

IOWA STATE UNIVERSITY
College of Engineering

WELCOME!



Overview

- Preparing for your academic advising appointment
 - Options for engineering degree programs
 - Required classes and prerequisites
 - Course registration
- Campus support resources
- College of Engineering opportunities

THE COLLEGE OF ENGINEERING →

Degree Offerings

Aerospace
Agricultural
Biological Systems
Biomedical
Chemical
Civil
Construction

Computer
Cyber Security
Electrical
Environmental
Industrial
Materials
Mechanical
Software

Minors

Biomedical Engineering
Cyber Physical Systems
Cyber Security
Energy Systems
Nondestructive Evaluation
Sales Engineering

Undecided?

**Start Undeclared
Engineering**

**Evaluate majors during
Basic Program**
Declare major after
finding match to
interests

**[engineering.iastate.edu
/undergraduate-majors-
and-minors/](http://engineering.iastate.edu/undergraduate-majors-and-minors/)**

Engineering Basic Program Classes (BP)

- Classes required by all engineering majors
- Typically takes 2-3 semesters to complete
- Enables students to easily change engineering majors early in their program
- Need a 2.0 grade point average in BP and 2.0 ISU cumulative **before** moving to upper level engineering courses
- Employers typically looking for a 3.0 cumulative ISU GPA for engineering internships, co-ops, and permanent jobs

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Basic Program – 24 credits

| Credits | Course | |
|---------|-------------------|----------------------------------|
| 4.0 | Math 1650 | <i>Calculus I</i> |
| 4.0 | Math 1660 | <i>Calculus II</i> |
| 3.0 | Engl 1500 | <i>Critical Think/Comm</i> |
| 4.0 | Chem 1670 or 1770 | <i>Chemistry</i> |
| 3.0 | Engr 1600 | <i>Engineering Problems</i> |
| 5.0 | Phys 2310/Lab | <i>Classical Physics I</i> |
| R | Engr 1010 | <i>Engineering Orientation</i> |
| 1.0 | Lib 1600 | <i>Intro to College Research</i> |

catalog.iastate.edu—4year plans show all classes required to graduate

English Placement

ENGL 1500: Critical Thinking and Communication

Advanced Placement Option:

- If ACT-English = 24+ or SAT-EWR (Evidence-based Writing & Reading) = 600+
Or if no ACT/SAT/transfer class, high school transcript GPA is 3.7 or higher

Then Placement = ENGL 2500 as first English class at ISU

****Must pass ENGL 2500 with "C" or better at ISU to get credit for ENGL 1500 from ACT/SAT/ High school GPA***

English AP exam = 3 Language or 4 Literature = 1500 credit

English Placement and Library 1600

ENGL 2500: Written, Oral, Visual, Electronic Communication

- Take after ENGL 1500 (unless criteria is already met for 1500 credit)
- Students typically take in 2nd year

ENGL 1500/2500 Test-out opportunity

- 3-hour, 2-part essay exam
- \$100 fee and must complete online registration form

LIB 1600: Introduction to College Research

- Take with first English class at ISU
- May take it second half of the semester – 8 week course
- Test-out opportunity available during the semester
 - \$100 fee and must complete registration form

English for Non-Native Speakers

Students whose native language is not English:

- Must take **English Placement Test (EPT)** for non-native speakers of English
 - Offered at beginning of each semester and must register prior to exam on EPT website
 - Exemption for students who graduated from U.S. high school (including Puerto Rico)
 - Exemption for students advanced placed into ENGL 2500
 - See website for other exemptions apling.engl.iastate.edu/english-placement-test/
- If placed in ENGL 1010B or 1010C from EPT, must complete *before* ENGL 1500 or ENGL 2500
- If placed in ENGL 0990S (\$480 fee*), can take with ENGL 1500/2500
- These additional EPT English classes are considered prerequisites and **must be completed as part of the engineering Basic Program**

