IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Department of Mechanical Engineering

2024-2025 Undergraduate Handbook

Kiewit Undergraduate Student Services Center
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PART 1: GENERAL INFORMATION

WELCOME

Welcome to the Department of Mechanical Engineering at Iowa State University. The Mechanical Engineering program has established a rich tradition of excellence with our faculty and staff, modern facilities, and growing number of remarkable alumni.

Faculty: Although the exact number varies from year-to-year, the department currently has approximately 60 faculty involved in teaching, research, and outreach. The faculty of the Department of Mechanical Engineering is a diverse group of professional educators. They include award-winning teachers, best-selling textbook authors, renowned researchers, prominent inventors, leaders of professional technical societies, journal editors, licensed engineers, esteemed designers, and sought-after consultants. The faculty's primary goal is educating and mentoring engineering students. Their productivity is measured in terms of how much they accomplish with their students. When students succeed, so do the faculty.

Staff: The department's 23 staff members are here to help students with everything from giving directions to making sure department computers are installed and maintained.

Facilities: The Henry M. Black Engineering Building, in use since 1985, provides an excellent home for the department with world class teaching and research laboratories. Continuous improvement of equipment, including computer hardware and software, is a high priority. A comprehensive list of laboratories associated with the ME Department can be found at **https://www.me.iastate.edu/teaching-labs-and-studios/**.

Student Profile: The undergraduate mechanical engineering program at Iowa State University has over 1,765 students; 12.3% are female identifying students, 15.2% are multicultural students, and 3.9% are international students (statistics from Fall 2023).

Alumni: Currently the Mechanical Engineering Department at ISU has many successful graduates. Many of our graduates have prominent positions in government, industry, or education. A mechanical engineering degree is an excellent foundation for success in the engineering profession and also for further training and subsequent achievement in other disciplines including business, law, and the sciences. Professional opportunities for mechanical engineering graduates are too numerous to list. Our alumni have gone on to attain prominence not only as engineers but also as corporate leaders, professors, inventors, innovators, attorneys, and medical doctors. Our graduates are found throughout the world--in companies ranging from the smallest to the largest.

THE ENGINEERING PROFESSION

Engineering is the profession in which knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to economically utilize the materials and forces of nature for the benefit of humankind.

The Mechanical Engineering Profession

Mechanical engineers are typically involved with the generation, distribution, and use of energy; the processing of materials; the control and automation of manufacturing systems; the design and development of machines; and finding solutions to environmental problems. Research, testing

manufacturing, operations, marketing, and administration are some of the key activities associated with practicing mechanical engineers. Mechanical engineers are characterized by personal creativity, breadth of knowledge, and versatility. They are also valuable and reliable multidisciplinary team members. The technical subject areas that form the main basis for their work include mechanics, energy transfer and conversion, design and manufacturing, and the engineering sciences. Through clever use of analysis, modeling, design, and synthesis, they solve important problems to improve quality of life.

Mechanical engineers work on teams responsible for developing a wide range of products and systems including space shuttle vehicles, aircraft of all sizes and shapes, automobiles, turbines, pumps, power plants, and factories. Virtually any machine or process an individual can think of has benefited from the influence of a mechanical engineer. Everyday conveniences such as refrigeration, microwave cooking, high-fidelity sound reproduction, transportation, communication, and copying are affordable largely because mechanical and other engineers worked together to make it happen. Mechanical engineers are in demand now, and projections for the future suggest a long-term need for professionals in this specialty. According to the Bureau of Labor Statistics in 2016, engineers held over 1.53 million jobs in the U.S; 288,800 are mechanical engineers.

The mechanical engineering profession offers a wide range of career pursuits. The field of mechanical engineering can be broken down into three concentrations:

1) Energy cultivation: Generation, distribution, and use of energy. Mechanical engineers are constantly challenged to find more productive and less expensive methods of energy conversion, distribution, and use.

2) Manufacturing: Processing of raw materials into finished products. Manufacturing systems are implemented by directing the control and automation of the manufacturing process. Mechanical engineers working in manufacturing are faced with the challenge of developing products that are safe to manufacture and use.

3) Design and analysis: Analyzing and modeling complex physical systems according to known mathematical models. Scaled models are commonly used to study such things as the stresses imposed on an airfoil by wind resistance. Computer simulations of naturally occurring phenomena are common (modeling weather patterns, for example, is useful in the study of wind turbines). In fact, the computer is an essential tool of the mechanical engineer working in design and analysis.

The mechanical engineering curriculum will give students the preparation to succeed in any of these fields. It will challenge students to think critically and creatively and to work well within teams. Students will be rewarded by receiving a quality education from a proud department with a rich history and tradition.

For more information about the specific Mechanical Engineering curriculum, please visit the Course Catalog at **http://catalog.iastate.edu/collegeofengineering/mechanicalengineering/**

THE MECHANICAL ENGINEERING CURRICULUM AT IOWA STATE

The mechanical engineering curriculum requires courses in mathematics, chemistry, physics, English, engineering, and general education area. The curriculum is accredited under the General Criteria and Mechanical Engineering Program Criteria by the Engineering Accreditation Commission of ABET (Accreditation Board for Engineering and Technology; **www.abet.org**).

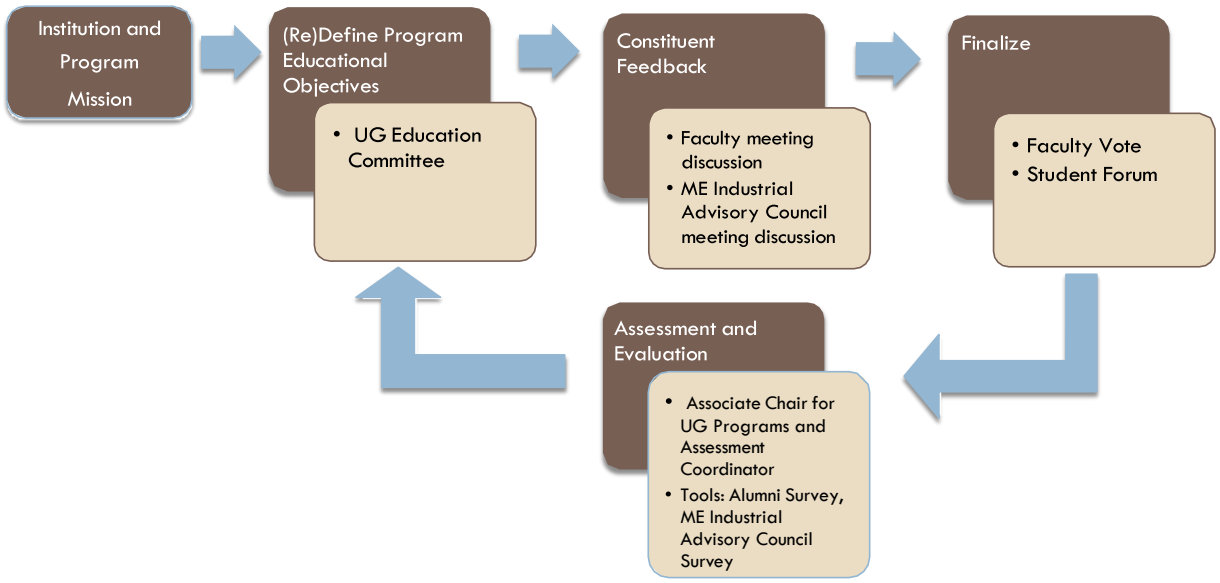
Program Educational Objectives

The mechanical engineering curriculum at Iowa State University is dedicated to preparing students for productive careers in the state, nation, and the world. The expected accomplishments of mechanical engineering graduates 3-5 years beyond the baccalaureate degree are:

- Graduates will have utilized a foundation in engineering and science to improve lives and livelihoods through a successful career in mechanical engineering or other fields.
- Graduates will have become effective leaders, collaborators, and innovators solving social, technical, business, and global challenges.
- Graduates will have engaged in life-long learning and professional development through self-study, continuing education, or graduate and professional studies in engineering, business, law, medicine, or other fields.
- Graduates will have fostered inclusive and diverse environments and functioned effectively in inclusive and diverse environments.

The figure below illustrates the mechanical engineering department's revision process for the Program Educational Objectives. The revision cycle is established at 6 years. The objectives were revised last in 2022-2023 with the next scheduled revision cycle being in 2028-29.

