (https://career.cornell.edu/ resources/engineering-co-operative-education-experience-co-op/) during a fall or spring semester.

#### Academic Credit for Employment

The College of Engineering does not award academic credit for employment, including internships and co-operative education experiences. On occasion, an employer may require a student to receive academic credit for work performed. The College is unable to certify any employer documents which state that the College will award academic credit for a work experience. The Engineering Career Center can provide a letter to the employer stating this policy. Some students may arrange to do an independent study for credit, based on an engineering-related work experience, with a faculty member during the semester following the work experience. It is the student's responsibility to arrange the independent study with a faculty member and to register for the independent study credit.

#### Verification of Student Status for Employment:

Students may obtain verification of enrollment from the Registrar by completing a request for Release of Information (https://www.engineering.cornell.edu/dynamic-forms/student-release/).

#### Employment as a Degree Requirement:

On occasion, an employer may request verification that you are required to complete an internship/co-op as part of your degree. The College of Engineering does not require an internship/co-op for degree completion, however, individual courses, such as CS 4997 Practical Training in Computer Science and ENGRG 4998 Engineering Practical Training, may require a prior work experience.

#### Experiential Learning Agreements:

Faculty, staff, students and experiential learning providers are encouraged to refer to guidance from Cornell Career Services (https:// www.engineering.cornell.edu/career-center/) when an employer is requesting that Cornell serve as a contracting entity or signatory to a student placement, internship, or other experiential learning agreement.

#### Funding:

A variety of funds and grants are available that can assist students in funding professional development, summer experiences, research, and other opportunities. You can find these by searching for "fellowships and funding" on the Experience Cornell (https://experience.cornell.edu/) website.

#### U.S. Work Authorization:

If you're an international student requiring Optional Practical Training (OPT) or Curricular Practical Training (CPT), refer to the Office of Global Learning (https://international.globallearning.cornell.edu/employmentand-taxes/f-1-cpt/) for the most up-to-date information on OPT and CPT.

Ready to take the next step in your career journey? Visit us at the Cornell Engineering Career Center to explore our services, schedule an advising appointment, and connect with employers seeking Cornell Engineering talent.

## **Engineering Leadership Program**

Breazzano Family Center, 4th Floor, 607-254-5708, Selander Center for Engineering Leadership Website (https://www.engineering.cornell.edu/ selander-center-engineering-leadership/)

Engineering leaders do more than solve technical problems—they bring people together to turn ideas into action. At the Selander Center for Engineering Leadership, we help students develop the skills and mindsets to lead with integrity, communicate effectively, and collaborate toward a shared purpose.

Our mission is to prepare students to take on complex, real-world challenges with knowledge, insight, and courage. We offer a range of programs to support students across all stages of their leadership journey—from foundational skills to advanced leadership practice. Our approach blends evidence-based leadership and management principles with reflection and experiential learning.

Cornell Engineering Leaders are known for their curiosity, self-awareness, accountability, compassion, and drive. They lead with purpose—and they lead by example.

## **Cornell Engineering Student Project Teams**

Cornell Engineering's Student Project Teams provide an outstanding opportunity for experiential learning in the form of multi-disciplinary teams working on complex problems. Over 1,700 students, from all 14 engineering majors and from across Cornell's seven undergraduate colleges/schools, are engaged in the program, providing students with opportunities to hone leadership, technical, and professional skills alongside teammates from across the college and university. Cornell Engineering currently supports 36 Student Project Teams, ranging from design and build teams to social impact programs to app and web development. Each SPT is divided into several sub-teams, so beyond sharpening technical skills, students from across Cornell gain experience and expertise in business, design, marketing, fundraising, education, operations, and logistics. Faculty advisors and a dedicated professional staff advise and support each team and the overall program. This program is unique in the way it complements the academic curriculum - real-world lessons learned through hands-on project work are solidified through critical reflection and acknowledged with course credit. The symbiosis of student leadership, faculty and staff advising, and integration with the curriculum offers students a rich, multifaceted learning opportunity.

Visit www.engineering.cornell.edu/teams (https://

www.engineering.cornell.edu/students/undergraduate-students/specialprograms/project-teams/) to learn more about the current project teams.

## **McCormick Teaching Excellence Institute**

190 Rhodes Hall, (607) 254-6514, McCormick Teaching Excellence Institute website (https://mtei.engineering.cornell.edu/)

The College of Engineering is committed to providing an outstanding education for its students. In support of this mission, Engineering's James McCormick Family Teaching Excellence Institute (MTEI) collaborates with faculty in developing innovative and effective teaching methods and in improving course design, supports faculty efforts in engineering education research, and assists faculty with the education or outreach components of grant proposals. MTEI plays a lead role in classroom redesign, innovation and support.

MTEI gives workshops and provides individual support to faculty on all aspects of education, including development of course syllabi, the use of technology in the classroom, active learning, learning styles, and assessment of student learning. MTEI runs a robust mid-semester feedback program enabling students to give anonymous feedback to their professors during the semester.

The MTEI collaborates with the university's Center for Teaching Innovation on various aspects of teaching support.

## **International Programs**

An international perspective, sensitivity to other cultures, and the ability to read and speak a second language are increasingly important for today's engineers. As a result, the College of Engineering encourages students to study or work abroad during their undergraduate years. Students can participate in a variety of study abroad and international education opportunities (https://experience.cornell.edu/) and are encouraged to contact the Office of Global Learning at abroad@cornell.edu and the Engineering Advising office at coe\_studyabroad@cornell.edu for more information.

## Master of Engineering Programs Support Team (MPST)

Carpenter Hall, M.Eng. Programs webpage (https:// www.engineering.cornell.edu/meng/)

Led by the Associate Dean for Master of Engineering (M.Eng.) Programs, the M.Eng. Programs Support Team (MPST) provides leadership, guidance, support, and programming for the Ithaca-based M.Eng. community.

The MPST's scope spans Access (Marketing & Recruiting, Admissions, College-level Fellowships), Experience (New Programs, M.Eng. Program and Student Support), and Outcomes (Professional Development, Job Search Support, Alumni Engagement). In supporting these functions, the MPST partners with a wide variety of units within and outside of Cornell. Specific objectives include:

#### Access

- Promoting brand awareness to ensure the Cornell M.Eng. is globally recognized as a top professional graduate degree
- Supporting program efforts to attract and enroll high-quality students, including awarding College-level fellowships
- Ensuring M.Eng. programs conduct admissions in accordance with best practices that are consistent, legally compliant, and promote a positive experience for applicants

#### Experience

- Supporting the expansion of educational program offerings for traditional and non-traditional M.Eng. student populations
- Informing students about their rights and responsibilities, as well as resources and support available to them throughout their M.Eng. journey
- Hosting College-wide events, including Orientation, special seminars, and social events, as well as focus groups to provide opportunities for students to be heard
- Keeping abreast of the current policies and guidance impacting the M.Eng. Community and ensuring programs have the knowledge and resources they need to support their students
- Connecting students to resources to help them navigate academic and personal challenges
- Expanding the footprint of industry partners and supporting practitioner engagement in the M.Eng. experience

#### Outcomes

- Offering professional development courses to help M.Eng. students secure and succeed in high-quality jobs
- Providing career guidance and advising for M.Eng. students and recent graduates
- Administering the M.Eng. Exit Survey (semi-annually) to track outcomes and use feedback to improve the M.Eng. experience
- Promoting and facilitating alumni engagement in the M.Eng. experience

## Departments

Engineering has 12 Departments and Schools and one program, Systems Engineering.

The Departments of Computer Science and Information Science are in the Faculty of Computing and Information Science (CIS) but offer engineering majors. The Department of Biological and Environmental Engineering is in the College of Agriculture and Life Sciences (CALS) and offers engineering majors. Earth and Atmospheric Sciences is a joint department between Engineering and CALS.

Departments are linked from each of the pages below.

- Applied and Engineering Physics (https:// www.engineering.cornell.edu/aep/) (AEP)
- Biological and Environmental Engineering (https://cals.cornell.edu/ biological-environmental-engineering/) (BEE)
- Biomedical Engineering (https://www.engineering.cornell.edu/bme/) (BME)
- Chemical and Biomolecular Engineering (https:// www.engineering.cornell.edu/cbe/) (CBE)
- Civil and Environmental Engineering (https:// www.engineering.cornell.edu/cee/) (CEE)
- Computer Science (https://www.cs.cornell.edu/) (CS)
- Earth and Atmospheric Sciences (https:// www.engineering.cornell.edu/eas/) (EAS)
- Electrical and Computer Engineering (https:// www.engineering.cornell.edu/ece/) (ECE)
- Information Science (https://infosci.cornell.edu/undergraduate/infosci-majors/bs-information-science-systems-and-technology/) (IS)
- Materials Science and Engineering (https:// www.engineering.cornell.edu/mse/) (MSE)
- Operations Research and Information Engineering (https:// www.engineering.cornell.edu/orie/) (ORIE)
- Sibley School of Mechanical and Aerospace Engineering (https:// www.engineering.cornell.edu/mae/) (MAE)
- · Systems Engineering (https://www.engineering.cornell.edu/sys/) (SE)

## **College of Engineering Graduation Requirements**

## Undergraduate Study

Students in the College of Engineering spend most of their first two years of undergraduate studies in the Common Curriculum, which is administered by the College Curriculum Governing Board (CCGB) through the associate dean for undergraduate programs and Engineering Advising. By the end of their third semester, they typically apply to affiliate with an Engineering major and must be affiliated by the start of their fifth semester.

Criteria for affiliation with the majors are described in this section under "Affiliation with a Major". The Undergraduate Engineering Majors are listed on the College of Engineering Programs page (p. 11).

Many of the majors have a corresponding minor, in which the student can pursue a secondary interest if eligible. In addition, there are minors that cut across majors including applied mathematics, engineering management, engineering statistics, game design, artificial intelligence, information science, and business. See Engineering Minors section of the College of Engineering Programs page (p. 11) for a listing of Undergraduate Minors.

