# Degree Offerings

<table>
<thead>
<tr>
<th>Aerospace</th>
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<tbody>
<tr>
<td>Agricultural</td>
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<tr>
<td>Biological Systems</td>
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<tr>
<td>Chemical</td>
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<tr>
<td>Civil/Environmental Construction</td>
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<table>
<thead>
<tr>
<th>Computer</th>
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<tbody>
<tr>
<td>Electrical</td>
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<td>Industrial</td>
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<tr>
<td>Materials</td>
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<tr>
<td>Mechanical</td>
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<tr>
<td>Software</td>
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## Minors

<table>
<thead>
<tr>
<th>Biomedical Engineering</th>
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<tr>
<td>Energy Systems</td>
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<tr>
<td>Nondestructive Evaluation</td>
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<tr>
<th>Cyber Security</th>
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<tr>
<td>Nuclear Engineering</td>
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<td>Sales Engineering</td>
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Undecided? Choose Undeclared Engineering
- Evaluate engineering majors during Basic Program
- Declare a major after selecting one matching your interests
Engineering Basic Program Classes (BP)

- Classes required by all engineering majors
- Typically takes 2-3 semesters to complete
- Need a 2.0 grade point average in BP and 2.0 cumulative before moving to upper level engineering courses
- Enables students to easily change engineering majors early in their program

Iowa State University
College of Engineering
## Basic Program – 27 credits

<table>
<thead>
<tr>
<th>Credits</th>
<th>Course</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>Math 165</td>
<td>Calculus I</td>
</tr>
<tr>
<td>4.0</td>
<td>Math 166</td>
<td>Calculus II</td>
</tr>
<tr>
<td>3.0</td>
<td>Engl 150</td>
<td>Critical Think/Comm</td>
</tr>
<tr>
<td>3.0</td>
<td>Engl 250</td>
<td>WOVE Composition</td>
</tr>
<tr>
<td>4.0</td>
<td>Chem 167 or Chem 177</td>
<td>Chemistry</td>
</tr>
<tr>
<td>3.0</td>
<td>Engr 160</td>
<td>Engineering Problems</td>
</tr>
<tr>
<td>5.0</td>
<td>Phys 221</td>
<td>Physics I</td>
</tr>
<tr>
<td>R</td>
<td>Engr 101</td>
<td>Orientation</td>
</tr>
<tr>
<td>1.0</td>
<td>Lib 160</td>
<td>Information Literacy (Library)</td>
</tr>
</tbody>
</table>
English Placement

ENGL 150: Critical Thinking and Communication

- ACT-E ≥ 24 or ACT-E = 23 and HSR of ≥ 75%
- SAT-EWR ≥ 600 or SAT-EWR ≥ 590 and HSR of ≥ 75%
  - Evidence-based Writing and Reading—test date of March 2016 or later
- SAT-CR ≥ 550 or SAT-CR ≥ 540 and HSR of ≥ 75%
  - Critical Reading—test date before March 2016

Above scores allow placement into ENGL 250 as first English class at ISU
*Must pass ENGL 250 with “C” or better at ISU to get credit for ENGL 150 from above.

English AP exam ≥ 3 Language or ≥ 4 Literature = 150 credit
ENGL 250: Written, Oral, Visual, Electronic Communication
- Take after ENGL 150 (unless already met entry criteria for 150 credit)
- Students typically take beginning sophomore year

ENGL 250 Test-out opportunity
- Offered 2nd week of class
- $100 fee and must complete online registration form
- 2 essay exam includes rhetorical analysis and reflective essay on selected reading
  (recommend ACT-English ≥ 29 & top 5% HS Rank)

LIB 160: Information Literacy (some take fall semester, some spring)
- Take with first English class at ISU
- May take it second half of the semester
- Test-out opportunity available during the semester (must register with Library office)
English for Non-Native Speakers

Students whose native language is not English:

- Must take **English Placement Test (EPT)** for non-native speakers of English before taking an English class at ISU
  - Offered at beginning of each semester
  - Exemption for students graduating from U.S. high school with ACT-E 16+ or SAT-EWR 450+ or SAT-CR 410+
  - Exemption for students placing into ENGL 250 based on ACT or SAT score
  - Transfer credit for ENGL 150/250 *does not* exempt students from EPT

- If placed in ENGL 101B or 101C, must complete *before* taking ENGL 150 or ENGL 250
- If placed in ENGL 99S ($480 fee*), can take with ENGL 150/250

*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 a math course unless college credit with final grades of “C” or better in both Calc I and II has been transferred to ISU

Trigonometry and Algebra background required prerequisites to calculus and engineering

- Do not need to take these courses if passed Trig/Algebra in ALEKS placement assessment or have college transfer credit for them
- Math placement score determines your math course and academic adviser for first semester as well as any required academic programming

Options for starting schedules in math:

- Math 10 (Algebra—$530 fee*, not college credit)
- Math 140 (College Algebra)
- Math 143 (Trigonometry/Prep for Calculus)
- Math 165 (Calculus I)
- Math 166 (Calculus II)
- Higher: Math 265 (Calculus III), Math 266/267 (Differential Equations)

*Fees subject to change
Chemistry Placement

CHEM 177: General Chemistry *(must be in Math 143 or higher)*
- Lab must be taken with the class
- Required for Ch E, C E, Mat E majors

CHEM 167: Chemistry for Engineers *(must be in Math 165 or higher)*
- Required for non-chemistry based engineering majors
- Lab required for A E and BSE majors
- Chemistry transfer credits for engineering need to transfer in as CHEM 177
- CHEM 177 credits can be used for CHEM 167 (additional chemistry may be needed)

CHEM 50: College Chemistry Preparation ($350 fee*)
- Required prerequisite for students who do not have the equivalent of one year of high school chemistry

*Fees subject to change
Engineering and Physics Classes

ENGR 160: Engineering problem solving and computer programming
- Two-part class: must pass both problem-solving and programming to pass class
- Some majors offer a departmental version: ABE 160; AER E 160; C E 160; CH E 160; CPR E/E E/SE 185; I E 148; M E 160
- Any version of ENGR 160 taken meets requirement for any major
- Must be finished with Math 143 and enrolled in Math 165 for AER E 160, CPR E/E E/SE 185, ENGR 160, C E 160, CH E 160, M E 160
  - Or enrolled in Math 143 for ABE 160 or I E 148

PHYS 221: Calculus-based Physics
- Must take Math 166 before or with Phys 221
- Time-consuming course with 10-15 hours of homework per week
- Avoid Phys 221 first semester if possible to allow for adjustment
Orientation to Engineering

Engr 101 Objectives:

- Weekly adviser contact
- “R” credit course – required for your major
- Meet engineering students and connect for study groups
- Learn about policies, procedures and campus resources
- Acquire/improve study skills
- Choose or confirm an engineering major
  - What are the disciplines and specialties within the major?
Examples of Other Required Engineering Courses

ENGR 170: Engineering Graphics and Design
- Credit or enrollment in Math 143
- Required for A E and BSE (ABE 170); C E and ConE (C E 170); and M E (M E 170)

COM S 227: Intro Object Oriented Programming
- Required for Cpr E and S E
- Placement into Math 143 or higher

CHEM 178 and lab: General Chemistry II
- Required for C E (environmental), Ch E, Mat E
- Continuation of Chem 177

E M 274: Engineering Statics
- Required of all majors except Ch E, Cpr E/E E/S E, Mat E
- Must have completed Math 166 and Phys 221

PHYS 222: Introduction to Classical Physics II
- Required for all majors except AE, BSE, C E, S E
- Must have completed Phys 221 and Math 166

MAT E 273: Principles of Materials Science and Engineering
- Required for AER E, A E, I E, M E
- Sophomore classification with Chem 167 or 177 and Math 165
Social Sciences/Humanities (General Education Courses)

- 12-15 credits (varies depending on major)
- 3 credits must be from U.S. Diversity list and 3 credits from International Perspective list
- Some departments require specific courses and/or have sequence requirements
- Typically take at least one Gen Ed elective first year

*Consider interest areas prior to your registration appointment!*
Engineering World Language Requirement

• All engineering students 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 a single world language
  • College transcript showing 2 semesters of a single world language

• Students not meeting the above requirement must take the equivalent of 2 semesters of a single world language in college for their engineering degree
Minors/Double Majors

- Languages and Cultures for Professions (LCP)
  - World language minor/major for engineering students
  - Take online placement assessment to determine first course if have had 3-4 years of world language in high school and want to start at 300 level
- 6 Engineering Minors
- Other common minors: Business, Economics, Math, Music Technology, Physics, Sustainability Studies, Entrepreneurial Studies
- Must declare major before adding minor/second major

Recommend waiting one year before declaring to allow time to explore
Advanced Placement/International Baccalaureate (AP/IB)

• It is the student’s responsibility to tell adviser of AP/IB courses (and to have scores sent to Iowa State)
• Chemistry department must review AP lab notebook and syllabus before chem lab credits applied
• All other AP/IB credits applied automatically
• You have the option to repeat these courses at ISU

Scores required:
4 in AP Chem or 5 in IB HL Chem for Chem 177/178
5 in AP Com S A for Com S 227
4 in AP Math AB or 3 in AP Math BC for Math 165
4 in AP Math BC for Math 165 and Math166
6 in IB HL Math 165
4 in AP Phys C-Mech=Phys 221 or 4 on Mag & Elec=Phys 222
Transfer Credits