Process for Revision of the Program Educational Objectives



Student Outcomes

The student outcomes for the Bachelor of Science in Mechanical Engineering program at Iowa State University consist of the ABET outcomes (a-k) and additional program outcomes required by the American Society of Mechanical Engineers (ASME). By the time of graduation students will have:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.

7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
12. *From ASME:* Students will have the ability to apply principles of engineering, basic science, and mathematics (including multivariate calculus and differential equations) to model, analyze, design, and realize physical systems, components or processes; and work professionally in both thermal and mechanical systems areas.

The table below maps student outcomes in relation to course outcomes within twelve mechanical engineering core courses ranging from sophomore to the senior level, including the capstone design experience courses. Therefore, the attainment of student outcomes can be demonstrated by the attainment of course outcomes assessed and evaluated by faculty through exams, homework, quizzes, lab activities/reports, project presentations, design reports, etc.

Student Outcomes	ME 160 Intro ME	ME 170 Engr. Graphics	ME 231 Thermo I	ME 270 Soph. Des.	ME 324 Manu-fact.	ME 325 Mach. Des.	ME 332 Thermo II	ME 335 Fluid Flow	ME 370 Engr. Meas.	ME 421 Sys. Dyn. & Controls	ME 436 Heat Trans.	ME 415/442/ 466/486 Capstone Des.
	Freshman		Sophomore		Junior					Senior		
(a) An ability to apply knowledge of mathematics, science, and engineering	✓	✓	✓	✓	✓	✓	✓(T)	✓(T)	✓ (M)	✓ (M)	✓	✓
(b) An ability to design and conduct experiments, as well as to analyze and interpret data					✓(M)			✓(T)	✓ (M)	✓(M)	✓(T)	
(c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability		✓		✓		✓ (M)			✓	✓	✓(T)	✓
(d) An ability to function on multidisciplinary teams				✓	✓	✓			✓	✓	✓	✓
(e) An ability to identify, formulate, and solve engineering problems	✓		✓		✓ (M)	✓	✓(T)	✓	✓	✓	✓	
(f) An understanding of professional and ethical responsibility				✓		✓						
(g) An ability to communicate effectively	✓	✓		✓	✓	✓			✓	✓	✓	✓
(h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context			✓	✓	✓	✓	✓			✓		
(i) A recognition of the need for, and an ability to engage in life-long learning	✓	✓		✓	✓	✓			✓			✓
(j) A knowledge of contemporary issues					✓	✓			✓	✓		
(k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	✓	✓		✓	✓ (M)	✓		✓(T)	✓	✓ (M)	✓(T)	✓
(ASME) The ability to: apply principles of engineering, basic science, and mathematics (including multivariate calculus and differential equations) to model, analyze, design, and realize physical systems, components or processes; and work professionally in both thermal and mechanical systems areas.	Incorporated into outcomes (a), (b), (c), (e) and (k) as indicated by thermal (T) and mechanical (M)											

✓ indicates course outcome(s) maps to student outcome

✓ indicates course will directly assess this particular outcome

The mechanical engineering curriculum requirements are outlined in Part 4 – Requirements for a Bachelor's Degree in Mechanical Engineering.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) CODE OF ETHICS OF ENGINEERS

"ASME is a not-for-profit professional organization that enables collaboration, knowledge sharing, and skill development across all engineering disciplines, while promoting the vital role of the engineer in society. ASME codes and standards, publications, conferences, continuing education, and professional development programs provide a foundation for advancing technical knowledge and a safer world." (Taken from **http://www.asme.org/about-asme**).

The Fundamental Principles

Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:

I. Using their knowledge and skill for the enhancement of human welfare;
II. Being honest and impartial, and serving with fidelity their clients (including their employers) and the public; and
III. Striving to increase the competence and prestige of the engineering profession.

The Fundamental Canons

1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.
2. Engineers shall perform services only in the areas of their competence; they shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
3. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional and ethical development of those engineers under their supervision.
4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest or the appearance of conflicts of interest.
5. Engineers shall respect the proprietary information and intellectual property rights of others, including charitable organizations and professional societies in the engineering field.
6. Engineers shall associate only with reputable persons or organizations.
7. Engineers shall issue public statements only in an objective and truthful manner and shall avoid any conduct which brings discredit upon the profession.
8. Engineers shall consider environmental impact and sustainable development in the performance of their professional duties.
9. Engineers shall not seek ethical sanction against another engineer unless there is good reason to do so under the relevant codes, policies and procedures governing that engineer's ethical conduct.
10. Engineers who are members of the Society shall endeavor to abide by the Constitution, By-Laws and Policies of the Society, and they shall disclose knowledge of any matter involving another member's alleged violation of this Code of Ethics or the Society's Conflicts of Interest Policy in a prompt, complete and truthful manner to the chair of the Committee on Ethical Standards and Review.

OPPORTUNITIES FOR MECHANICAL ENGINEERING STUDENTS

Mechanical Engineering students at Iowa State University have numerous opportunities to complement their engineering education. By taking advantage of such opportunities, students make the most of their time at ISU. Participation in various activities and utilization of numerous available resources better enable students to gain leadership and organizational skills.

***Scholarships**:* Many scholarships are available in the College of Engineering. Information on scholarships will be posted on the College of Engineering homepage – **www.engineering.iastate.edu/scholarships/**. Applications are usually due by February 1 of each year. More information regarding scholarships may be found in Part 3 - Commonly Requested Information.

***Internships/Co-op Program**:* The Co-operative Education Program combines classroom learning with on-the-job engineering experience. Engineering Career Services defines the experiences as "periods of institutionally supervised, work experience that supplement formal academic classwork. Students are employed by industry and government organizations in positions related to their major field of study. Unlike a typical part-time or summer job, an engineering co-op or internship must involve the practice of engineering. A co-op is a single work term of a semester or a semester plus a summer. An internship is ten or more weeks of engineering related work during the summer. A parallel co-op will be two, part-time semesters working 20 hours per week and taking up to 9 credits of course work or a part-time semester and full-time summer with the same company. Co-ops and internships are not required by the College, but they are highly encouraged." Contact Engineering Career Services (ECS) in 3200 Marston Hall or visit their website at **www.engineering.iastate.edu/ecs/** for more information regarding co-operative education and internships. More detailed information regarding internships and co-ops may be found in Part 3 - Commonly Requested Information.

***Student Organizations**:* Mechanical engineering students have hundreds of organizations and clubs available for membership at Iowa State University. Engineering students are found in virtually every organization on campus. Some clubs and societies are technically oriented while others are more social in nature. A few of the organizations providing opportunities to network and socialize with other engineering students are listed below and on the web at **https://www.me.iastate.edu/student-organizations/**:

American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE)
American Society of Mechanical Engineers (ASME)
Cyclone Space Mining
Engineers without Boarders
National Society of Black Engineers (NSBE)
Pi Tau Sigma (Honorary, by invitation only)
Society of Automotive Engineers (SAE)
Society of Hispanic Professional Engineers & Latinos in Science and Engineering (SHPE)
Society of Manufacturing Engineers (SME)
Society of Women Engineers (SWE)
Tau Beta Pi (Honorary, by invitation only)
Team PrISUm (Solar car project)
Women in Mechanical Engineering

***Undergraduate Research**:* Undergraduate research is recommended for students interested in attending graduate school. Students that qualify for College Work-Study may be able to utilize College Work-Study funds in order to join a faculty member's research project. Students interested in

undergraduate research are encouraged to contact the faculty members in their area of interest for more information. Information regarding research areas currently being explored is available on the Mechanical Engineering Undergraduate Research website - **http://www.me.iastate.edu/research/**.

The Program for Women in Science and Engineering (WISE): WISE collaborates with faculty and staff across campus to increase the participation of women in science, technology, engineering, and math fields. Mechanical engineering students can get involved with WISE through programming via the WISE office. WiSE offers educational, career, and social support programs and opportunities. For more information about WISE students may contact the office in 218 Carver Hall. Information is available on-line at **www.wise.iastate.edu**.

Study Abroad*:* Students often elect to study in a foreign country as part of their undergraduate experience. This is an excellent way to complement the education students receive at Iowa State University. Students can also satisfy the international perspective requirement by earning credit at an institution in a foreign country. Students wishing to study abroad are encouraged to do so; however, students should keep in mind that studying abroad at the end of their Mechanical engineering degree has the potential to delay graduation during transcript transfer and processing.