## Engineering Core Requirements - Engineering Major Engineering Majors

To receive the bachelor of science degree, students must meet the requirements of the Common Curriculum (outlined below) as set forth by the College of Engineering, including the requirements of their chosen major, as established by the school or department that administers the major. (Further explanation of the revised Common Curriculum and major flow charts are provided in the *Engineering Undergraduate Handbook*.)

Course Category	Credits	
Mathematics (major-specific)	14-16	
Physics (major-specific)	8-13	
Chemistry (major-specific)	4-8	
First-year writing seminars	≥6	
Engineering Communication <sup>1</sup>	1-3	
Computing	4	
Engineering Distribution		
a. One introduction to engineering (ENGRI)	3-4	
b. Two engineering distributions (ENGRD)	6-8	
Liberal studies distribution (6 courses min.)	≥18	
Advisor Approved electives	≥6	
Major program		
a. Major-required courses	≥30	
b. Major-approved electives	≥9	
c. Courses outside the major	≥9	
Two semesters of physical education and demonstration of proficiency in swimming (university requirement)		

Engineering-communication courses may simultaneously fulfill another requirement.

Total credits required for graduation vary by major (see Engineering Majors).

## Mathematics

The normal program in mathematics includes MATH 1910, MATH 1920, MATH 2930 or MATH 2940 depending on the major), and a major-specific math course for some majors. At least C- must be attained in these courses; if not, the course must be repeated immediately before the next course in the sequence is taken. Failure to achieve at least C- the second time will result in, at minimum, an automatic required leave of absence for one semester from the College of Engineering. Courses that are taken a second time do not yield additional credit toward a degree.

## **Physics**

The normal program in physics includes PHYS 1112, PHYS 1110, PHYS 2213, and PHYS 2214 or the corresponding honors courses (PHYS 1116, PHYS 1110, PHYS 2210, PHYS 2217, and PHYS 2218). Engineering students should attain at least C- in each math prerequisite of a physics course before taking the physics course (e.g., C- in MATH 1910 before taking PHYS 1112 and C- in MATH 1920 before taking PHYS 2213). Substitutions for PHYS 2214 are possible in certain majors. Please consult the Engineering Undergraduate Handbook (https://cornellengineeringhandbook.freeflowdp.com/ cornellengineeringhandbook/library/) for details.

## Chemistry

CHEM 2090 and CHEM 2091 is required. While the content of CHEM 2090 and CHEM 2091is the same as that of CHEM 2070 and span class="structuredcontent" college="all" contenteditable="false" department="CHEM" id="courseinline24" title="Inline Course - Double Click to Edit">CHEM 2071, Engineering students are expected to take CHEM 2090 and CHEM 2091. Typically, CHEM 2090 and CHEM 2091 is taken during the first year, but students who wish to first complete the physics sequence (PHYS 1112, PHYS 1110, PHYS 2213, and PHYS 2214, depending on the major) may postpone CHEM 2090 and CHEM 2091 until the sophomore year.

Students considering chemical engineering or a health-related career such as medicine must take CHEM 2090 and CHEM 2091 in the fall of their first year and CHEM 2080 and CHEM 2081 in the spring semester.

## Computing

Students must complete one Introduction to Computing course during either semester of the first year. Students can take either CS 1110 or CS 1112. Some majors may have a preference of either CS 1110 or CS 1112, however, either one will count toward the degree requirement.

## **First-Year Writing Seminars**

Each semester of their first year, students choose a first-year writing seminar from courses offered by over 30 different departments across the university. These courses offer the student practice in writing English prose and college level discourse within a small class (<20) setting.

## **Engineering Communications**

Students can fulfill the Engineering Communications Requirement using one of the options below. See the Engineering Communications Program website (https://www.engineering.cornell.edu/courses-requirements/ bachelor-science-requirements/engineering-communicationsrequirement/) for more information.

# Category A: Via the Engineering Communications Program Courses and Opportunities

## 1. Engineering Communication Program Courses

Courses in this category, offered by the Engineering Communications Program (ECP), develop communication skills in a variety of genres, including writing, presenting, multimodal forms, graphics, charts, posters, and other. These courses fulfill the Engineering Communication Requirement for Cornell's College of Engineering.

Code	Title	Hours
ENGRC 3025	Creating and Communicating Your Digital Professionalism	1
ENGRC 3026	Engineering Presentations and Expert Present	ce 1
ENGRC 3027	Cross-cultural Communications and Ethics in the Workplace	1
ENGRC 3340	Independent Study in Engineering Communications	1-3
ENGRC 3350	Organizational Communications for Engineers	s 3
ENGRC 3500	Engineering Communications	3
ENGRC 3700	<b>Communications Consulting for Engineers</b>	3

2. Complete a Communication-Intensive Co-op, listed as ENGRC 3024 This is an opportunity to combine work and academics. Some co-op students do a significant amount of writing and other communicative work on the job; under certain circumstances, a set of authentic work artifacts combined with on-site manager reviews and guide, reflective summary assignments with an ECP instructor will satisfy the Engineering Communications Requirement. This option does not count toward the Liberal Studies requirements for engineers. Students should begin organizing this request the semester prior to being on-site for the co-op or internship. Not offered AY 2025-2026.

3. Enroll in and pass ENGRC 3023

A one credit attachment to an engineering course that is not one of the officially designated W-I or C-I courses. CE instructors may occasionally wish to extend communication competencies with added work inside their course for a given semester so that it will fulfill the Engineering Communications Requirement. With approval from the College Curriculum Governing Board (CCGB) Subcommittee on Engineering Communications, instructors may have students coregister in ENGRC 3023, which may be taken more than once with different courses by permission of the engineering instructors. This option does not count toward the Liberal Studies requirement for engineers, even via petition. More information can be found at the Cornell Engineering website (https://www.engineering.cornell.edu/ courses-requirements/bachelor-science-requirements/engineeringcommunications-requirement/engrc-3023/).

To begin,& send an email to engrcomm\_info@cornell.edu, requesting the full ENGRC 3023 information packet. Please insert "3023 request" in the subject line.

Paperwork is due by the last Wednesday in January for the Spring semester.

## 4. Complete and Pass a One Credit Partner Course

The current options are below, and they require enrollment in the departmental course (usually three credits) and its corresponding ENRGRC course (one credit). The below courses do not count toward the Liberal Studies requirement for engineers, even via petition:

Code	Title	Hours
ENGRC 3120	Communications for Practical Tools for	1
	Data Science <sup>1</sup>	
ENGRC 3152	Communication for Game Development $^2$	1
ENGRC 3610	Communication for Transportation Engineerir 3	וg 1
ENGRC 4152	Communication for Advanced Game Development <sup>4</sup>	1
ENGRC 4590	Communications for Physical Design in Biological Engineering <sup>5</sup>	1

<sup>1</sup> 1cr partnered with ORIE 3120 Practical Tools for Operations Research, Machine Learning and Data Science

<sup>2</sup> 1 cr partnered with CS 3152 Introduction to Computer Game Architecture/INFO 3152 Introduction to Computer Game Design

<sup>3</sup> 1cr partnered with CEE 3610 Introduction to Transportation Engineering

<sup>4</sup> 1cr partnered with CS 4152 Advanced Topics in Computer Game Architecture/INFO 4152 Advanced Topics in Computer Game Design

<sup>5</sup> 1 cr partnered with BEE 4590 Physical Design in Biological Engineering

# 5. **Apply for** ENGRC 3341 Guided Fieldwork for Engineering Communications

Occasionally, a student will be doing a significant amount and variety of engineering or technical communication elsewhere in the College of Engineering, usually as part of a research team, as part of leadership in a project team, and the like. It may be appropriate to petition the CCGB's Subcommittee on Engineering Communications for permission to use as ENGRC 3341 as an option for upcoming projects (not past ones) to meet the Engineering Communications Requirement. This option does not count toward the Liberal Studies requirement for engineers, even via petition. It is essential for students and their mentoring Engineering faculty to prepare well in advance for this option.Request the information packet and form by emailing engrcomm\_info@cornell.edu with "3341 request" in the subject line. This option is not to be used for work done by

teaching assistants, nor is it to be used to finish up work from prior semesters in another course. More information can be found at the Cornell Engineering website (https://www.engineering.cornell.edu/ courses-requirements/bachelor-science-requirements/engineeringcommunications-requirement/engrc-3341/).

Paperwork is due by the last Wednesday in August for the Fall semester and the last Wednesday in January for the Spring semester.

#### **Category B: Via Other Paths**

- 1. Take an officially designated Writing-Intensive (W-I) or Communication-Intensive (C-I) engineering course.
- Note: The following course list is not comprehensive, as different engineering departments may offer W-I or C-I courses on an ad-hoc basis. Indeed, these offerings can change each semester. Students need to check with their major advisors each semester to confirm if a course will fulfill the Engineering Communications Requirement; curriculum approvals are made by each major via CCGB approval. W-I or C-I courses are based in a major, as part of that major's regular core offerings to its declared/affiliated undergraduate majors. This option does not count toward the Liberal Studies requirement for engineers, even via petition. See also the CE Undergraduate Handbook (https://www.engineering.cornell.edu/engineeringundergraduate-handbook/).
- It's important to note that these options usually only fulfill the Engineering Communications Requirement for their own majors. Students, advisors, and departments need to cross check against each student's major requirements for graduation. The Engineering Communications Program does not control, monitor, or assess for these courses. This option does not count toward the Liberal Studies requirement for engineers, even via petition.