**Fees subject to change*

Math Placement

Placement based on online placement assessment and college transfer courses

- All students are required to take the ALEKS math placement assessment prior to being scheduled in courses
- **Trigonometry and Algebra background required prerequisites to engineering**
- ALEKS Math placement score determines your math course for first semester
- Must take Trig/Algebra if not placed into Calculus I (Score 76=Calc I placement)

Options for starting schedules in math:

- Math 1390 (Algebra)
- Math 1400 (College Algebra)
- Math 1430 (Trigonometry/Prep for Calculus)
- Math 1650 (Calculus I)
- Math 1660 (Calculus II)
- Higher: Math 2070 (Linear Algebra), Math 2650 (Calculus III), Math 2660/2670 (Differential Equations)

Math Placement Scores

ALEKS % (S)

Class Placement

15-38

MATH 1390 and Math 1400 (Algebra)

39-50

MATH 1400 (College Algebra)

51-75

MATH 1430 (Pre-Calc)

76-100

MATH 1650 (Calc I)

80+ and college credit for Math 1650

MATH 1660 (Calc II)

80+ and college credit for Math 1660

MATH 2070/2650/2660/2670
(Linear Alg/CalcIII/DifferentialEquations)

Calculus I (Math 1650 Credit)

Considerations for students deciding whether to review Calc I first semester

- Math 1660 (Calculus II) is considered the most difficult of the calculus series
- Math 1660 is a one-semester course that goes quickly
- You need good time management and study skills to make sure you can keep up with new material presented in Calc II

Math AP/IB credits:

- Need 4 in AP Calc AB or 3 in AP Calc BC for Math 1650 credit
- Need 4 in AP Calc BC for Math 165 AND Math 1660 credit
- Need 6 in IB HL Math for Math 1650 credit

Chemistry Placement

CHEM 1770: General Chemistry I *(must be in Math 1430 or higher)*

- Lab must be taken with the class
- Required for Chemical, Environmental, and Materials engineering majors
- Need 4 in AP Chem or 5 in IB HL Chem for Chem 1770/1780 lecture credit (lab notebook reviewed separately for lab credits)

CHEM 1670: Chemistry for Engineers *(must be in Math 1430 or higher)*

- Required for non-chemistry based engineering majors
- Lab required for Agricultural, Biological Systems, Biomedical and Civil engineering majors
- CHEM 1770 credits can be used for CHEM 1670 (additional chemistry may be needed)

CHEM 0500: College Chemistry Preparation (\$400 fee*)

- Required prerequisite for students who do not have the equivalent of one year of high school chemistry

Introductory Engineering and Physics Classes

ENGR 1600: Engineering Problems with Computer Applications Lab

- Two-part class: must pass both problem-solving and programming to complete class
- Some majors offer a departmental version: ABE 1600; AerE 1600; BME 1600; CE 1600; ChE 1600; CprE 1850; EE 1850; IE 1600; ME 1600; SE 1850
- Any version of ENGR 1600, including departmental equivalent ones, count for any major (additional programming may be needed)
- Must be finished with Math 1430 and enrolled in Math 1650 for AerE 1600, BME 1600, CE 1600, ChE 1600, CprE 1850, EE1850, ENGR 1600, ME 1600
 - Or enrolled in Math 1430 for ABE 1600, IE 1600, or SE 1850

PHYS 2310/Lab: Intro to Classical Physics I (Calculus-based Physics)

- Credit or enrollment in Math 1660 is required for Phys 2310
- Time-consuming course with 10-15 hours of homework per week outside the classroom
- Take 2nd semester, if possible, to allow for adjustment to ISU first
- AP Physics C exam: 4 on Mechanics=Phys 2310/L; 4 on Elec/Mag=Phys 2320/L credit

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Orientation to Engineering

“R” credit course = required for your major

Engr 1010 Objectives:

- Weekly advisor contact
- Meet engineering students and learn to work in teams
- Learn about policies, procedures and campus resources
- Acquire/improve study skills
- Choose or confirm an engineering major
- Learn about the disciplines and specialties within the majors