> Students interested in studying abroad should contact a representative at the College of Engineering International Programs in 1300 Marston Hall or look at their website at **www.engineering.iastate.edu/studyabroad**. Students may also visit the University's Study Abroad Center in 3224 Memorial Union or look at their website for more information, **www.studyabroad.iastate.edu**. Students must obtain departmental approval of any course taken at another institution in order to have those credits applied towards their mechanical engineering degree. Course approval involves having all transfer credits evaluated by the Office of Admissions (as well as departmental faculty in many cases), and having the credits applied towards the student's degree by the academic advisor.

Alice R. Black Fund for the Performing Arts*:* The Alice R. Black Memorial Fund provides funds to purchase tickets to introduce undergraduate mechanical engineering students to the performing arts. Two tickets for each performance in the Performing Arts Series at Stephens Auditorium are awarded. Winners of the performance tickets are selected from the group of undergraduate mechanical engineering students who have indicated an interest in the performing arts by signing up for the free ticket give-away in 2620 Howe Hall. Details are posted inside of this room.

Opportunities after Graduation

Professional Employment: One of the most popular options available to students upon graduation is professional engineering employment. ISU mechanical engineering graduates find jobs in all parts of the country, in companies of all sizes, and in a wide range of industries. The job seeking process actually begins during student's first year. Students should visit the Engineering Career Services in 3200 Marston during the freshman year to register for summer work or internships or go to their website at **www.engineering.iastate.edu/ecs/***.* Even though ISU engineering graduates do well in the job seeking process, it is best to start the process early. Students who wait to visit Engineering Career Services until the final semester of their senior year will find themselves at a distinct disadvantage.

Graduate Study in Mechanical Engineering: The graduate program at Iowa State University offers advanced study in a variety of interest areas, including biological and nanoscale sciences, clean energy technologies, complex fluid systems, design and manufacturing innovation, and simulation and

visualization as well as interdisciplinary programs including human-computer interaction and bio-renewable resources and technology. Undergraduate students interested in pursuing advanced degrees in mechanical engineering are encouraged to use their technical electives to help identify an "area of interest."

The list below is provided to assist students in the development of an area of interest:

General Industry Preparation: ME 3960 and ME 3980 (internship courses); ME 4120, ME 4150, ME 4170, ME 4180, ME 4250, ME 4750, ME 4840, IE 3050, Con E 3800

Agriculture: ME 4130, EM 4250, TSM 3350, A B E 3420

Biomedical: B M E courses, CHEM 3310, CHEM 3320, KIN 3550

CAD: ME 4150, ME 4170, ME 4190, ME 4750, ME 6250, EM 4250

Construction and Heavy Equipment: ME 4490, EM 4250, TSM 3350, A B E 3420

Consulting: Con E 3800, ME 4120, ME 4410, ME 4420

Controls: ME 4110, ME 4130, ME 5110, ME 5740, ME 5750, EE 4750, CPR E 3080

Energy: ME 4330, ME 4440, ME 4750, ME 4840

Engineering Business, Marketing and Sales: ME 4120, ME 4840, CON E 3800, IE 3050, SCM 3010

Environmental: ME 4330, ME 4840, Con E 3800, ENV S 3240, AER E 3810, AER E 4810

Government: ME 4840, ME 4860, CON E 3800

Heating, Cooling, and Refrigeration: ME 4410, ME 4420

Law School: ME 4120, CON E 3800

Manufacturing: ME 4180, ME 5200, ME 5210, ME 5280, EM 3620, EM 3620L, IE 3480, IE 3610, IE 4480, IE 5450

Mechatronics and Robotics: ME 4100, ME 4110, ME 4180, ME 5110, TSM 4650

Transportation: ME 4170, ME 4490, EM 4250, TSM 3350, A B E 3420 and any nondestructive evaluation course

Also, students may access the Careers in ME link below for additional information about areas of interest - **www.me.iastate.edu/students/careers-in-me/.** There is a complete list of approved technical electives available in 2620 Howe Hall.

Graduate Study in Other Engineering Fields*:* It is not uncommon for students to obtain graduate degrees in fields different from their undergraduate degrees. Mechanical engineering undergraduate students interested in obtaining advanced degrees in a discipline other than mechanical engineering should contact the department responsible for the degree of interest. Careful planning in the junior and senior years will reduce the possibilities of having to make up any deficiencies while in graduate school.

Business School: Some engineers earn a Master's of Business Administration (MBA) after first earning

their baccalaureate degree. The combination of an engineering degree and an MBA provides excellent preparation for those individuals wishing to practice as private consultants.

Most MBA programs have wide admissions requirements and accept students with a variety of undergraduate backgrounds. Students interested in an MBA are encouraged to take Econ 101 and Econ 102, (one or the other of which is required in the mechanical engineering curriculum). Departmental approved courses in economics may also provide the future MBA student a head start in graduate school. Students interested in an MBA program are encouraged to contact those schools at which they are considering applying as well as visit the Graduate Program Office of the Ivy College of Business.

Law School: The professional training of a lawyer requires a minimum of three years from an American Bar Approved (A.B.A.) law school to earn the Doctor of Juris Prudence (J.D.) Degree. Pre-law is not a major or minor at Iowa State University. Undergraduate courses listed below can assist students in developing the skills, values, and knowledge that are essential toward becoming a competent lawyer. Appropriate skills would include logical reasoning, critical thinking, persuasion, advanced writing, research, listening and other communication skills. The courses listed below do not represent all courses that might be applicable to a student considering law as a profession. Students should check with the pre-law Advisor to determine if courses not listed on this handout would be applicable. As students consider these courses, they need to check for prerequisite courses.

Agricultural Education and Studies (AGEDS 4510)
Business (ACCT 2150, ACCT 3160, MGMT 3700, MGMT 3710, MGMT 4140, MGMT 4710, and MGMT 4720)
Communication Studies (COMST 1010, COMST 1020, COMST 2180, and COMST 3100)
Construction Engineering (CON E 3800)
Criminal Justice Studies (CJ ST 2400, CJ ST 3200, CJ ST 3320, CJ ST 3400, CJ ST 3410, and CJ ST 4020)
Economics (ECON 1010, ECON 1020, ECON 3010, ECON 3020, ECON 3200, and ECON 3210)
English (ENGL 3020, ENGL 3090, ENGL 3100, ENGL 3130, and ENGL 4180)
History (HIST 2210, HIST 2220, and HIST 4530)

Journalism and Mass Communication (JL MC 1010, JL MC 2010, and JL MC 4600)
Philosophy (PHIL 2060, PHIL 2070, PHIL 2300, PHIL 3320, and PHIL 3340)
Political Science (POL S 2150, POL S 3190, POL S 3200, POL S 4200, POL S 4210, POL S 4220, POL S 4760,and POL S 4830)
Speech Communication (SP CM 3120, SP CM 3220, SP CM 3230, SP CM 3240, and SP CM 3270)

Selection of applicants for law schools is based upon consideration of the cumulative grade point average, Law School Admission Test (LSAT) scores, letters of recommendation, curricular and extra-curricular activities, and a personal essay. Students should contact their law schools of interest and speak directly with an admission representative to have questions answered about applications materials, admissions policies, and scholarship deadlines. Law school related materials are available via email prelaw@iastate.edu or 102 Carrie Chapman Catt Hall. Students may access **http://www.lsac.org** for LSAT information. Students can also access general law school information at https://pre-law.las.iastate.edu/

Medical School: Medical schools look upon mechanical engineering graduates very favorably. Students interested in medicine should contact those medical schools at which they are considering applying and visit with advisors in the LAS Pre-professional Advising Center.

In addition to meeting the normal mechanical engineering requirements, students interested in medical school should complete additional coursework as recommended by the LAS Pre-professional advisor.

PART 2: UNDERGRAUDATE ADVISING

KIEWIT UNDERGRADUATE STUDENT SERVICES CENTER

2620 Howe Hall, 515.294.4932
www.me.iastate.edu/students/advising/
isume@iastate.edu

The department advising center is located in **2620 Howe Hall**. The Center has seven Academic Advisors and a Student Services Coordinator who work to assist our students from orientation to graduation. Using Navigate, students can make appointments during the hours of operation, 8 a.m. – 11:50 a.m. and 1 p.m. – 4:30p.m., Monday through Friday. You can drop in, however, an appointment guarantees you will be seen with time to discuss your question in full. Students may also contact their Advisor by email.