Code	Title	Hours
BEE 4530	Computer-Aided Engineering: Applications to Biological Processes (crosslisted)	3
BEE 4730	Watershed Engineering	4
BEE 4590	Physical Design in Biological Engineering	3
BME 4190	Laboratory Techniques for Molecular, Cellular, an Systems Engineering	nd 3
BME 4390	Circuits, Signals and Sensors: Instrumentation Laboratory	3
BME 4490	Biomechanics Laboratory (crosslisted)	3
CHEME 4320	Chemical Engineering Laboratory	4
ECE 4920	ECE Technical Writing	1
MAE 4272	Fluids and Heat Transfer Laboratory	3
MSE 4030	Senior Materials Laboratory I	4
ORIE 4100	Manufacturing Systems Design: A Consulting Bo Camp	oot 4

#### 2. Enroll in and Pass COMM 3020 or COMM 3030

• Enroll in and pass COMM 3020 or COMM 3030 taught by the Department of Communication (in the College of Agriculture and Life Sciences). The Engineering Communications Program does not control, monitor, or assess for these courses. This option does not count toward the Liberal Studies requirement for engineers, even via petition. See also the CE Undergraduate Handbook (https:// www.engineering.cornell.edu/students/undergraduate-students/ curriculum/engineering-undergraduate-handbook/).

#### Introduction-to-Engineering Course:

An introduction-to-engineering course (designated ENGRI) is expected to be completed by the end of a student's first year. This course introduces students to the engineering process and provides a substantive experience in an open-ended problem-solving context. See the Introduction-to-Engineering course listing for current course offerings.

## 3. Enroll in and pass HADM 3670, taught through the Nolan School

 The Engineering Communications Program does not control, monitor, or assess for these courses. This option does not also fulfill the Liberal Studies requirement, even via petition.
See also the Engineering Undergraduate Handbook (https:// www.engineering.cornell.edu/engineering-undergraduate-handbook/).

#### **Engineering Distribution**

Two engineering distribution (ENGRD) courses (6-8 credits) must be selected from two different categories listed below. A student may use any one of the possible substitutions described.

#### 1. Scientific computing:

Code	Title	Hours
ENGRD 2110	Object-Oriented Programming and Data Structures (crosslisted)	4
ENGRD 2112	Object-Oriented Design and Data Structures - Honors (crosslisted)	4
ENGRD 2140	Computer Systems Programming (crosslisted	d) 4
ENGRD 3200	Engineering Computation (crosslisted)	4

#### 2. Materials Science:

ENGRD 2610 Mechanical Properties of Materials: From Nanodevices to Superstructures

ENGRD 2620 Electronic Materials for the Information Age

#### 3. Mechanics:

ENGRD 2020 Statics and Mechanics of Solids Note: Majors in Engineering Physics may use AEP 3330 as an ENGRD in this category.

#### 4. Probability and statistics:

ENGRD 2700 Eng Probability and Statistics: Modeling and Data Science

Note: Majors in Engineering Physics may substitute MATH 4710 for ENGRD 2700. Majors in Civil Engineering, Biological Engineering, and Environmental Engineering may substitute CEE 3040 for ENGRD 2700. ENGRD 2720

#### 5. Electrical sciences:

Code	Title	Hours
ENGRD 2100	Introduction to Circuits for Electrical and Computer Engineers (crosslisted)	4
ENGRD 2300	Digital Logic and Computer Organization (crosslisted)	4
ENGRD 2550	Engineering Quantum Information Hardware (crosslisted)	3

#### 6. Thermodynamics and energy balances:

ENGRD 2111 Biomolecular Thermodynamics ENGRD 2190 Chemical Process Design and Analysis ENGRD 2210 Thermodynamics

## 1. Earth and life sciences:

Code	Title	Hours
ENGRD 2250	The Earth System (crosslisted)	4
ENGRD 2510	Engineering Processes for Environmental Sustainability (crosslisted)	3
ENGRD 2600	Principles of Biological Engineering (crosslisted)	3

## 2. Biology and chemistry:

Code	Title	Hours
ENGRD 2202	Biomedical Transport Phenomena (crossliste	d) 3
CHEM 3890	Honors Physical Chemistry I	4
ENGRD 2520	The Physics of Life (crosslisted)	3
BIOMG 3300	Principles of Biochemistry, Individualized Instruction	4
or BIOMG 331	(Principles of Biochemistry: Proteins and Metabolism	
or BIOMG 335	(Principles of Biochemistry: Proteins, Metaboli and Molecular Biology	ism,

## **Additional Information**

Some majors may require completion of 9 specific engineering distribution courses for affiliation (acceptance into the major), or as a prerequisite for upper-class courses. For complete information, please see Affiliation with a Major and the flow charts for each major in the Engineering Undergraduate Handbook (https://www.engineering.cornell.edu/engineering-undergraduate-handbook/).

Note: Some majors require additional distribution courses after affiliation.

## **Liberal Studies Distribution**

Global and diverse societies require that engineers have an awareness of historical patterns, an appreciation for different cultures, professional ethics, the ability to work in multifaceted groups, and superior communication skills. Cornell has a rich curriculum in the humanities, arts, and social sciences, enabling every engineering student to obtain a truly liberal education. The rationale for these distribution courses is discussed in the Requirements for Graduation section of the *Engineering Undergraduate Handbook* and these courses should be chosen with as much care and foresight as courses from technical areas.

#### Requirements:

- · At least six courses (totaling at least 18 credits)
- The six courses must be chosen from the categories listed and come from at least three different groups outlined in the following section
- At least 3 or more credits must be chosen from Group 7
- No more than two courses may be chosen from Group 6 (CE)
- · At least two courses must be at the 2000 level or higher

The categories outlined above have been organized into seven Groups based on common themes in content. Those Groups are as follows:

## Group 1. Cultural Analysis, Literature and the Arts, Social Differences

- Cultural Analysis (CA)
- · Literature and the Arts (LA)
- Literature, the Arts and Design (LAD)
- Arts, Literature, and Culture (ALC)
- · Social Difference (SCD-HA only. SCD-AS not allowed in this group.)

## **Group 2. Historical Analysis**

• Historical Analysis (HA/ HST)

## Group 3. Ethics, Cognition, and Moral Reasoning

- Knowledge, Cognition, and Moral Reasoning (KCM)
- Ethics and the Mind (ETM)

## Group 4. Social Science and Global Citizenship

- Social and Behavioral Analysis (SBA)
- Social Sciences (SSC)
- Global Citizenship (GLC)

#### Group 5. Foreign Languages (not literature courses) (FL)

 Courses teaching language skills, inclusive of reading, writing, listening, and spoken non-English languages, at beginning to advanced levels.

## Group 6. Communications in Engineering (CE)

- Engineering specific courses exploring communication as a way of acting in the world
- Courses must be specifically designated by CCGB as satisfying the CE category (no petitions)
- No more than two courses from this category may be used to satisfy the liberal studies requirement

## Group 7. Race and Equity

- · Social Difference (SCD-AS only. SCD-HA not allowed in this group)
- · Diversity (D-AG only. D-HE not allowed in this group)

Students should utilize the current Courses of Study as the master list of approved liberal studies courses. Refer to Cornell Engineering Advising's Liberal Studies Policies (https://liberal-studies.engineering.cornell.edu/) webpage for complete lists of additional approved courses and unacceptable courses. Please direct any questions to Engineering Advising, 180 Rhodes Hall.

#### Electives

- Advisor-Approved electives: 6 credits required (approved by the faculty advisor<sup>1</sup>). Because these courses should help develop and broaden the skills of the engineer, faculty advisors generally accept the following as approved electives (as long as they are not being used elsewhere toward degree requirements):
- · One additional introduction-to-engineering course (ENGRI)
- · Engineering distribution courses
- · Courses stressing written or oral communication
- · Upper-level engineering courses
- Advanced courses in mathematics
- Rigorous courses in the biological and physical sciences
- Courses in business, economics, or language (when they serve the student's educational and academic objectives)
- Courses that expand the major or another part of the curriculum, including liberal studies electives not already being used toward the Liberal Studies Distribution requirement.
- Up to 6 credits of approved electives may come from ROTC courses at the 3000-level or higher.
- **Major-approved electives:** 9 credits (approved by the major and faculty advisors in the major). Refer to the major curricula for descriptions of courses in this category.
- **Outside-the-major electives:** 9 credits of courses outside the major to ensure breadth of engineering studies; these courses may be subject to major specific requirements for appropriateness.

<sup>1</sup> In the event a student and their faculty advisor disagree regarding the suitability of an approved elective, the student may appeal the decision to the Director of Undergraduate Studies (Associate Director) for their major department or to the Associate Dean for Undergraduate Programs.

## **First-Year Requirements**

During the first year, engineering students are expected to complete (or receive credit for) the following core requirements:

Code	Title	Hours
MATH 1910	Calculus for Engineers	4
& MATH 1920	and Multivariable Calculus for Engineers	
Select two of the	following:	4-8
CHEM 2080	General Chemistry II	
CHEM 2081	General Chemistry II Laboratory <sup>1</sup>	1
CHEM 2090	Engineering General Chemistry	
PHYS 1112	Physics I: Mechanics and Heat	
PHYS 1110	Introduction to Experimental Physics	
PHYS 2213	Physics II: Electromagnetism	
PHYS 2214	Physics III: Oscillations, Waves, and Quantum Physics (or the Honors equivalent) <sup>2</sup>	
One of: CS 111X		

Two first-year writing seminars

One introduction to engineering (ENGRI) course

Two physical education courses and the university swim test

- Depends on the major.
- <sup>2</sup> Depending on the major, students interested in chemical engineering, pre-med, or other health-related careers should enroll in the CHEM 2090 and CHEM 2091- CHEM 2080 and CHEM 2081 sequence during their first year.

Students interested in biomedical engineering should additionally complete BIOMG 1350 during the first year.

## Affiliation with a Major

Students are encouraged to apply for affiliation with a major during the first semester of their sophomore year, although earlier affiliation may be granted at the discretion of the major. This is done by completing the Application for Major Affiliation via the Engineering Registrar's website. To affiliate, students must:

- 1. make good progress toward completing required courses in the common curriculum,
- 2. have a GPA  $\geq$  2.0, and
- 3. have satisfied the major's course and grade requirements as specified below:

Students must be affiliated or conditionally affiliated with a major by the beginning of their fifth semester or they will be withdrawn from the College of Engineering, and therefore Cornell.