- The **Transfer Credit Evaluation (TCE)** from the Office of Admissions shows how a class transfers into ISU (shown in student record on AccessPlus)
- If a transfer class shows up as a 1T, 2T, 3T, 4T it will not count towards an engineering degree unless it is reviewed and approved by a faculty member from the course content area
  
  **Students must initiate this review with their academic adviser during the school year**

- TRANSIT allows you to enter courses and see how they transfer to your engineering degree [www.transit.iastate.edu/](http://www.transit.iastate.edu/)
- Engineering accepts credits for transfer courses with a grade of “C” or better only
- Up to 65 transfer credits from a 2-year 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

- Schedule no more than three problem solving courses per semester and fewer if heavy outside commitments
  
  Examples of problem solving classes:
  
  - MATH
  - CHEM
  - COM S
  - ENGR 160
  - PHYS

- 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)
### Example 1st Semester Schedules

<table>
<thead>
<tr>
<th>Example A</th>
<th>Example B</th>
<th>Example C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engl 150 (3)</td>
<td>Math 166 (4)</td>
<td>Math 267 (4)</td>
</tr>
<tr>
<td>Math 143 (4)</td>
<td>Engr 160 (3)</td>
<td>Phys 222 (5)</td>
</tr>
<tr>
<td>SSH (3)</td>
<td>Chem 167 (4)</td>
<td>EM 274 (3)</td>
</tr>
<tr>
<td>Chem 177 (4)</td>
<td>Lib 160 (1)</td>
<td>Engr 101 (R)</td>
</tr>
<tr>
<td>Chem 177L (1)</td>
<td>SSH (3)</td>
<td>SSH (3)</td>
</tr>
<tr>
<td>Engr 101 (R)</td>
<td>Engr 101 (R)</td>
<td>Engr 101 (R)</td>
</tr>
</tbody>
</table>

__________  __________  __________
| 15 Credits | 15 Credits | 15 Credits |

Typically take between 13-16 credits (problem-solving courses shown in bold above)
Use support resources!

- Advisers
- Academic Success Center
- Instructors
Advisers: Facilitators of Information

3 Types: Financial Aid, Residential, Academic

**Academic advisers provide**
- Course guidance and selection
- Referrals to resources
- Assistance with making informed career-related decisions
- Student advocacy and support

**Advising in the College of Engineering**
- Faculty adviser, professional adviser, or both, depending on the department
Student Support Resources

Academic Success Center
• Supplemental Instruction (SI)
• Study Skills Class (Psych 131)

Help Rooms/Sessions
• Chemistry
• English

Other Resources
• Multicultural Liaison Officer
• Student Accessibility Services
• Student Counseling

• Tutoring Services
• Academic Coaching

• Math
• Physics

• Veterans Center
• Student Clubs & Organizations

Remember, your assigned academic adviser is a source of help, too
Ask for Help EARLY

• First 2-4 weeks are critical
• Problems build on the knowledge learned from prior assigned problems
• Research shows that students who are not afraid to ask for help are more successful

• Read the syllabus – and follow it
• Attend class
• Visit with your instructor as often as possible
Study Abroad

The College of Engineering maintains partnerships with universities worldwide

• Examples: Australia, Germany, Ireland, Singapore, France, China
• Summer, semester, full-year options
• Credits may transfer to Engineering degree
• English and non-English speaking programs
• Plan early with your academic adviser

For more information, contact:
Engineering International Programs
engineering.iastate.edu/studyabroad/
Engineering Work Experience

Internship/Work experiences
• Summer, semester, full-year options

Benefits
• Earnings average $3,000/month
• Higher placement rate at graduation

For more information, contact:
Engineering Career Services
engineering.iastate.edu/ecs

IOWA STATE UNIVERSITY
College of Engineering
Policies and Procedures

• Schedule changes during first week of each semester:
  • Student can complete online through AccessPlus

• Schedule changes **after first week** of classes:
  • Adviser and instructor signatures required

• Last day to drop a full-semester course
  • Typically one week after mid-term grade reports
    • AccessPlus schedule will show date on top line under each course
Policies and Procedures

- Maximum course drops for ISU degree:
  - Direct from high school students – May drop no more than 5 classes
  - Transfer students - May drop no more than 4 classes
  - Dropped courses during the first semester at ISU and the first week of class each semester are not counted against this limit

- Maximum “Designated Repeats” for retaking courses:
  - 15 Credits (new class grade replaces old grade for cumulative GPA )
  - Repeats above 15-credit limit will have both new class grade and old grade averaged for cumulative GPA
Final Notes

Please remember to:

• Arrive on time for your advising appointment!
• Get your student ID (ISUCard) at 0530 Beardshear Hall; bring photo ID
• Register for ISU email (CyMail) at Solution Center, 192 Parks Library

After your academic advising appointment, you will be registered for your first semester of classes

Thank you!
BE > YOU IMAGINED

Questions? We are here to help!

Iowa State University

College of Engineering