Alyssa Stafne Phone 515-294-2012 E-mail: amittlei@iastate.edu
Alyssa is the lead academic advisor of the Kiewit Undergraduate Student Services Center. Alyssa earned her B.S. in Psychology and English from the University of South Dakota and her M.A. in Higher Education and Student Affairs from the University of Iowa.

Jenn Good Phone 515-294-2304 E-mail: jenng@iastate.edu
Jenn earned her degree B.S. in Psychology from Nova Southeastern University and a Masters of Science in Counseling (specialization in school counselling) from Drake University.

Kirsten Hauge Phone 515-294-9354 E-mail: khauge@iastate.edu
Kirsten earned her MA in College Student Personnel at Bowling Green State University as well as a BS in special education at University of Wisconsin-Eau Claire.

Ryan Johnson Phone 515-294-1744 E-mail: ryanj01@iastate.edu
Ryan eared his BA in journalism at Ball State University. He has also earned an MFA in Fine Arts at Minnesota State Mankato as well as a PhD in Fine Arts from Texas Tech.

Breanna (Bree) Kixmiller Phone 515-294-6187 E-mail: breekix@iastate.edu
Bree earned her BFA in Integrated Studio Arts from Iowa State University. She continued her education with an MEd in Student Affairs in Higher Education from Iowa State University.

Fred Lloyd Phone 515-294-3686 E-mail: fslloyd@iastate.edu
Fred earned his AA in French from Defense Language Institute. He also earned his BA in Liberal Studies as well as his MA in History at Iowa State University.

Aliza MacKenzie Phone 515-294-6366 E-mail: aliza@iastate.edu
Aliza earned her B.A. in Psychology and Religion from Drake University and her M.S. in Student Affairs in Higher Education from Miami University in Ohio.

Samantha Brockshus Phone 515-294-4932 E-mail: sjkoontz@iastate.edu
Samantha is the student services coordinator earned her B.A. in Fine Arts with an emphasis in acting and directing from Iowa State University.

Kiewit Undergraduate Student Services Center Mission

The Mechanical Engineering Department's Academic Advisors are dedicated to enhancing each student's academic and career aspirations, as well as their experience at Iowa State University. To achieve this mission:

Mechanical Engineering's Academic Advisors are:

- Interested in the academic, personal, and professional development of their advisees
- Knowledgeable about University, College, and departmental policies and procedures
- Advocates for their advisees, the department, the College, and the University

Our Academic Advisors will help students:

- Navigate university, college, and departmental systems
- Identify university resources
- Understand program requirements
- Plan courses
- Find solutions to academic problems
- Make academic decisions
- Register for courses
- Find appropriate resources for personal concerns
- Navigate the transfer credit process

WORKING WITH AN ADVISOR

Mechanical Engineering Academic Advisors work with students to ensure they are making satisfactory progress towards their academic and career goals. Students should seek assistance from their academic Advisor as they would from a legal or financial Advisor, keeping in mind that:

- Advisors will only **advise** students with respect to completion of the requirements for a mechanical engineering degree; they cannot and will not make decisions for the student.
- Advisors will provide students with an objective perspective and help students find ways to resolve many issues.

Academic Advisors in the Kiewit Undergraduate Student Services Center can help students find answers to questions they may have and direct students to other campus resources. For questions related to financial aid or housing issues, students should contact financial aid counselors and the Office of Residence. Students should not wait for their Advisor to contact them if the student has questions or is experiencing academic concerns - by then it may be too late! Students are invited to drop by the Kiewit Undergraduate Student Services Center anytime during office hours. Although appointments are generally required to meet with your Advisor, you can drop in during open hours to check with the front desk for general questions. They will let you know if you need to make an appointment. Students are also free to contact their Advisor through email.

Every student has a formally assigned Advisor (the Advisor's name is located in Navigate on the right hand side of the students main dashboard. Students should meet with their assigned Advisor with questions or concerns so that we can best assist you. Your Advisor will know your history and be more aware of the best way to assist you.

Advisors in the Kiewit Undergraduate Student Services Center will be kept informed about their students' academic progress. Even though an academic Advisor will be available to assist students, students are expected to be aware of University policies. Students are also expected to know their degree requirements and to plan schedules in order to meet those requirements. Finally, an academic Advisor can help students only to the extent that the Advisor understands their concerns.

STUDENT RESPONSIBILITY

It is the responsibility of each student to ensure that their program of study satisfies all graduation requirements. Students should:

- Be proactive in reaching out to Advisors!
- Be serious about their studies and take ownership of their learning experiences.
- Be responsible and accountable for their decisions and actions.
- Be knowledgeable about Iowa State policies and procedures and the graduation requirements for the mechanical engineering program.
- Be conscientious about integrating degree requirements with out-of-class, leadership, and career opportunities
- Be aware of all important dates/deadlines (i.e. last day to drop a course, scheduling dates, etc.).
- Know which catalog is dictating their degree requirements.
- Plan their program of study and review their degree audit. Students should resolve any questions they have about either in a timely manner.
- Capitalize upon the resources at their disposal.

Lack of awareness of the policies, procedures, and expectations of the College of Engineering and the University will result in a delayed graduation.

ESSENTIAL RESOURCES

Several important resources students will want to reference throughout their academic career at ISU include:

Academic Progress Reports – Workday
Kiewit Undergraduate Student Services Center – 2620 Howe Hall

A student's Academic Progress Reports will provide them with information about their progress towards a degree. Any concerns or questions should be brought to the student's Academic Advisor as soon as possible to be resolved.

Mechanical Engineering Undergraduate Handbook -
https://www.me.iastate.edu/degree-planning/ - available under Current Students->Advising->Degree Planning *Kiewit Undergraduate Student Services Center – 2620 Howe Hall*

The Mechanical Engineering Undergraduate Handbook is designed to summarize information taken from the ISU Catalog—**it should not be used as a substitute for the Catalog, but as a supplement**.

Iowa State University Catalog - http://catalog.iastate.edu/
Registrar – 214 Enrollment Services Center

The Catalog outlines degree programs and details the expectations that the University and College have of students in completing their respective degree requirements. Additionally, the Catalog summarizes course content and pre- and co- requisites for the courses. Information regarding fees and policies and procedures are also included. ***This document is essential!***

Workday – http://myworkday.com/isu

Workday is the hub of information for a student's personal, academic, and billing information as well as course information for current and upcoming terms.

Iowa State University Academic Calendar - http://www.registrar.iastate.edu/calendar
Registrar – 214 Enrollment Services Center

The Academic Calendar details the important dates and deadlines for each term.

PART 3: COMMONLY REQUESTED INFORMATION

STUDENT RESOURCES

Dean of Students Office: Iowa State students are eligible to receive a number of services from the Dean of Students Office (DSO). Services offered by the DSO are designed to help students make the most of their time while earning their degrees at Iowa State University. Students are encouraged to visit the DSO, 1010 Student Services Building, or website, **www.dso.iastate.edu/**, for academic assistance, counseling, or simply to find out about the services offered by the DSO.

Academic Success Center: The Academic Success Center (ASC) is a collection of services and programs designed to help students reach their academic goals. The center offers individualized and small group experiences, course-specific and general academic assistance, and even credit and non-credit programs. ASC also offers a large menu of services--it's up to students to choose and use those services which can help them get the grades they want. The ASC is located at 1060 Hixson-Lied Student Success Center.
https://www.asc.dso.iastate.edu/

> ***Academic Coaching:*** Academic Coaching is a "learning how to learn" service sponsored by ASC designed to assist students at any level. Coaches work one-on-one with students to evaluate and identify problems with study habits and time management and then help students develop strategies for improvement. Start by meeting with a Success Navigator in the ASC; schedule an appointment using Navigate.
>
> ***Psychology 131****:* This is a one-credit course designed to facilitate students' development of effective study skills including reading textbooks, note-taking, and study strategies. While this is a valuable class, it is ***not*** an approved general education elective for mechanical engineering.
> **https://www.asc.dso.iastate.edu/more/psychology-131**
>
> ***Supplemental Instruction (SI)****:* Supplemental Instruction (SI) is a nationally recognized academic support program offering free, regularly scheduled study sessions for selected number of difficult 100-200 level courses. SI sessions are facilitated by "SI Leaders," undergraduate students who have previously taken the course and demonstrated academic competency in the subject area. **https://www.asc.dso.iastate.edu/supplemental**
>
> ***Tutoring Services****:* This fall, the ASC will be in collaboration with the app Knack, a tutoring platform for undergraduate students. Knack's platform allows students to book one-on-one and group tutoring sessions with tutors. Similar to the current tutoring model, sessions can be conducted in-person and are facilitated by high-achieving Iowa State students who have taken the course and achieved a grade of B or higher. Additionally, sessions will now also be offered online, and students enrolled in select courses will have access to free, unlimited tutoring.
> **https://www.asc.dso.iastate.edu/tutoring**

Student Accessibility Services*:* This unit of the DSO provides a variety of services for students with disabilities. A growing number of college-age students are being identified by their doctors as learning-disabled and in need of accommodations. Services offered by Accessibility Services include: videos, journals, magazines on a variety of disability-related topics, Braille/accessibility maps, readers; note takers, sign-language interpreters, personal assistants, test proctors, proof readers, and advocacy.
www.sas.dso.iastate.edu

LEAD Program: Leadership through Engineering Academic Diversity (LEAD) Initiatives provides services and programming to assist members of unique undergraduate populations with a primary focus on retention of scholars in the College of Engineering and at Iowa State University.