## Biological Engineering<sup>1</sup>

Minimum cumulative GPA of 2.5 and at most one grade below C– in any math, chemistry, physics, and engineering courses: <u>CS 1110</u>, CS 1112, ENGRI, ENGRD, and any engineering course cross-listed with ENGRI or ENGRD. Completion of BEE 2600/<u>ENGRD 2600</u> or ENGRD 2510 with

at least C-,and one year of Introductory Biology (two lectures and a lab) with grades of at least C-. Allowable courses include BIOMG 1350, BIOG 1440, BIOG 1445 BIOG 1500, and BIOEE 1610. No more than two credits of research/project team and two credits of arts performance courses will count toward the cumulative GPA required for affiliation.

#### **Biomedical Engineering**

Minimum GPA of 2.4 in designated math, science, and engineering courses completed with grades of C- or higher.

To apply for affiliation in the third semester, a student must be on track to complete the following requirements by the end of the third semester. BIOMG 1350 (or a score of 5 on the CEEB AP Exam (or equivalent)), MATH 1910, MATH 1920, MATH 2930, PHYS 1112, PHYS 1110, PHYS 2213, CHEM 2090 CHEM 2091, ENGRD 2111, CS 111X, and any ENGRI. BIOG 1440 cannot be used to satisfy this requirement for students entering Fall 2017 and after.

To apply for affiliation in the fourth semester, a student must be on track to complete the above courses plus the following additional courses by the end of the fourth semester. MATH 2940, ENGRD 2020, BME 2000, and BME 2010.

#### **Chemical Engineering**

At most one grade below C- in chemistry, math, physics, and chemical engineering courses, and a GPA  $\geq$ 2.2 in math, science, and engineering courses (except independent study, seminar, research, or project teams).

To apply for affiliation in the third semester, a student must be on track to complete the following requirements by the end of the semester.

- · Mathematics: MATH 1910, MATH 1920, and MATH 2930
- Chemistry: CHEM 2090 & CHEM 2091 , and CHEM 2080 & CHEM 2081 (or a score of 5 on the CEEB Advanced Placement exam for Chemistry and CHEM 2150 or CHEM 2080 & CHEM 2081 )
- Physics: PHYS 1112, PHYS 1110, and PHYS 2213
- · Computing: CS 111X
- Engineering Distribution: One Introduction to Engineering course (ENGRI 1XXX), ENGRD 2190 , and CHEM 3890
- · Two First-Year Writing Seminars
- One Liberal Studies Distribution course

Students applying in the fourth semester must be on track to complete the following prerequisites for junior year as well as the core requirements listed above: MATH 2940 or CEE 3040 or ENGRD 2700, CHEM 2900, CHEME 2200, CHEME 3230, and additional Liberal Studies Distribution course.

#### **Civil Engineering**

GPA  $\ge$  2.0 in all engineering, math, and science courses that have been completed at the time of affiliation. C grade or higher in ENGRD 2020.

#### **Computer Science**

At least C (not C-) in all completed CS courses and all critical math courses. GPA  $\ge 2.5$  in CS 2110/ CS 2112 and CS 2800/ CS 2802, or ECE 2400/ENGRD 2140 and CS 2800/CS 2802 and CS 3110. CS GPA calculation may be supplemented by the following courses: CS 3110 and CS 3410/ CS 3420. GPA  $\ge 2.3$ between <u>MATH 1920</u> and any other completed critical math course(s): MATH 2940, MATH 4710, BTRY 3080/STSCI 3080, CS 4850, ECON 3130, ECE 3100, ENGRD 2700. If only AP/CASE credit appears, then another Cornell critical math course must be taken to affiliate. Qualifying courses must be taken at Cornell for a letter grade. A required supplemental application must be submitted along with the College of Engineering Application for Major Affiliation.

#### Earth and Atmospheric Sciences

The following courses must be completed or currently enrolled in at the time of affiliation: MATH 1910, MATH 1920, MATH 2930, MATH 2940, PHYS 1112, PHYS 1110, PHYS 2213, CHEM 2090 & CHEM 2091, CHEM 2080 & CHEM 2081 (or CHEM Must have at least a C- in all courses taken and a cumulative GPA of 2.3 or higher.

#### **Electrical and Computer Engineering**

At least C+ in: MATH 2930 or MATH 2940, PHYS 2213, and one of ECE 2100/ENGRD 2100, ECE 2720 or ECE 2300/ENGRD 2300.

Must have a GPA  $\geq$  2.5 in (if completed): MATH 1920, MATH 2930, MATH 2940, PHYS 2213, ENGRD 2110, ECE 2400/ENGRD 2140, ECE 2300/ENGRD 2300, EQE 2300/ENGRD 2300, EQE 2400/ENGRD 210, ECE 2300/ENGRD 2300, EQE 2400/ENGRD 2400/ENGRD 2400/ENGRD 2300, EQE 2400/ENGRD 2400/EN

#### **Engineering Physics**

At least B- in all required math and physics courses: MATH 1910, MATH 1920, MATH 2930, MATH 2940, PHYS 1110, PHYS 1112 / PHYS 1116, PHYS 1110, PHYS 2213 / P

#### **Environmental Engineering1**

GPA  $\geq$  2.0 in all math, science, and engineering courses. At least C- in BEE 2510/ENGRD 2510.

#### Independent Major

Students must submit, and receive approval for, a proposed program including endorsement from advisors for a primary and secondary area. See the IM website (https://www.engineering.cornell.edu/independentmajor/) for specific requirements and deadlines.

#### Information Science Systems, and Technology

At least a C in two of MATH 2940, CS 2110/ENGRD 2110, and ENGRD 2700 (must have taken at least two of these courses at time of affiliation). GPA ≥ 2.5 between CS 2110/ENGRD 2110,ENGRD 2700, and all completed MATH and ISST Major core courses. Qualifying courses must be taken at Cornell, and for a letter grade. A required supplemental application (https://affiliations.coecis.cornell.edu/is/) must be submitted to ISST in addition to the College of Engineering's Application for Major Affiliation.

Students in their senior year of study intending to change majors to ISST or add ISST as a second major must submit a course plan to demonstrate they can complete all degree requirements by their current expected graduation date.

## Materials Science and Engineering

On track to complete by the end of the fourth semester the following required courses, and completion of at least 24 credits from these courses, when applying for affiliation: MATH 1910, MATH 1920, MATH 2930, MATH 2940 (all with a minimum grade of C), PHYS 1110, PHYS 1112/PHYS 1116, PHYS 2213/PHYS 2213, CHEM 2090 & CHEM 2091, and CS 1110/CS 1112.

Additionally, cumulative GPA ≥2.0 in the completed required math, physics, and chemistry courses (including MSE 3010 if taken) and at least C in ENGRD 2610 or ENGRD 2620.

For any course that is repeated, the most recent grade will be used for affiliation requirements. However, repeated grades will be included for GPA calculations.

Students who will not satisfy these requirements by the end of the fourth semester should contact the MSE department about alternative paths to affiliation.

#### 1570 or PHYS 2214). Mechanical Engineering

At least C- in ENGRD 2020 and all completed required math, physics, chemistry, and computer science courses. ENGRD 2210 is recommended prior to affiliation. GPA > 2.5 in these courses: ENGRD 2210 (if taken), MATH 2930, PHYS 2213, and ENGRD 2020.

## **Operations Research and Engineering**

At least C in each of ENGRD 2700 and MATH 2940. GPA ≥ 2.2 in math, science, and engineering courses (both overall and in the term thus far. Good academic standing in the College of Engineering.

Students may major in biological engineering and environmental engineering through the College of Engineering or the College of

HXgricculture and Effe Sciences (CALS) Students who do so through the College of Agriculture and Life Sciences are jointly administered by the College of Engineering and the College of Agriculture and Life Sciences.

## **Honors Program Within Majors**

Many of the engineering majors supplement the major with an honors program.

## Eligibility

The B.S. degree with honors is granted to engineering students who, in addition to having completed the requirements for a B.S. degree in a major, satisfactorily complete the honors program in the major and are recommended for the degree by the honors committee of that major. To enter an honors program, the student must be on track to graduate with distinction, and a student who does not stay on track to graduate with distinction is will be dropped from the honors program.

At least 9 extra credit hours are required for the honors degree, and a student must be in the program for at least two semesters before graduation. Courses taken to satisfy the honors requirement may not be used to satisfy any other B.S. degree requirements.

No research, independent study, or teaching for which the student is paid may be counted toward the honors program.

## Procedures

An applicant to the honors program in a major must have an honors advisor: a faculty member from that major who will supervise the honors program and direct any research or project. The honors advisor need not be the student's advisor in the major.

The application for the honors program should be a letter from the student that describes the proposed honors program in detail and includes the explicit approval of the honors advisor.

Students must complete a written application no later than the beginning of the first semester of their senior year, but they are encouraged to make arrangements with the honors advisor during the second semester of their junior year. Each major may place further constraints on timing.

## **Major-Specific Information**

Each major defines the content of the honors program and may also place other requirements on the program, in terms of timing, content, and procedures. Information is given within the description of the individual majors.

## **Graduation Requirements for Engineering Minor Degree Programs**

## **Requirements**

Students may pursue minors in any department in any college that offers them, subject to limitations placed by the department offering the minor or by the students' major. Completed minors will appear on the student's transcript. Not all departments offer minors. Additional information on specific minors can be found above, in the *Engineering Undergraduate Handbook*, in the undergraduate major office of the department or school offering the minor, and in Engineering Advising.

An engineering minor recognizes formal study of a particular subject area in engineering normally outside the major. Students undertaking a minor are expected to complete the requirements during the time of their continuous undergraduate enrollment at Cornell. Completing the requirements for an engineering minor (along with a major) may require more than the traditional eight semesters at Cornell. However, courses that fulfill minor requirements may also satisfy other degree requirements (e.g., distribution courses, advisor-approved, or major-approved electives), and completion within eight semesters is possible.