Examples of Other Required Engineering Courses

ENGR 1700: Engineering Graphics and Design

- Required for AE and BSE (ABE 1700); CE and ConE (CE 1700); and ME (ME 1700)
- Credit or enrollment in Math 1430

Biol 2120: Principles of Biology II

- Required for BME, BSE

CHEM 1780 and lab: General Chemistry II

- Required for ChE, EnvE, MatE

C E 2740: Engineering Statics

- Required: AerE, AE, BSE, CE, ConE, EnvE, IE, ME
- Must have completed Math 1660 and Phys 2310

COMS 2270: Intro Object Oriented Programming

- Required for CprE, CybE, and SE
- Credit for Math 1430; CprE1850/1610 or EE 2850 or SE1850 or ComS 1270

IE 3050: Engineering Economics

- Required for AE, BSE, ConE, IE
- Must have completed Math 1660

PHYS 2320: Introduction to Classical Physics II

- Required: AerE, BME, ChE, ConE, EE, IE, MatE, ME
- Must have completed Phys 2310/L and Math 1660
- AerE and EE do not require the Phys 2320 lab

MAT E 2730: Principles of Materials Science Engr

- Required for AerE, BME, IE, ME
- Must have credit for Chem 1670/1770 and Math 1650

Stat 3050: Engineering Statistics

- Required for AE, BME, BSE, ConE, MatE, ME
- Must have completed Math 1650

Social Sciences/Humanities (General Education Courses)

- 12-15 credits over academic career required for all engineering majors
- Examples – Psychology, Sociology, History, Economics, World Languages, Anthropology, Political Science, Women’s Studies
- 3 credits must be from U.S. Cultures and Communities list and 3 credits from International Perspective list
- Some departments require specific courses and/or have sequence requirements (your advisor will know requirements for your major)
- Typically take at least one SSH/Gen Ed elective first year
- Avoid taking SSH courses in areas you have pending AP/Transfer credit

**** Consider interest areas from handout prior to advising appointment!****

Examples of Other Courses

Please tell your advisor if you plan to participate in Music or ROTC

Instrumental

- Marching Band
- Concert Band
- Symphonic Band
- Symphony Orchestra
- Jazz Ensembles
- Wind Ensemble

Choral

- Lyrica
- Cantamus
- Iowa Statesmen
- Iowa State Singers

ROTC

- Military Science
- Naval Science
- Air Force Studies

Engineering World Language Requirement

- All direct from high school students and engineering transfer students with less than 24 academic credits transferring in must have the equivalent of 2 years of high school world language
- Requirement can be met by sending ISU:
 - High school transcript showing 2 years of the same world language
 - College transcript showing 2 semesters of the same world language
- Students not meeting the above requirement must take the equivalent of 2 semesters of the same world language in college for their engineering degree
 - Students whose 1st language is not English meet the requirement through 2 semesters of college English classes

College Transfer Credits

- **Transfer Credit Granted** from the Office of Admissions shows how a class transfers into ISU
 - Official transcripts are required to meet class prerequisites even if classes are in-progress
- If a transfer class is not counting towards an engineering degree under **Academic Progress**, it can be *reviewed by a faculty member from the course content area* to see if it can count
 - **Students must initiate this review with their academic advisor during the school year (Fall/Spring semesters)**
 - Provide a course syllabus, name of book/author, example assignments
 - Best to have info ready for advisor by beginning of semester planning to start
- Courses can be entered on TRANSIT website to see how they transfer in
(transit.iastate.edu)

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courses with a grade of "C" or better only
school may apply to degree

- No credit limit for 4-year schools; final 32 credits must be taken at ISU

Plan Your Schedule for Success

- We recommend taking no more than three problem solving courses first semester and fewer if other heavy time commitments outside classroom

Examples of problem solving classes:

- Math
 - Chemistry
 - Computer Science
 - Engineering 1600
 - Physics
- Problem solving courses take more time than other classes to complete homework so need to allow for this time in your schedule
 - Important to not get behind in problem solving courses (very difficult to catch up)