LEAD Initiatives has been recognized by Insight into Diversity with the 2023 Inspiring Programs in STEM Award for being an "exemplary and innovative initiative designed to recruit and retain underrepresented individuals in STEM. For more information about the LEAD Program, contact the LEAD Program Coordinator, 1300 Marston Hall. **www.engineering.iastate.edu/lead/**

Student Counseling Services (SCS): Located on the third floor of the Student Services Building, SCS offers assistance to many students coping with relationship problems, low self-esteem, stress, loneliness, depression, cultural differences, sexual assault recovery, eating disorders, trauma and childhood abuse, conflicts over sexuality, substance abuse, academic motivation, and other concerns. Most clients reach their desired goals within the first six sessions. Those clients who need longer term services can receive assistance in referrals to other agencies within the community.
https://www.counseling.iastate.edu/

Tau Beta Pi: As a national honor society for engineers, Tau Beta Pi strives to help other engineering students to succeed in their classes. Free tutoring is provided each semester in subjects ranging from Math to Thermodynamics. Information and specific times can be located at the Tau Beta Pi web site.
http://iowaalpha.tbp.org/

Women in Mechanical Engineering Program: The goal of the Women in Mechanical Engineering Program is to provide services, support, and networking opportunities to help women students succeed in engineering. For more information about the program, contact their current advisor.
http://www.me.iastate.edu/undergraduate/wime/

SCHOLARSHIPS

Many students qualify for scholarships from Iowa State University. Each year the College of Engineering also awards scholarships to engineering students. The generous support of hundreds of individuals and corporations allows the College to recognize the academic accomplishments of outstanding, hard-working students.

Scholarships are awarded based on merit and financial need. Scholarship opportunities are available to incoming freshmen students, transfer students, and currently enrolled engineering students.

For detailed information on College of Engineering scholarships contact:

Engineering Student Services, 1300 Marston Hall
(515) 294-8355
email:engineering@iastate.edu
www.engineering.iastate.edu/scholarships/

Incoming Engineering Freshmen: Scholarships are awarded to incoming freshmen students based on the information from their admission application. No formal application for the General College of Engineering scholarships is required. The Dean of Engineering notifies incoming first year students, who have been offered admission to Iowa State, if they are recipients of a General College of Engineering Scholarship award. A number of scholarships are offered based on criteria set by donors. The College Scholarships and Awards Committee administer most of these scholarships centrally; a few are administered by individual program offices. Follow this link,

www.engineering.iastate.edu/scholarships, for details on any specific engineering scholarships.

Transfer Students: The College of Engineering awards scholarships to transfer students based primarily on academic performance at the transfer school. Transfer students should complete the online application

(**http://www.engineering.iastate.edu/scholarships/transfer-student-scholarships/**) by the deadline listed for the semester they wish to enter Iowa State.

Currently Enrolled Engineering Students: Currently enrolled students have the opportunity to receive scholarships through the College of Engineering. Students must apply electronically via a form made available through the College of Engineering's homepage. Instructions for using the electronic form are usually available in December and will be available via email from the College of Engineering. Application **deadline is early February** of each year.

General and specific University scholarships are also available. For more information, contact:

Office of Student Financial Aid
0210 Beardshear Hall
Ames, IA 50011
(515) 294-2223
email: financialaid@iastate.edu
www.financialaid.iastate.edu

INTERNSHIPS AND CO-OPERATIVE EDUCATION PROGRAMS

Co-operative education (Co-op's), internships and summer work programs give students the unique opportunity of earning money while gaining valuable engineering experience. These programs allow students to apply what is learned "in the classroom" directly in industry. Upon returning from either a co-op or an internship, students find themselves better able to:

1. Understand their course work
2. See how their engineering course work relates to their chosen field of study
3. Determine if mechanical engineering is the right field of study for them
4. Stay motivated to perform better academically
5. Find full-time employment upon graduation

Even though co-ops and internships are not required, they are highly recommended. Information on companies that participate in these programs is available in the Engineering Career Services (ECS) Office in 3200 Marston Hall or on their website: **http://www.engineering.iastate.edu/ecs/.**

Is there a difference between an internship and a Co-op?

Yes. The Mechanical Engineering Department uses the following definitions:

Co-operative Education Program (Co-op): According to Engineering Career Services, "a co-op is a single work term of a semester or a semester plus a summer."

Even though students are not physically at ISU during the terms they are away, they are still considered full-time students. (They are <u>not</u> assessed tuition and fees while they are away.) This allows a student to maintain most benefits of being enrolled in college (parental health insurance coverage, loan repayment deferment, etc). Students maintain their full-time university status by enrolling in ENGR 3980. The course is an R-credit course and will not affect tuition or grades.

Internship: A work program of less duration than a Co-op. Internships are typically only the summer session. The experience must be at least 10 weeks or longer in order to meet the requirements for ENGR 3960. Approximately 88% of all students with an internship secured positions at the time of graduation (Spring 2019 statistic). Students will register for ENGR 3960 for summer internships. It is an R credit course and will not affect tuition or grades.

How are students guaranteed a significant engineering experience?

Each company that interviews and hires ISU engineering students for either Co-ops or internships has signed an agreement with ISU to give students valuable engineering experience. In turn, ISU agrees to provide each company with quality students.

This agreement is the student's guarantee that the student will not be "getting coffee or filing for someone." It is in the student's best interest to verify with Engineering Career Services that such an agreement has been signed and request that the company sign one if they haven't done so. Most companies value their relationship with ISU and will not risk losing their privileges of hiring ISU students by refusing to sign an agreement or violating an already signed agreement.

Guidelines for Co-ops and Internships

1. In order to qualify for either a Co-op or an internship, students must be enrolled at ISU on a full-time basis.
2. Students interested in Co-ops or internships should sign up with Engineering Career Services using CyHire.
3. Any student can interview with companies and obtain either an internship or Co-op at any time. However, we suggest students complete their basic program before beginning a search for a Co-op and/or internship. It is also suggested that students be in good academic standing before initiating any job search. This will increase the probability of a student's success in an already competitive job market.
4. Once a Co-op or internship offer has been accepted, students need to notify the personnel in the Engineering Career Services, fill out the Experiential Learning Form on CyHire and verify that the company has signed an agreement with ISU. FAQ's regarding registration can be found at this link: **www.engineering.iastate.edu/ecs/internships/how- to-register/**
5. Students can visit with their academic advisor if they would like.
6. Students will enroll in the appropriate experiential course once they have returned the signed EAF form to ECS.

Please note: In some unique cases, students may see their scholarships, parental insurance coverage, living arrangement, etc. affected by not being physically present on campus (even after having registered for ENGR 3960 or ENGR 3980). Therefore, every student accepting a Co-op or internship is advised to notify certain campus offices of the semesters the student will be absent from ISU. In addition, students need to be aware of all possible consequences of their absence from campus.

HONORS PROGRAM

The First-Year Honors Program

The First-Year Honors Program provides special educational opportunities for a limited number of entering first-year students. The program introduces qualified and motivated students to the advantages of an honors education, emphasizing learning in small groups and fostering a sense of community among students with similar abilities and interests.