An engineering minor requires:

- successful completion of all requirements for an undergraduate degree.
- · enrollment in a major that approves participation in the minor.
- satisfactory completion of six courses (at least 18 credits) in a college-approved minor.

Students may apply for certification of a minor at any time after the required course work has been completed in accordance with published standards. An official notation of certification of a minor appears on the Cornell transcript following graduation.

## Graduation Requirements for Master of Engineering Degree (M.Eng.) Programs Requirements

The following are general requirements for graduation that apply to all Master of Engineering degrees offered on the Ithaca campus. The individual program pages provide additional information about disciplinespecific requirements.

## **Credits and Residency Units**

- Satisfactory completion of 30 technical credits, of which:
  - At least 21 credits must be earned at Cornell. (Some M.Eng. programs allow up to 9 transfer credits of letter-graded coursework completed outside of Cornell to be applied to the M.Eng. degree.)
  - At least 12 credit hours must be in coursework from the home M.Eng. program (as determined by the program).
  - A maximum of two credit hours graded on an S/U basis may be included.

- The credit hours of any course in which a student receives a grade below C- will not count toward the Master of Engineering degree.
- Students must maintain a course load of at least 12 credit-bearing hours<sup>1</sup> each semester.
- Students may not enroll in more than 20 credit-bearing hours per semester.
- Students must complete two full-time residency units<sup>1</sup> (semesters) as registered M.Eng. students. Winter and summer sessions do not count as residency units.

Course load and residency unit exceptions apply for Distance Learning program students, employee degree program students, and Industrial Partnership Program students. The residency unit requirement is one full-time registered semester for Early Admit M.Eng. students and certain Cornell MPS/MS/PhD student transfers.

## Courses

- Only program-approved courses at the 5000 level and above may count toward the M.Eng. degree.
- Courses covering subject matter previously taken at Cornell may not be repeated for credit.
- Satisfactory completion of an engineering design project bearing 3 or more credit hours and including a formal written report.

## **Other Requirements**

- A grade-point average of 2.50 or above is required across all Cornell courses which count for credit towards the M.Eng. degree.
- Students must complete all degree requirements within four calendar years of their first enrollment in the M.Eng. program (six years for distance learning students), inclusive of any leaves of absence.
- Students must complete the M.Eng. Exit Survey prior to graduation.

## Degree Programs Degrees Offered

Cornell programs in engineering and applied science lead to the degrees of Bachelor of Science (B.S.), Master of Engineering (M.Eng.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.). A student can pursue a degree in one of 14 majors listed below. In addition, undergraduate students in engineering and across the university can pursue one or more Engineering minors.

Professional Master of Engineering (M.Eng.) degrees are offered in 14 different disciplines, 4 of which are also available in a distance learning (DL) mode. Within the general requirements framework for the M.Eng. degree, each program has a discipline-specific curriculum that is designed to meet the career interests of its students. Programs leading to the M.S. and Ph.D. degrees are administered by the Graduate School.

## **Undergraduate Majors**

Undergraduate students in engineering spend most of their first two years in the Common Curriculum, which is administered by the College Curriculum Governing Board (CCGB). By the end of their fourth semester, students will affiliate with one of the majors given below. The majors BE, BME, ChemE, CE, ECE, EnvEng, MSE, and ME are accredited by ABET. All coursework for the degrees below is in person, in Ithaca, unless otherwise noted.

• Biological Engineering (BS) (https://catalog.cornell.edu/programs/ biological-engineering-bs/) - (BE)

- Biomedical Engineering (BS) (https://catalog.cornell.edu/programs/ biomedical-engineering-bs/) - (BME)
- Chemical Engineering (BS) (https://catalog.cornell.edu/programs/ chemical-engineering-bs/) - (ChemE)
- Civil Engineering (BS) (https://catalog.cornell.edu/programs/civilengineering-bs/) - (CE)
- Computer Science (BS) (https://catalog.cornell.edu/programs/ computer-science-bs/) - (CS)
- Earth and Atmospheric Sciences (EASEN-BS) (https:// catalog.cornell.edu/programs/earth-atmospheric-sciences-easenbs/) - (EAS)
- Electrical and Computer Engineering (BS) (https:// catalog.cornell.edu/programs/electrical-computer-engineering-bs/) -(ECE)
- Engineering Physics (BS) (https://catalog.cornell.edu/programs/ engineering-physics-bs/) - (EP)
- Environmental Engineering (BS) (https://catalog.cornell.edu/ programs/environmental-engineering-bs/) - (EnvEng)
- Independent Major (https://catalog.cornell.edu/programs/ independent-major/) - (IM)
- Information Science, Systems, and Technology (BS) (https:// catalog.cornell.edu/programs/information-science-systemstechnology-bs/) - (ISST)
- Materials Science and Engineering (BS) (https://catalog.cornell.edu/ programs/materials-science-engineering-bs/) - (MSE)
- Mechanical Engineering (BS) (https://catalog.cornell.edu/programs/ mechanical-engineering-bs/) - (ME)
- Operations Research and Engineering (BS) (https:// catalog.cornell.edu/programs/operations-research-engineering-bs/) -(ORE)

## **Undergraduate Minors**

Undergraduate students may pursue minors in a wide variety of areas offered by multiple colleges in the University. Completed minors will appear on the student's transcript. Not all departments offer minors and some may include specific limitations based on a student's major. Consult the list below or contact the appropriate department for information on a specific minor and how to pursue the minor.

Minors offered by the College of Engineering are listed below and all require a minimum of six courses and 18 credits.

- Aerospace Engineering Minor (https://catalog.cornell.edu/programs/ aerospace-engineering-minor/)
- Applied Mathematics Minor (https://catalog.cornell.edu/programs/ applied-mathematics-minor/)
- Atmospheric Science Minor (https://catalog.cornell.edu/programs/ atmospheric-science-minor/)
- Biological Engineering Minor (https://catalog.cornell.edu/programs/ biological-engineering-minor/)
- Biomedical Engineering Minor (https://catalog.cornell.edu/programs/ biomedical-engineering-minor/)
- Business Minor for Engineers (https://catalog.cornell.edu/programs/ dyson-business-minor-engineers/)
- Civil Infrastructure Minor (https://catalog.cornell.edu/programs/civilinfrastructure-minor/) - not admitting new students
- Climate Change Minor (https://catalog.cornell.edu/programs/climatechange-minor/)

- Computer Science Minor (https://catalog.cornell.edu/programs/ computer-science-minor/)
- Earth and Atmospheric Sciences Minor (https://catalog.cornell.edu/ programs/earth-atmospheric-sciences-minor/)
- Electrical and Computer Engineering Minor (https:// catalog.cornell.edu/programs/electrical-computer-engineeringminor/)
- Engineering Communications Minor (https://catalog.cornell.edu/ programs/engineering-communications-minor/)
- Engineering Entrepreneurship Minor (https://catalog.cornell.edu/ programs/engineering-entrepreneurship-minor/)
- Engineering Management Minor (https://catalog.cornell.edu/ programs/engineering-management-minor/)
- Environmental Engineering Minor (https://catalog.cornell.edu/ programs/environmental-engineering-minor/) - not admitting new students
- Game Design Minor (https://catalog.cornell.edu/programs/gamedesign-minor/)
- Information Science Minor (https://catalog.cornell.edu/programs/ information-science-minor/)
- Materials Science and Engineering Minor (https:// catalog.cornell.edu/programs/materials-science-engineering-minor/)
- Mechanical Engineering Minor (https://catalog.cornell.edu/ programs/mechanical-engineering-minor/)
- Operations Research and Management Science Minor (https:// catalog.cornell.edu/programs/operations-research-managementscience-minor/)
- Robotics Minor (https://catalog.cornell.edu/programs/roboticsminor/)
- Smart Cities Minor (https://catalog.cornell.edu/programs/smartcities-minor/)
- Sustainable Energy Systems Minor (https://catalog.cornell.edu/ programs/sustainable-energy-systems-minor/)

## Master of Engineering Programs (M.Eng.)

The College of Engineering offers professional Master of Engineering (M.Eng.) degrees in the following disciplines:

- Aerospace Engineering (MEng) (https://catalog.cornell.edu/ programs/aerospace-engineering-meng/)<sup>1</sup>
- Biological and Environmental Engineering (MEng) (https:// catalog.cornell.edu/programs/biological-environmental-engineeringmeng/)
- Biomedical Engineering (MEng) (https://catalog.cornell.edu/ programs/biomedical-engineering-meng/)
- Chemical Engineering (MEng) (https://catalog.cornell.edu/programs/ chemical-engineering-meng/)
- Civil and Environmental Engineering (MEng) (https:// catalog.cornell.edu/programs/civil-environmental-engineeringmeng/)
- Computer Science (CSCN-MENG) (https://catalog.cornell.edu/ programs/computer-science-cscn-meng/)
- Earth Science and Engineering (MEng) (https://catalog.cornell.edu/ programs/earth-science-engineering-meng/)
- Electrical and Computer Engineering (MEng) (https:// catalog.cornell.edu/programs/electrical-computer-engineeringmeng/)

- Engineering Management (MEng) (https://catalog.cornell.edu/ programs/engineering-management-meng/)<sup>1</sup>
- Engineering Physics (MEng) (https://catalog.cornell.edu/programs/ engineering-physics-meng/)
- Materials Science and Engineering (MEng) (https:// catalog.cornell.edu/programs/materials-science-engineering-meng/)
- Mechanical Engineering (MEng) (https://catalog.cornell.edu/ programs/mechanical-engineering-meng/)<sup>1</sup>
- Operations Research and Information Engineering (ORIE-MENG) (https://catalog.cornell.edu/programs/operations-researchinformation-engineering-orie-meng/)
- Systems Engineering (MEng) (https://catalog.cornell.edu/programs/ systems-engineering-meng/)<sup>1</sup>
- Distance Learning mode available

## **Double Major in Engineering**

The double-major option, which makes it possible to develop expertise in two allied engineering majors, generally requires at least one semester beyond the usual four years. Students affiliate with one major following normal procedures and then apply for a second major after completing at least one full semester in the first major and before the first day of classes of their final senior semester. All requirements of both majors must be satisfied. Further information is available from Engineering Advising, 180 Rhodes Hall, and the individual major offices.

