What Engineering courses should I sign up for in my first year?

ENGR 17: Introduction to Engineering Design is a project-based and application-oriented course for first-year students that focuses on fundamental fabrication skills and design methodologies. E17 provides a semester-long orientation to the field of Engineering as a human-centered discipline, and will help first-years develop a strong and supportive cohort.

There is no expectation of prior experience in Engineering, and no prerequisites.

We expect all first-year students interested in Engineering to enroll in ENGR 17. Students who have credit for, or are enrolled in MATH 25 are welcome to take ENGR 11 concurrently.

Aside from ENGR 17, we expect most prospective Engineers will take: the MATH course they receive placement into; a third course in a STEM subject – most frequently PHYS 3, BIOL 1, CHEM 10, or CPSC 21*; and finally a first-year seminar or intro course in a non-STEM subject.

See the back of this handout for sample first-semester schedules.

Frequently Asked Questions

Q: What if I'm not sure the Engineering major is right for me?
A: In that case, we definitely recommend ENGR 17 your first semester! The advice we give all prospective Engineers is to *pretend you're a major until you decide you're not*. It's much easier to switch out of Engineering than it is to join late.

Q: What if I don't want to take three STEM classes my first semester?
A: No problem – we would still suggest taking ENGR 17 and the MATH course you received placement into. That leaves room for two classes in the Arts and Humanities and/or Social Sciences.

Q: Can I double-major in Engineering and something else?
A: Yes – in fact, over 40% of Engineering majors graduate with another major. An additional 30% of students minor in another subject.

Q: Do Engineers study abroad?
A: Yes, our department has affiliations with a long-running study abroad program in Cape Town, South Africa, and Engineering majors have studied everywhere from Perú to Australia.

Q: Is Engineering a very difficult major?
A: Although there are many credits required for the major, there is plenty of support available for ENGR students, from professors' office hours, to problem sessions, to peer instructors known as "Wizards". We are strongly committed to helping students succeed, regardless of background or prior experience.

* CPSC 21 does not count towards the ENGR major, but is popular among prospective CS majors.

Example first-semester schedules

All of the sample schedules below provide a good first step into the Engineering major while allowing students to explore other opportunities at Swarthmore.

Student A: Typical prospective ENGR major

- ENGR 17: Introduction to Engineering Design
- MATH 15: Single-Variable Calculus 1
- PHYS 3: General Physics I
- ENGL 1F: FYS: Transitions to College Writing

Student B: Possible pre-med, placement into MATH 25

- ENGR 17: Introduction to Engineering Design
- MATH 25: Single-Variable Calculus 2
- CHEM 10: Foundations of Chemical Principles
- PSYC 1: Introduction to Psychology

Student C: Has placement into MATH 25 and feels prepared for ENGR 6

- ENGR 17: Introduction to Engineering Design
- ENGR 11: Electrical Circuit Analysis
- MATH 25: Single-Variable Calculus 2
- LING 1: Introduction to Language and Linguistics

Student D: Interested in Arts & Humanities and Social Sciences

- ENGR 17: Introduction to Engineering Design
- MATH 15: Single-Variable Calculus 1
- EDUC 14: Pedagogy and Power: An Introduction to Education
- SPAN 15: FYS: Introduction to Latinx Literature and Culture

First-semester STEM courses to consider

- ✓ PHYS 3/3L: Useful for ENGR 6 (taken by prospective ENGR students in 2nd semester)
- ✓ BIOL 1: Taken by prospective Biology majors and students interested in life sciences
- ✓ CHEM 10: Taken by prospective Chemistry majors and pre-med students
- ✓ PHYS 5: Taken by prospective Physics majors
- ✓ CPSC 21: Taken by prospective CS majors

First-semester STEM courses that do NOT count towards the ENGR major

- × ASTR 1: Does not count towards ASTR major
- × PHYS 1C: Does not count towards PHYS major
- × CHEM 3C: Does not count towards CHEM major
- × CPSC 21: Does not satisfy science requirement for ENGR (but popular nonetheless)

For more information, talk to your ENGR advisor, an ENGR faculty member, or an ENGR SAM!