Students in the First-Year Honors Program are automatically placed in honors sections of First-Year Honors Seminar (HON 1210) and a special section of Library 1600. Unless they bring in credit for ENGL 2500, students will also be placed in an Honors section of English 2500H. Students also have the opportunity to enroll in the honors sections of introductory classes in Biology, Freshman Engineering, Mathematics, Physics, Philosophy, Psychology, Speech and other areas.

Information regarding first year student admissions in the university honors program can be found at https://www.honors.iastate.edu/program/prospective-members/first-year-admissions

University Honors Program

A cumulative grade point average of 3.5 or above is the primary requisite for admission into and continued membership in the Honors Program. Full membership information can be found at:

University Honors Program
2130 Jischke Honors Building
(515) 294-4371
email: honors@iastate.edu
www.honors.iastate.edu

The honors advisor for Mechanical Engineering Students is:

Dr. Mark Mba-Wright
2611 Howe Hall
515-294-0913
email: markmw@iastate.edu

MECHANICAL ENGINEERING LEARNING TEAMS (MELTs)

What is a Learning Team/Community?

In the Mechanical Engineering department, learning teams are made up of small groups of students that work together to enhance each other's academic and networking skills. Mechanical Engineering Learning Teams are non-residential course-based communities. Students participating in a learning team enroll in the same set of courses as well as a one-credit Learning Team Seminar, ME 1900. In the seminar, students participate in group sessions where they review concepts from their courses, learn about opportunities at Iowa State and in engineering from their peer mentors, and work on team building skills. Please visit our learning team web site at:
https://www.me.iastate.edu/melt/

What are the Benefits of Participating in a Mechanical Engineering Learning Team (MELT)?

- Students tend to have more academic success.
- Students tend to have higher GPA's than those who do not participate in learning communities.
- Students gain better insight into the mechanical engineering profession.
- Students receive guidance from experienced mechanical engineering junior/senior peer mentors.

Can Anyone Participate in a MELT?

Learning Team registration occurs during June orientation. In fall 2024, there will be 20 teams of with about 20 students in each team. Approximately, 3/4 of the incoming first-year mechanical engineering students register to be in one of the MELTs.

How do I sign up for a MELT?

1. Students discuss their interest in participating in a learning team when they meet with an Academic Advisor during June orientation.
2. Students register for the specific courses reserved for their learning team when they register for their fall schedule.

SCHEDULE CHANGES

Prior to the start of the term students may use Workday to add or withdrawal from a class. These changes will not be reflected on the student's permanent record. If the student wishes to cancel their registration, the student must do so prior to the start of classes, otherwise they will be assessed tuition and fees. After the semester begins all withdrawals can be done via Workday (see below for instructions).

During the first five days of a semester students may use Workday to add or drop a class. The schedule changes made during the first five days of classes will not count against the student's permanent record. However, if a class is closed, or if permission is required to add the class, the instructor's signature is needed. An advisor's signature is ***not required*** during the first week of classes. After the student has secured the instructor's approval, they can add the course on Workday.

After the fifth day of classes,

Students will still be able to withdrawal from the course via Workday. Changes made after the fifth day of classes will count against the student's permanent record. The last day to drop a class is Friday in the tenth week of courses.

After the drop deadline, course withdrawals are not allowed unless extenuating circumstances exist. An extenuating circumstance is a circumstance beyond the student's control. *A failing grade is not an extenuating circumstance!*

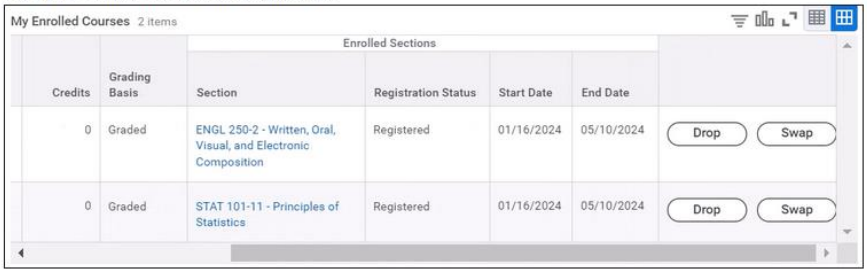
Dropping a class via Workday:

2. Select **Menu** in the top left corner.

3. Select **Academics**.

4. Select **View My Courses** under *Planning & Registration*.

5. In the *My Enrolled Courses* chart, select **Drop** in the very right column. Scroll over to view, if needed. If *Drop* does not appear, you cannot drop this course. Connect with your Academic Advisor for guidance.



What if a class that the student wants to take is closed or full?

1. If a waitlist is available for the course, add yourself to the waitlist. If a seat opens and you are next on the waitlist, you will have 24 to add the course.

2. Check Workday regularly by searching "Find or Register Course Sections Report" to see if a spot has opened. Keep in mind that:
   - Seats may open up at the end of the semester, especially after grades have been released and/or Coop/Internship offers have been accepted.
   - Seats may open up while students shift sections during and after the registration period, up through the start of classes.

****** Checking Workday frequently is key. ******

PROGRAM OF STUDY

If a Mechanical Engineering student decides to change their program of study, the student would do the following:

1. Visit with an advisor in the new department to learn more about that department and the requirements of the new major.
2. Visit with the student's advisor in mechanical engineering. This can be arranged on Navigate. The mechanical engineering advisor will answer the student's question, confirm their change, and request for the change to be completed on Workday.

If the student is on academic probation and making a change to another college, the student must **first receive permission to change** from the college and department the student wishes to enter. If the student proceeds with the change and at a later time determine that he/she would like to transfer back to the College of Engineering, the student must receive permission from the College of Engineering Academic Standards Committee.

STUDY ABROAD OPPORTUNITIES

The first step in determining whether or not a student wants to pursue a study abroad opportunity is to visit with the staff of the Engineering International Engagement office, 1300 Marston Hall (**www.engineering.iastate.edu/studyabroad/**) or the University Study Abroad Center, 3224 Memorial Union (**www.studyabroad.iastate.edu/**).

The Engineering International Engagement office is equipped to answer questions about which programs are best for engineering students, what schools are in countries the student is interested in visiting, what the student will need to do before leaving, approximately how much it will cost to live and study abroad, and a whole host of other important information that will help students make a decision. The Study Abroad Center should also be able to answer many of these same questions, but may have limited information on specific engineering courses and programs abroad.

After students have settled on a school to attend, the next step is to find out which courses they can and/or should register for at the host school. The Engineering International Programs office has identified many courses that meet general education and tech elective requirements for a mechanical engineering degree. Students may access much of this information on the International Engagement website under

Pre-Approved or Previously Transferred Classes or make an appointment to meet with a program coordinator in the Engineering International Engagement office. Students are welcome to visit with their Advisor about to review these evaluations. Additionally, the Office of Admissions also has thorough and extensive records for many international programs and courses.
Students should utilize the online transcript and preliminary degree evaluation program, TRANSIT (**https://transit.iastate.edu/**) or complete a Preliminary Transfer Credit Evaluation form and submit it to the Office of Admissions for review.

If a course has not been previously evaluated, students can request to complete a Course Substitution Evaluation Request via the Engineering International Programs office. **The student is responsible for acquiring the course description, syllabus, and name of the textbook.** Some students are able to get this information through the host institution's web site and through e-mail from staff and/or instructors at the host school. While this part of the process can be extremely time consuming, knowing which courses will apply to an ME degree and which will not is essential before beginning courses at the host school. For this reason, students need to understand the remaining degree requirements before they leave so that they have maximum flexibility in course selection upon arrival. We recommend that students **begin planning for study abroad at least one full semester in advance of departure.**

Students also need to clearly understand evaluation procedures of the institution they are attending (i.e., how often students will be tested on material, how often students will be required to submit homework, when the school year begins and ends, etc.).

Finally, we suggest that students do not go to a host school and take so many credits that they are unable to enjoy the culture of the country they are visiting. The idea is for students to make progress toward the ME degree while gaining a new perspective about the country they are visiting and a new perspective about the U.S.

The procedures students need to follow to prepare for study abroad are summarized below:

- Identify a school through the Engineering International Engagement or Study Abroad Center
- Determine what courses and how many credits will transfer back to Iowa State
- Complete Course Substitution Evaluation Requests, as necessary

TRANSFER CREDIT EVALUATION

If a student has transfer credits from another institution, they should receive a notification when their transfer credits have been evaluated and added to their ISU record. Students transferring credits from other institutions are encouraged to see their advisor regarding application of transferred credits toward their degree.