## **Policies and Procedures**

## **Advanced Placement Credit**

Advanced Placement at Cornell includes more than just College Board AP. Students may become eligible for advanced placement credit in four ways:

- · By taking a College Entrance Examination Board (CEEB) examination;
- By successfully completing a General Certificate of Education (GCE) Advanced (A-Level) examination and/or a Cambridge Pre-University Principal Subject;
- By successfully completing an International Baccalaureate (IB) Higher Level examination;
- · By successfully completing French Baccalaureate;
- By taking a departmental Cornell Advanced Standing Exam (CASE), typically given prior to the beginning of the fall and spring terms.

If a student's performance on one of these exams is satisfactory, college credit will be offered.

## Acceptable Subjects and Scores for CEEB or CASE AP Exams

The most common subjects for which AP credit is awarded in the College of Engineering, and the scores needed on qualifying tests, are listed below. AP credit is awarded only for courses that meet engineering curriculum requirements.

Mathematics: MATH 1910, MATH 1920 are required.

First-semester math (MATH 1910). AP credit may be earned by:

- a score of 5 on the CEEB BC exam
- a passing score on the CASE exam for MATH 1910.

First-year math (MATH 1920). AP credit may be earned by:

• a passing score on the CASE exam for MATH 1920.

Physics: PHYS 1112, PHYS 1110, and PHYS 2213 are required.

PHYS 1112 Physics I: Mechanics and Heat. AP credit may be earned by:

- · a score of 5 on the Mechanics portion of the CEEB AP C exam, or
- a passing score on the CASE for PHYS 1112 Physics I: Mechanics and Heat.

PHYS 2213. AP credit may be earned by:

- a score of 5 on the Electricity & Magnetism portion of the CEEB AP C exam, or
- a passing score on the CASE for PHYS 2213.

PHYS 1110. There is no AP credit awarded.

PHYS 1116 PHYS 2217, and PHYS 2218 (honors sequence). This sequence is designed for students with strong experience in physics and calculus, e.g., a 5 on one or both Physics C AP tests and the equivalent of at least one semester of university calculus. Students interested in PHYS 2217 or PHYS 2218 are strongly advised to start with PHYS 1116. Even for a student with a 5 on both Physics C AP tests, PHYS 1116 will not be boring. Students may not simultaneously receive credit for PHYS 1116 and AP credit for PHYS 1112, or credit for PHYS 2217 and AP credit for PHYS 2213.

Chemistry: CHEM 2090 and CHEM 2091 are required.

CHEM 2090 and CHEM 2091 AP credits may be earned by:

- a score of 5 on the CEEB AP exam, or
- a passing score on the CASE for CHEM 2090 and CHEM 2091.

**Note:** Students who obtain AP credit for CHEM 2090 and CHEM 2091 and who are considering a major in chemical engineering should consider enrolling in CHEM 2150. Those who obtain AP credit for CHEM 2090 and CHEM 2091 and then successfully complete CHEM 2150 will earn 8 credits of Chemistry for the CHEM 2090 and CHEM 2091 AND CHEM 2080 and CHEM 2081 sequence. Students are encouraged to discuss this option with their faculty advisor.

**Computing:** CS 1110 or CS 1112 are required. AP credit may be earned for CS 1110 by:

- a score of 5 on the CEEB A exam, or
- a passing score on the CASE for CS 1110.

Biology: Biology is not required as part of the core curriculum, although it is required for several majors and is a popular elective, especially for students who intend to pursue health-related careers. AP credit may be earned as follows:

- 8 credits will be offered to students who receive a 5 on the CEEB AP exam;
- · 4 credits will be offered to students who receive a 4 on the CEEB AP

Those who want to study more biology should contact the Office of Undergraduate Biology, 200 Stimson Hall, to discuss proper placement.

First-year writing seminar: Two first-year writing seminars are required.

• AP credit for one first-year writing seminar may be earned by a score of 5 on either of the CEEB AP English exams.

Students who earn a score of 4 on the AP English Literature and Composition exam or the AP English Language and Composition exam\* will be offered 3 credits, which may be applied toward the Literature and Arts (LA) category of the Liberal Studies distribution requirement.

Liberal studies distribution: Six courses beyond two first-year writing seminars are required. Students may earn AP credit toward the liberal studies distribution by taking CEEB AP tests. AP credit earned in the liberal studies distribution cannot be used to fulfill the "upper-level" liberal studies requirements.

Languages: Students may earn AP credit for competence in a foreign language by taking the CEEB AP test or by taking the CASE, depending on the particular foreign language. Those who score 4 or 5 on the CEEB AP test in Spanish, French, and Italian are entitled to 3 credits. To qualify for the CASE exam (in any language), the student must score at least 65 on a college placement test (taken either in high school or at Cornell during Orientation Week). A passing score on the CASE entitles the student to 3 credits. Language credit, earned via AP or CASE, may be used to satisfy part of the liberal studies distribution in the foreign language category, or may meet an approved elective requirement, contingent on discussions with the faculty advisor.

## **Advanced Placement and Credit for International Credentials**

Students who have successfully completed either a General Certificate of Education (GCE) Advanced ("A") Level Examination, or an International Baccalaureate (IB) Higher Level Examination, or a Cambridge Pre-U Principal Subject Examination may be eligible for advanced placement credit in the College of Engineering as follows:

# General Certificate of Education Advanced Level Examination (GCE "A")

Hong Kong Advanced Level examinations and the joint examination for the Higher School Certificate and Advanced Level Certificate of Education in Malaysia and Singapore—principal passes only—are considered equivalent in standard to GCE "A" Levels. For Cambridge Pre-U Examination credit awards see the main university Advanced Placement section.

Subject	Marks	Credit
Biology	A or B	8 credits
Chemistry	A* or A	8 credits (CHEM 2090 and CHEM 2091, CHEM 2080 and CHEM 2081)
	В	4 credits (CHEM 2090 and CHEM 2091)
Mathematics or Pure Mathematics	A*, A, B, or C	4 credits (MATH 1910) only if taken in Singapore
Physics	A or B	3 credits for PHYS 1112; 4 additional credits for PHYS 2213 are granted to a combination of grades of A or B and a minimum of 4 AP (or advanced standing) credits in mathematics (MATH 1910).
First-year writing seminar	А	3 credits for one first- year writing seminar

## В

3 credits of liberal studies - Literature and the Arts (LA) category

## International Baccalaureate (IB) Higher Level Examination

Subject	Marks	Credit
Biology	7	8 credits
	6	4 credits
Chemistry	6 or 7	4 credits (CHEM 2090 and CHEM 2091)
Computer Science	6 or 7	4 credits (CS 1110)
Physics	6 or 7	3 credits (PHYS 1112)
First-year writing seminar	7	3 credits for one first- year writing seminar
	6	3 credits of liberal studies - Literature and the Arts (LA) category

Mathematics: No credit is given for the IB exam; students are encouraged to take the Engineering Mathematics CASE exam during orientation.

Note: Advanced placement credit based on GCE or IB results may also be awarded for courses that satisfy the liberal studies requirement in the College of Engineering. In such cases, the College of Engineering follows the AP guidelines found earlier in this publication under "Advanced Placement."

## **General Policies for Advanced Placement**

The general policies in the College of Engineering governing awards of AP credit are as follows:

- For students who matriculate to Cornell as first-year students, there is no maximum limit to the amount of advanced placement credit that can be used towards an engineering degree, however, students who matriculate to Cornell as external transfer students are limited to earning 66 credits of all outside credit, including CEEB, IB, GCE, French Baccalaureate, and CASE credit. Only credit for acceptable scores will be given.
- 2. AP credit will not be offered in any subject area without a documented examination.
- 3. All AP examinations are normally taken and scored before fallsemester classes begin. Students who take CEEB AP tests in high school should have an official report of their scores sent directly to Cornell as soon as possible. Students who have completed either GCE A-Level, IB Higher Level, French Baccalaureate, or Cambridge Pre-U Examinations must present the original or a certified copy of their examination certificate to the Engineering Registrar's Office, 170 Rhodes Hall. Those who wish to take CASE examinations should do so during Orientation week.

For more information on the college's policies regarding advanced placement credit and its use in developing undergraduate programs refer to the Engineering Undergraduate Handbook (https://www.engineering.cornell.edu/engineering-undergraduate-handbook/).

## **General Policies for Transfer Credit**

For information about how transfer credit is defined, reviewed and accepted by the university, please refer to University Transfer Credit Policy (https://registrar.cornell.edu/credit\_evaluation/).

• For specific information regarding transferring credit into Engineering and to learn more about the application process,

8

please visit the Engineering Registrar's website (https:// www.engineering.cornell.edu/registrar/advanced-placement-apand-transfer-credit/#transfer). A Transfer Credit Application Form (one form for each request), accompanied by a course syllabus, is required and should be submitted before enrollment in the course to be transferred. An official transcript from the offering institution (bearing the institutional seal and Registrar's signature) must be sent to the Engineering Registrar's office before official transfer credit will be awarded.

- Applications for transfer credit to satisfy requirements in math, science, engineering courses, or first-year writing seminars require approval from the department offering an equivalent course at Cornell. The department may require course materials, textbooks used, etc., in addition to the course syllabus before approving the course.
- Cornell does not award credit for courses in which a student has earned a grade less than C; departments may stipulate a higher minimum grade.
- Grades for courses taken at other institutions do not appear on the official Cornell transcript and are not included in the Cornell cumulative GPA.
- Transfer credit will not be awarded for courses taken during a fall or spring semester in which a student is enrolled at Cornell in a degree program.
- College courses completed under the auspices of cooperative college and high school programs will be considered for advanced placement credit only if students demonstrate academic proficiency by taking the appropriate AP or Cornell Advanced Standing Examination (CASE), as described in the "Advanced Credit" section above.
- For students who matriculate to Cornell as first-year students, a maximum of 18 transfer credits may count towards your engineering degree requirements at Cornell (this does not include advanced placement credit). Any coursework taken while in high school, and/ or before matriculation, is included in this 18-credit limit. (Credit for summer and winter session courses taken at Cornell are not considered transfer credit, nor do they count toward the 18-credit maximum.)
- For students who matriculate to Cornell as external transfer students, a maximum of 66 transfer credits may count towards your engineering degree requirements at Cornell. In this case, however, advanced placement credits are counted toward the 66 allowable credits. External transfer students must complete at least 60 credits at Cornell.