Class Formats

- M W F – Lecture (large class)
 - T or R – Discussion (small class)
 - *Both lecture and discussion times go on your schedule*
- ENGR 1600 (or equivalent) – 1 hour and 50 minutes M W *or* T R
- Chemistry Labs – 2 hours and 50 minutes one time per week
- Some sections of classes are online only
- Typically take 13-16 credits 1st semester

| <i>Times</i> Days | <i>8:00</i> <i>a.m.</i> | <i>9:00</i> <i>a.m.</i> | <i>10:00</i> <i>a.m.</i> | <i>11:00</i> <i>a.m.</i> | <i>12:10</i> <i>p.m.</i> | <i>1:10</i> <i>p.m.</i> | <i>2:10</i> <i>p.m.</i> | <i>3:10</i> <i>p.m.</i> | <i>4:10</i> <i>p.m.</i> | <i>5:10</i> <i>p.m.</i> | <i>6:10</i> <i>p.m.</i> |
|---------------------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| MON (M) | | CHEM 1770 | MATH 1650 | | | | | | | | |
| TUES (T) | | | | | MATH 1650 | | ENGR 1600 | ENGR 1600 | | | |
| WED (W) | | CHEM 1770 | MATH 1650 | | | | | CHEM 1770L | CHEM 1770L | CHEM 1770L | |
| THUR S (R) | | | | CHEM 1770 | | | ENGR 1600 | ENGR 1600 | | | |
| FRI (F) | | CHEM 1770 | MATH 1650 | | | | | | | | |

Use support resources!

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Advisors: Facilitators of Information

Academic advisors provide

- Course guidance and selection
- Referrals to resources, student advocacy and support
- Answers to questions when you are not sure what to do

Student Academic Support Resources

Academic Success Center

- Supplemental Instruction (SI)
- Study Skills Class (Psych 1310)
- Tutoring Services
- Academic Coaching

Help Rooms/Sessions

- Chemistry
- English
- Math
- Physics

Engineering Technology Support

- College of Engineering student computer recommendations:
 - it.engineering.iastate.edu/new-to-engineering/#ComputerRec

Tips for Success

First 2-4 weeks are critical

Problems build on the knowledge learned from prior assigned problems

Don't be afraid to ask for help (use your resources early in the semester)

Read the syllabus – and follow it

Attend class regularly

Read your ISU email—this is how faculty/advisors will communicate with you

Use online CANVAS resources and tools—your CANVAS “Courses” will show all courses using CANVAS and their book lists

Visit with your instructor as often as possible – drop-in help times called “office hours” listed on syllabus

All university policies and requirements for graduation found in ISU catalog at

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Additional Opportunities

Look for experiences each semester that can add to your resume

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Additional Minors/Double Majors

World Languages and Cultures for Professions (LCP)

- World language minor/major for engineering students
- Take 20 min online placement assessment to determine first course if have had 3-4 years of world language in high school and want to start above 1000-level language.iastate.edu/placement-exams/ (write down score for advisor)
- You may continue to next level of language for transfer credits without assessment

Minors, certificates, and double majors cannot be officially added to the academic record until after 1st semester, but classes can still be taken towards these before that

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Study Abroad

The College of Engineering maintains partnerships with universities worldwide

- 30+ Study Abroad programs
- Spring break, Winter break, Summer, semester, full-year options
- Credits count towards Engineering degree
- English and non-English speaking programs

For more information, contact:

Engineering International Programs

engineering.iastate.edu/studyabroad/

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Student Clubs

Information on all university student clubs and organizations found at stuorg.iastate.edu

More than 900 Iowa State student clubs

- 12 Engineering Competition teams
- 90 Engineering student organizations
- Networking opportunity with professionals
- Build teamwork and leadership skills
- Have fun and meet other students

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Engineering Work Experience

Paid Internship/Work experiences

- Summer, semester, full-year options

Benefits

- Salary earnings average \$3,758/month
- Higher career outcome rates at graduation

For more information, contact:

Engineering Career Services
engineering.iastate.edu/ecs

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**Remember to complete your Workday Onboarding tasks
before your advising appointment**

QUESTIONS?



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