The Transfer Credit Granted section of Workday lists how the courses taken at other schools transfer to ISU. It also lists the titles for each course, their respective credits, and the grade the student earned in each of the courses. Courses that appear in this area for which there is no direct translation at Iowa State may need to be evaluated. The mechanical engineering department decides which of the transferred credits will apply towards the student's degree in mechanical engineering. Transferred courses that are not applied towards the student's degree will appear in the "Unused Registrations" section at the top of the Academic Progress Report, along with any other non-applicable courses the student has successfully completed. **Mechanical Engineering will not apply any transfer course to the degree in which the student received a grade lower than C.**

If the student feels that a transferred course should be applied to the degree but has not been, they should contact their assigned academic advisor. The advisor will review the credit to verify that all courses that can be applied to the Mechanical Engineering degree have been applied.

Progress toward degree completion is the student's responsibility. Review the APR carefully and make an advisor aware of any credit deficiencies or other issues that will prevent or delay graduation. *It is imperative to note whether or not the transferring institution awards the same number of credits that Iowa State does.* Any credit deficiencies must be resolved in order to graduate. Also, when requesting that transferred credits be applied to the degree, remember the following two rules:

1. No more than 65 transfer credits (97 quarter credits) may be applied toward graduation from a two-year school or community college.
2. A student's final 32 credits should be earned at Iowa State University.

Summer Transfer Courses

If students plan to take courses at another institution over the summer and transfer the credits to Iowa State, the rules and policies listed above still apply. The student is responsible for ensuring off-campus courses can and will be applied to the mechanical engineering degree.

To find out if a course at another institution is equivalent to an Iowa State course, students can utilize TRANSIT - **https://transit.iastate.edu/.** There are also course equivalency guides for each community college in Iowa posted on the Admissions website - **www.admissions.iastate.edu/equiv/index.php** – that students should review before they enroll in courses elsewhere. Additional information on transfer credits for the College of Engineering can be found at **http://www.engineering.iastate.edu/transfer/**.

Students need to be sure that the transfer institution sends updated transcripts to ISU so that classes can be evaluated in a timely manner.

PART 4: REQUIREMENTS FOR A BACHELOR'S DEGREE IN MECHANICAL ENGINEERING

MECHANICAL ENGINEERING CURRICULUM PLANNING

A curriculum outline (page 26) and flow chart (page 28) follow which represent the 129 credits required for graduation. Seven important things to remember as students plan:

1. Basic Program Requirements

Students must have a C (2.00) average in the **Basic Program Courses** taken at ISU in order to be allowed to take 2000 or higher level engineering courses. Until the Basic Program is complete, students will not be allowed to take upper division courses for more than two semesters.

2. General Education/International Perspective/US Cultures (minimum of 15 credits)

- 3 credits for either Econ 1010 or 1020 must be completed
- 3 credits in the *social sciences*
- 6 credits in the *humanities*
- 3 credits in either the *social sciences or humanities*
- Students must meet the University *International Perspective* requirement.
- Students must meet the University *US Cultures* requirement.
- No more than three 1000-level courses will be applied
- All must be chosen from the ME Department General Education approved list

3. English Proficiency Requirement

Students must have a C (2.00) average in Engl 1500 and Engl 2500 with no grade in either class less than C (2.00). If a student fails to meet this requirement, the student needs to do one of the following:

- Repeat one or both classes until the English proficiency requirement is met.
- Take another writing course to make up the deficiency as an alternative to repeating Engl 1500 and/or Engl 2500. *However, the Mechanical Engineering Academic Standards Committee must approve this alternative.*

4. Technical Electives

Fifteen (15) technical elective credits are required for graduation and must be chosen from the ME Department approved list**.**

5. Capstone Design

Three (3) design elective credits are required for graduation. The design elective must be chosen from the ME Department approved list.

6. Mechanical Engineering Foundation

A student must have a minimum grade-point average of 2.00 in this group of courses to move on to the Engineering Core:

MATH 2650	PHYS 2320+L	CE 2740	MATE 2730
MATH 2670	ME 2310	EM 3240	

7. Mechanical Engineering Core Courses

A student must have a minimum grade-point average of 2.00 in this group of courses to graduate:

ME 2700	ME 3450	EE 4420	ME 3700
ME 3240L	ME 3240	EE 4480	ME 4210
ME 3350	ME 3250	ME 3320	ME 4360
CAPSTONE			

CURRICULUM OUTLINE

2024-2025

129 Credits

First Year			
1st Semester	Credits	*2nd Semester*	Credits
CHEM 1670	4	LIB1600	1
ME 1600	3	ENGL 1500	3
MATH 1650	4	ME 1700	3
ENGR 1010	R	MATH 1660	4
ECON 1010 or 1020	3	PHYS 2310 PHYS 2310L	5
Total	**15**	**Total**	**16**
Sophomore			
3rd Semester	Credits	*4th Semester*	Credits
ENGL 2500	3	EM 3240	3
MATE 2730	3	Gen. Ed.	3
CE 2740	3	MATH 2670	4
MATH 2650	4	ME 2310	3
PHYS 2320 PHYS 2320L	5	ME 2700	3
		ME 2020	R
Total	**18**	**Total**	**16**
Junior			
5th Semester	Credits	*6th Semester*	Credits
Gen Ed.	3	ME 3250	3
ME 3450	3	ME 3700	3
EE 4420/EE 4480	4	ME 3350	4
ME 3320	3	Comm. Req.	3
STAT 3050	3	ME 3240	3
ME 3240L	1		
Total	**17**	**Total**	**16**
Senior			
7th Semester	Credits	*8th Semester*	Credits
Tech. Electives	6	Tech. Electives	9
ME 4210	4	Capstone Design	3
ME 4360	4	Gen. Ed.	3
Gen. Ed.	3		
Total	**17**	**Total**	**15**

BASIC PROGRAM REQUIREMENTS

The following courses comprise what is known as the Basic Program. A student must earn **at least a C average** in the Basic Program in order to progress to upper division mechanical engineering courses (ME 2000 and higher). The student must also have an Iowa State cumulative grade point average of 2.00 or higher in order for the Basic Program to be considered complete.

The Basic Program Rule states that until a student completes the Basic Program, they can take 2000-level or higher engineering courses for only two semesters.

The Basic Program	
Chem 1670	4 credits
Engl 1500	3 credits
Lib 1600	1 credit
Engr 1010	R credits
ME 1600	3 credits
Math 1650	4 credits
Math 1660	4 credits
Phys 2310+L	5 credits

Grade Values (quality points/credit)		
A	=	4.00
A-	=	3.67
B+	=	3.33
B	=	3.00
B--	=	2.67
C+	=	2.33
C	=	2.00
C--	=	1.67
D+	=	1.33
D	=	1.00
D-	=	0.67
F	=	0.00

Computing the Basic Program Grade Point Average

1. Multiply the number of credits given for the course by the numerical value of the grade earned. For example, assume the student earned an A in Chem 1670. Chem 1670 is 4 credits at ISU and an A is worth 4.00 quality points/credit. The student would receive 4 credits x 4 quality points/credit = 16 quality points for Chem 1670.
2. Sum the quality points.
3. Sum the credits (attempted or earned).
4. Divide the total number of quality points by the total number of credits attempted or earned;