For more information on the college's policies regarding transfer credit and its use in developing undergraduate programs refer to the Engineering Undergraduate Handbook (https://www.engineering.cornell.edu/engineering-undergraduate-handbook/).

## **Transfer Credit for External Transfer Students**

External transfer students may transfer up to 33 credits for each year spent in full-time study at another institution, provided that the courses are acceptable for meeting graduation requirements. No more than 66 total transfer credits (combination of those taken both before and after matriculation, and including advanced placement credits) may be used to meet graduation requirements. External transfer students must complete at least 60 credits at Cornell.

## **Research Credit and Pay**

Students who conduct research in the college may have the opportunity to receive academic credit or pay for their efforts. Students should

consult with their faculty advisor and research mentor to decide which option is available to them and best for their educational goals and for the project. If receiving academic credit, students should contact the department's undergraduate coordinator for additional information. Those who receive credit for research may not receive pay for the same work effort on the project.

## Academic Standing

Full-time students are expected to remain in good academic standing. The criteria for good standing change somewhat as a student progresses through the four years of the engineering curriculum. At all times, the student must be making adequate progress toward a degree, but what this means depends on the major.

Engineering students not yet affiliated with a major must meet the following standards at the end of each semester to be considered in good academic standing. Failure to meet these standards will result in a review by the Committee on Academic Standards, Petitions, and Credit (CASPAC), and the actions of Alert, Warning, Required Leave of Absence, or Withdrawal from the College of Engineering may be taken.

- At least 12 credits passed (phys. ed. courses and courses below the 1100 level—except ENGRG 1050 Engineering Seminar, Academic Excellence Workshops, and other supplemental academic support courses—do not count).
- At least a C- in required mathematics courses. Students are expected to continue the sequence of core engineering math courses each semester until completed.
- At least two courses (≥ 3 credits each) completed in required common curricular mathematics, science and engineering (project teams, research, independent study, ENGRG courses not included).
- At least one ENGRD course completed by the end of the third semester with a grade of at least a C-
- No more than one grade below a C each semester in required mathematics, science and engineering courses
- Semester GPA ≥ 2.0
- Cumulative GPA ≥ 2.0
- No F, U, or UX grades

## Academic Progress

The total number of credits required for graduation vary depending on the major. An average semester credit load ranges from 15 to 17 credits.

Because math is pivotal to the study and practice of engineering, students must earn at least C- in their four required math courses. If at least C- is not attained, the course must be repeated immediately. Failure to achieve at least C- the second time will result in, at minimum, a required leave of absence for one semester from the College of Engineering. Physics and advanced math courses often have math prerequisites, and having to repeat the prerequisite course may delay progress in the physics and math curricula.

## Time to Degree

Time limit for completion of Bachelor of Science Degree requirements from the College of Engineering: students must complete all graduation requirements for the Bachelor of Science Degree from the College of Engineering within eight calendar years of a student's initial matriculation in the undergraduate program. Failure to complete requirements within this time period will be deemed unsatisfactory performance and will result in withdrawal from the College of Engineering. In addition, requirements for graduation may be updated if the degree is not completed within five calendar years.

For all students on leave, responsibility for maintaining eligibility to return rests with the student. A student who has been withdrawn may reapply through the College's admissions process; if re-admitted, majors (or the College if unaffiliated) will determine which credits previously taken will count toward degree requirements.

## **Dean's List**

Cornell University is phasing out individual school and college Dean's Lists. The Dean's List designation will not be applicable to undergraduate students matriculating in Summer 2023 and beyond. The Dean's List will be discontinued for all students at the end of the Spring 2026 semester.

#### For students whose matriculation was Summer 2022 or earlier:

Dean's List citations are presented each semester to engineering students who have exemplary academic records. The dean of the college determines the criteria for this honor. For 2024-2025 and beyond, the requirement is a semester GPA  $\ge 3.5$  (without rounding); no failing, unsatisfactory, missing, or incomplete grades (even in physical education); and at least 12 letter-grade credits (not S/U). Students may earn Dean's List status retroactively if they meet these criteria after making up incomplete grades. For students earning Dean's List, the honor will appear on their official transcript for the corresponding term.

## **Class Rank**

The College of Engineering does not compute class rank.

## **Graduating With Latin Degree Honors**

Meritorious students graduating with a B.S. degree from the College of Engineering may also receive degrees designated as cum laude, magna cum laude, or summa cum laude. Beginning with the December 2026 conferral date, Cornell University will institute a standardized Latin Honors system based solely on final cumulative undergraduate GPA. The Latin Honors categories include:

Summa Cum Laude (top 5%), Magna Cum Laude (next 10%), and Cum Laude (next 15%).

The cumulative undergraduate GPA at the time of degree conferral will be reviewed in a respective College or School degree.

#### For students matriculating summer 2022 or earlier:

**Cum laude is** awarded to all engineering students with an overall GPA  $\geq$ 3.50. Cum laude is also awarded to all engineering students who received a semester GPA  $\geq$ 3.50 in each of the last four semesters of attendance at Cornell; in each of these semesters, at least 12 letter-grade credits must be taken with no failing, unsatisfactory, missing, or incomplete grades. If the student is an Engineering Co-op student, then the Engineering Co-op summer term will count as one of the last four. Students who were approved for prorated tuition in their final semester will be awarded cum laude if they received a semester GPA  $\geq$ 3.50 in their last semester and meet the conditions above in the prior four semesters.

Magna cum laude is awarded to all engineering students with a GPA ≥3.75 (based on all credits taken at Cornell).

Summa cum laude is awarded to all engineering students with a GPA  $\ge$ 4.0 (based on all credits taken at Cornell).

## **Major Honors Program**

To be eligible to enter a major honors program, a student must be on track to graduate with distinction. A student must be in the program for at least two semesters before graduation. If the student's major has an approved honors program and the requirements for:

- 1. distinction,
- 2. Bachelor of Science degree, and
- 3. a major honors program are fulfilled, the faculty of the major may recommend that the student graduate with the additional diploma and transcript notation of "With Honors."

## Grades

Grades are granted under the authority of each course instructor. Please refer to the Cornell University Faculty Handbook for additional information.

## S/U Grades

Many courses may be taken either for a letter grade or for an S/U (satisfactory or unsatisfactory) grade designation. Under the S/U option, students earning the letter grade equivalent of at least C- in a course will receive a grade of S; those earning less than C- receive U. A course in which a U grade is received does not count toward graduation requirements.

Engineering students may choose to receive an S/U grade option under the following conditions:

- The course in question must be offered in the official Cornell class roster with an S/U option.
- The student must previously have completed at least one full semester of study at Cornell. First-year students may not take any courses on an S/U basis during their first semester except for courses that are graded S/U only.
- In the Engineering Common Curriculum, S/U courses must count either as a liberal studies distribution or as an advisor approved elective, but may not also fulfill the engineering communications requirement if taken with the S/U option.
- Unless explicitly permitted by the major program, all technical courses and electives within the major curriculum are not allowed to be taken as S/U. Please refer to the appropriate major department for more information.
- No more than 15 S/U optional credits will count toward a student's degree requirements. However, a student may take more than one S/U course in any one semester. If a course is offered "S/U only", it will not count toward the 15-credit limit (this includes AP and transfer credit). Additionally, any course not being applied towards official degree requirements will not count toward the 15-credit limit.

The choice of grading option for any course is made initially during the pre-enrollment period and may be changed until the end of the 57th calendar day of the term. After this deadline, the grading option may not be changed, nor will a student be permitted to add a course in which he or she was previously enrolled (in the current semester) under a different grade option. (Grading options may be changed online for most courses. A properly completed add/drop form must be used to change a grade option for a permission-only course.)

## **Incomplete Grades**

Incomplete grades are granted entirely at the discretion of the course instructor. If a student believes an incomplete is appropriate they must discuss it with the instructor and make specific arrangements under which the missing work is to be completed within a defined time frame. Generally deadlines are one-year, but instructors may require shorter deadlines, and may, at their own discretion, extend the deadline. All incomplete grades should be cleared before graduation.

To receive an incomplete, students must:

- Have an extenuating reason that prevents them from completing the course in the time allotted
- Have passing equity in the course at the time of the request. (This is generally defined as completion of at least half the course work at a passing level.)

Prior to Fall 2023, evidence of an incomplete remains permanently on the transcript. When the course had been completed, a grade was entered with an asterisk, indicating that it was not completed during the regular semester. Asterisk inclusion ceased Summer 2023.

#### **Grade Changes**

Each semester's work is an entity, and grades are assigned for work completed during the official semester period. Grade changes after the end of the final exam period may be made only in the event of a calculation error on the part of the instructor. Grades changes based on additional work submitted by a student will not be accepted. Upon graduation all courses and grades on a student's transcript are frozen and cannot be altered.

## **Residency Requirement**

Candidates for an undergraduate degree in engineering must spend at least four semesters or an equivalent period of instruction as full-time students at Cornell, including at least three semesters affiliated with an engineering major.

Students on a voluntary leave of absence may register for courses extramurally only with the approval of their major (or the college, for unaffiliated students). No more than 18 credits earned through transfer credit after matriculation may be used to satisfy the requirements for the B.S. degree in engineering. Students may not complete their last semester extramurally.

Degree candidates may spend periods of time studying away from the Cornell campus with appropriate authorization. Information on programs sponsored by other universities and on procedures for direct enrollment in foreign universities is available at the Cornell Abroad office. Programs should be planned in consultation with the staff of Engineering Advising, who can provide information on credit-evaluation policies and assist in the petitioning process.

## **Transferring Within Cornell**

It is not uncommon for students to change their academic or career goals after matriculation in one college and decide that their needs would be better met in another college at Cornell. While transfer between colleges is not guaranteed, efforts are made to assist students in this situation.

Students who wish to transfer out of the College of Engineering to another college at Cornell should consult initially with Engineering Advising.

Students who wish to transfer into the College of Engineering should also consult initially with Engineering Advising. Students apply in the semester in which they are completing affiliation criteria for the desired major. Transfer students who would enter the college must be accepted by a major as part of the admission process. Students who wish to transfer into engineering should take courses in math, chemistry, computer science, physics, and engineering that conform to the requirements of the Common Curriculum. Students should discuss their eligibility with an advisor in Engineering Advising, 180 Rhodes Hall.

## **Leaves of Absence**

There are three types of leaves of absence for students in the College of Engineering: voluntary leave of absence, health leave of absence, and required leave of absence.

Students on any type of leave of absence are not permitted to enroll in courses at Cornell during their leave. Students may take courses at other institutions while on a leave. In order to satisfy Cornell degree requirements, courses taken at another institution must be approved in advance and taken as a non-degree seeking student. Credit for courses completed at foreign institutions during a leave of absence will not be accepted for transfer credit unless students are returning to their countries of permanent residence during their leave of absence. A maximum of 18 transfer credits may be used to meet degree requirements after matriculation.

Students who are considering taking a voluntary or health leave, as well as those who are placed on a required leave of absence, should check with the Bursar's Office, Office of Financial Aid, Housing and Residential Services, Student Employment, Student Health Plan, International Student Services, and Athletics to find out about financial and other implications. Please note, the change in enrollment status may have implications for financial aid, billing, student health benefits, and international student Visa status. It is particularly important for students who have educational loans to contact the Office of Financial Aid. Eligibility for medical or auto insurance may also be affected during a student's leave of absence.

Students who are granted a voluntary or health leave of absence during a semester are responsible for any outstanding tuition or other university charges owed through the date of the leave of absence. On-campus housing and dining charges may accrue until the student no longer utilizes the services, regardless of the official leave date.

## Voluntary Leave of Absence (VLOA)

Students who desire to suspend their studies for a period of time may request a voluntary leave by submitting an online request form through the Engineering Registrar. Voluntary leaves are granted for no less than one full semester and no greater than two years. Stu- dents who do not return to active status by the two-year mark will be withdrawn from the College of Engineering. In extenuating circumstances, students may petition to return sooner than the minimum one full semester voluntary leave of absence timeframe, or extend their leave of absence past the two-year timeframe. A student may request to take a voluntary leave of absence for an in-term semester or for a future semester.

Students who request a voluntary leave of absence for an in-term semester by the university "drop without a W" deadline will have the current semester's courses dropped, unless the official course end date was prior to the drop deadline and a grade has been posted to the record. In this scenario, the grade would stand. Voluntary leaves requested for an in-term semester after the "drop without a W" deadline and by the last day of the term will result in "W"s on a student's transcript for enrolled courses, unless the official course end date was prior to the drop deadline and a grade has been posted to the record. In this scenario, the grade would stand. Partial term classes (e.g., seven week-first) in which the course has ended prior to the leave date will remain on the transcript with

the grade awarded. A voluntary leave of absence granted for an in-term semester will be effective on the date the online request form is received by the Engineering Registrar's Office.

Students who are not issued a required leave of absence or required withdrawal at the conclusion of a semester may request to take a voluntary leave of absence for a future semester, prior to the start of that semester. Leaves requested for a future semester will be effective on the day after the end of the last term attended.

## Health Leave of Absence (HLOA)

Students sometimes benefit from taking a leave of absence to address physical or mental health issues. For an in-term semester, a student may apply to take a health leave of absence up until the last day of the term. The health leave of absence process i initiated by a student with the Health Leaves Coordinator. Clinicians assess the student and if deemed appropriate will recommend a health leave of absence to the college. The College may include academic conditions for the leave, in addition to any conditions set forth by the Health Leaves Coordinator. The College evaluates the recommendation and grants the health leave of absence. A health leave of absence granted for an in-term semester will be effective on the date stated in the letter from the Health Leaves Coordinator. A health leave of absence for a future term will be effective on the day after the end of the last term attended.

A health leave of absence that is granted between semesters or an interm health leave of absence that is granted between the first day of class and the university "drop without a W" deadline will result in the upcoming or current semester's courses being dropped, unless the official course end date was prior to the drop deadline and a grade has been posted to the record. In this scenario, the grade would stand. If a health leave is granted for an in- term semester after the "drop without a W" deadline, and by the last day of the term, it will result in Ws on a student's transcript for the enrolled courses, unless the official course end date was prior to the drop deadline and a grade has been posted to the record. In this scenario, the grade would stand. Partial term classes (e.g., seven week- first) in which the course has ended prior to the leave date will remain on the transcript with the grade awarded.

Health leaves are granted for no greater than two years. Students who do not return to active status by the two-year mark will be withdrawn from the College of Engineering. In extenuating circumstances, students may petition to extend their leave of absence past the two-year timeframe.

#### **Required Leave of Absence (RLOA)**

At the end of each semester, the academic records of all students are reviewed. Unaffiliated students' grades are reviewed by the faculty Committee on Academic Standards, Petitions, and Credit (CASPAC) and affiliated students' grades are reviewed by their Major department. Students who do not meet the requirements for good standing may be issued a required leave of absence. (RLOA's are issued for no less than one semester and take precedence over voluntary leaves and health leaves unless petitioned through CASPAC or the major department.) A required leave of absence will be effective on the day after the end of the last term attended. Required leaves are granted for no greater than two years. Students who do not return to active status by the two-year mark will be withdrawn from the College of Engineering. In extenuating circumstances, students may petition to extend their leave of absence past the two-year timeframe.

#### **Rejoining the College**

Students who wish to rejoin the college after either a voluntary or required leave of absence must notify the college prior to the rejoin

deadlines (https://catalog.cornell.edu/enrollment-credit-requirements/ leaves-withdrawals/#Return\_from\_LOA\_deadlines). Students will be required to complete a college Request to Rejoin Form. If no conditions were imposed at the time of the leave, permission to rejoin will be granted. Students who were given conditions to meet while on leave will be granted permission to rejoin once evidence has been presented that all conditions have been met. Students who are rejoined will receive written confirmation and be reactivated on the university student system.

Students who wish to rejoin the college after a health leave of absence must first contact the Health Leaves Coordinator (https://health.cornell.edu/get-care/health-leave-absence/) at healthleaves@cornell.edu prior to them rejoin deadlines to seek an approval to be rejoined. The College of Engineering cannot approve a rejoin from a health leave without the Health Leave Coordinator's approval of the return. Once the Health Leaves Coordinator approves of a student's fitness to return from the health leave, the student must then notify the College of Engineering prior to the rejoin deadlines below. If no academic conditions were imposed at the time of the health leave, permission to rejoin will be granted. Students who were given academic conditions to meet while on the health leave will be granted permission to rejoin once evidence has been presented that all conditions have been met. Students who are rejoined will receive written confirmation and be reactivated on the university student system.

#### For additional advising and guidance, contact:

- Unaffiliated B.S. students: Engineering Advising Office (https:// www.engineering.cornell.edu/advising/engineering-advising-office/)
- Affiliated B.S. students: department major Undergraduate Coordinator (https://www.engineering.cornell.edu/registrar/registrarforms/affiliation-form-contacts/)
- M.Eng. students: department Major Coordinator/Graduate Field Assistant

If returning from a Health Leave of Absence, documentation of fitness to return must be received first by the Health Leaves Coordinator by their timeline for return (https://sds.cornell.edu/accommodations-services/ health-leave-absence/returning-health-leave-absence/) in order for us to approve the rejoin.

## Withdrawal From the College

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. Unaffiliated and affiliated students who wish to withdraw should first meet with Engineering Advising (unaffiliated) or their major department (affiliated). To officially withdraw, students submit an online request form through the Engineering Registrar's Office. A student may request to withdraw from an in-term semester or for a future semester.

A student who fails to register in the first three weeks of the semester, without benefit of a leave of absence or permission for study in absentia, will be deemed to have withdrawn.

Students who withdraw from the College of Engineering are eligible to apply for admission to one of the other six colleges at Cornell and should follow their respective procedures for applying.

During the semester, a student may request a voluntary withdrawal up until the last day of the term. A withdrawal that is granted during a semester goes into effect on the day it is requested. If a withdrawal is requested before the 57th day of the semester, the courses are dropped, unless the official course end date was prior to the "drop without a W" deadline and a grade has been posted to the record. In this scenario, the grade would stand. If a withdrawal is requested after the 57th day of a semester and by the last day of the term, the courses in which the student was registered at the time of the request are treated as having been withdrawn (i.e., a "W" will appear on the transcript for each course), unless the official course end date was prior to the drop deadline and a grade has been posted to the record. In this scenario, the grade would stand. Students are responsible for any outstanding tuition or other university charges owed through that date. On-campus housing and dining charges may accrue until the student no longer utilizes the services.

A student who has withdrawn and subsequently wishes to return must make a formal request to do so. This is rarely granted. It is subject to a review of the student's academic background and depends on available space in the college and in the student's major.

## **Required Withdrawal**

Students are required to withdraw from the college only when their overall record indicates that they are either incapable of completing the program or not sufficiently motivated to do so. This action withdraws them only from the College of Engineering and does not, in and of itself, adversely affect their ability to apply and complete a degree in one of the other colleges in the university. Required withdrawals take precedence over voluntary withdrawals.

## Graduate Students, M.Eng. program

Graduate students enrolled in an M.Eng. program should refer to: Master of Engineering Academic Procedures and Policies

# Faculty

A

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