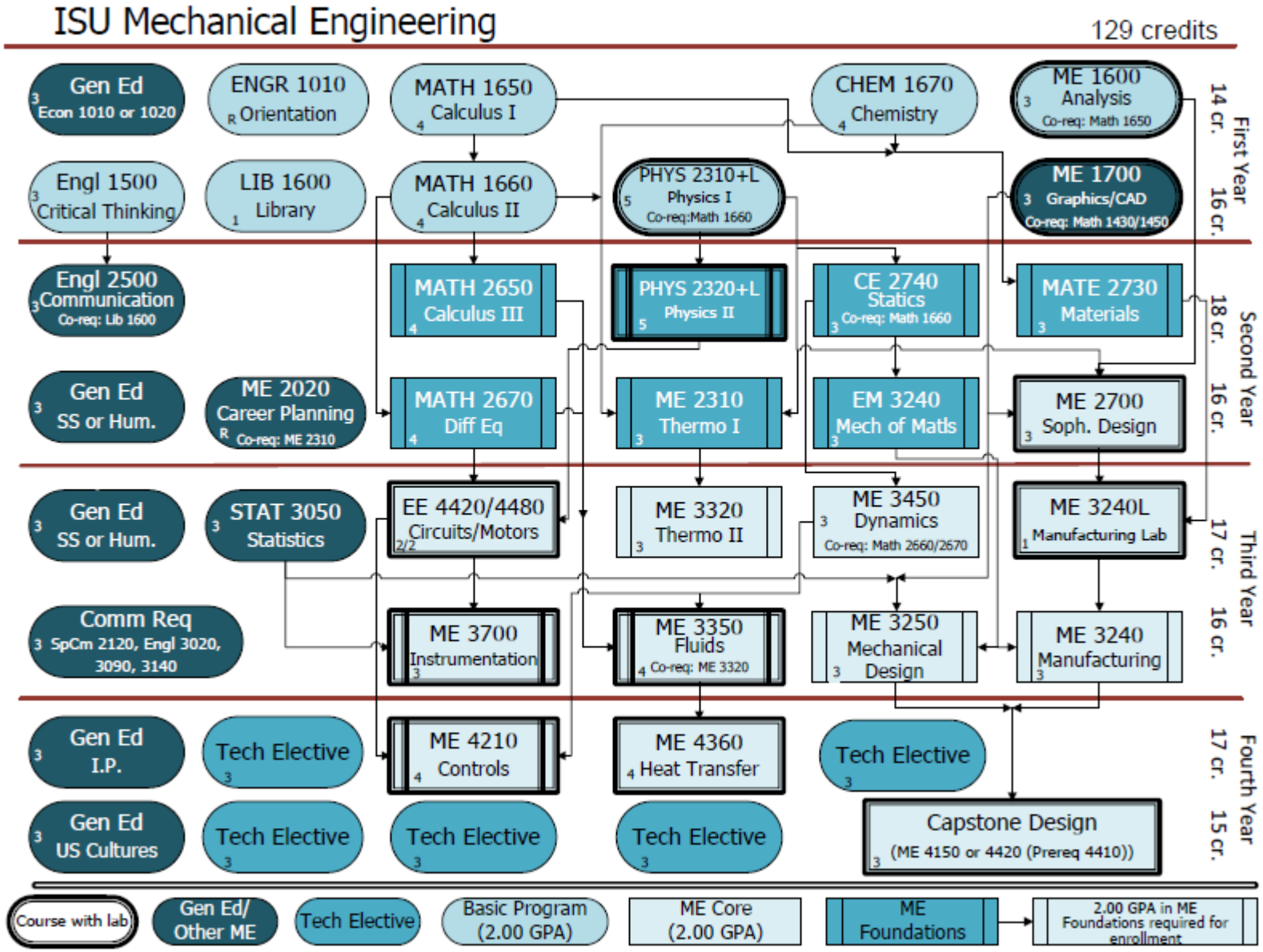
The result from Step 4 is the Basic Program Grade Point Average. Lib 1600 credit is used only if the student fails it! Students can also use the ISU Gradepoint Calculator which can be found at **www.registrar.iastate.edu/gpa-calc/gpaCalculator.html**

Example:

Course	Credits	Grade	Quality Points
Chem 1670	4	A	16.00
Engl 1500	3	C+	6.99
ME 1600	3	A-	11.01
Lib 1600	1	S	
Math 1650	4	B-	10.68
Math 1660	4	B	12
Phys 2310/L	5	C	10.00
Total	**24.0**		**66.68**

Basic Program GPA = Quality Points /Credits · 66.68/24.0 = 2.90

ISU MECHANICAL ENGINEERING FLOWCHART 129 credits



APPROVED SOCIAL SCIENCE AND HUMANITIES COURSES

Undergraduate Mechanical Engineering Students must take for their General Education Electives:

- Econ 1010 OR 1020
- 3 credits of Social Sciences
- 6 credits of Humanities
- 3 credits of Social Sciences or Humanities

3 of these credits must also satisfy the International Perspective Requirements. For complete listing see http://www.registrar.iastate.edu/courses/InternationalPerspectives-current.html

3 of these credits must also satisfy the US Cultures and Communities Diversity Requirements. For complete listing see http://www.registrar.iastate.edu/courses/USDiversity-current.html

For a complete list of approved ME general education electives please visit:

https://www.me.iastate.edu/degree-planning/

No more than three 1000-level Social Science and Humanities courses can apply to a degree in ME.

APPROVED TECHNICAL ELECTIVES

Criteria for Technical Electives

Technical electives provide an opportunity for students to explore a range of advanced technical subjects (engineering, mathematics and the natural sciences) or relevant engineering professional skills topics (e.g. design, business, management, marketing) to provide increased breadth or to focus on a specific technical area to develop in-depth understanding. This generally implies a course that

- Is designated at the 3000 level or higher, including graduate level courses
- Utilizes skills developed in introductory and intermediate technical courses (basic program and ME engineering math, science requirements) or covers topics to enhance students' knowledge of professional skills related to the engineering profession.

Bachelors of Science in Mechanical Engineering (BSME) Technical Elective Course Requirements

- The BSME requires at least 15 credits of technical electives (in addition to a capstone design elective).
- Any Independent Study courses (4900, AER E 4940/4940X, or other) must go through a departmental approval process prior to being applied as TEs. "All courses" as noted below does **not** automatically include 4900, AER E 4940, or other independent study classes in the listed departments – see your advisor for details).
    - No more than six (6) total credits of independent study (ME 4900, non-ME 4900, AER E 4940/4940X or other independent study) will be applied to the BSME degree, and no single independent study experience may exceed three (3) credits.
- Any courses involving travel must show specific learning outcomes and assessment plan prior to approval.
- Internship and cooperative education courses in any department (including ME) are not acceptable as technical electives.
- Departmental prerequisites are **not** waived simply because a course is on this list. Students must complete the prerequisites or obtain prior professor approval to waive the prerequisites.
- Some listed courses may be restricted to majors only and may not be available to ME students.
- 2000 level prerequisite courses may be applied as technical electives if taken **prior** to the final course and credit is earned in the final course.

You can view the list of approved Tech Electives here: https://www.me.iastate.edu/degree-planning/

INDEPENDENT STUDY, ME 4900

Independent study courses are variable credit courses (1-6 credits) that provide students and a mechanical engineering faculty member an opportunity to work together on a special project or topic area of which the student and the faculty member share an interest. **No more than 6 credits of any independent study courses will be applied to the degree.**

Independent study IS NOT a means by which students can acquire course content of courses not being offered during a particular semester. For example, if a student wants to take ME 4490, IC Engine Design, but will miss the proper sequencing of pre-requisite courses that would allow them to take ME 4490, then the student SHOULD NOT approach the professor of ME 4490 about teaching an independent study that would enable him or her to learn what would be missed by not taking ME 4490.

Before the student agrees to complete the requirements of an independent study course, **the student must understand what the professor expects of them**. And, by the same token, the student must communicate their expectations of the course to the professor. For these reasons, an independent study form should be completed and signed by the student and the supervising professor. Once the form is signed by both the student and professor, the form then goes to the academic advisor; they will sign the form and forward it to the Mechanical Engineering Academic Standards Committee (MEASC). MEASC will review the content of the course and vote to either approve the course as a technical elective or recommend that the student and professor review the rigor and content of the course and resubmit for further review.

The student must understand, before agreeing to do an ME 4900, how much time the supervising professor is willing to spend with the student on the topic or project. Independent study courses are not good choices for students seeking a structured learning environment. Independent study courses are not good choices for students who are not self-motivated and proactive or for students who require close supervision and direction. Independent study courses are, in part, designed to teach students how to become self-sufficient in solving and researching engineering problems. If the student is seriously considering advanced study of mechanical engineering as a graduate student, an independent study course will help to gauge how well the student might like graduate school.

The following sequence of steps should be followed to enroll in a ME 4900 course:

1. Identify a supervising professor and discuss course content/project with them.
2. Complete an Independent Study Form. Forms and information are available on the Mechanical Engineering Website under Undergraduate Independent Study 4900: **https://www.me.iastate.edu/undergraduate-independent-study-490/**.
3. The completed form will be electronically set to your supervising professor. Once approved, the form will be electronically sent to the Mechanical Engineering Academic Standards Committee (MEASC) for approval as a technical elective.
4. Once all of the approvals have been given, the student may register for the independent study course.

Every professor has a special section of ME 4900. Students can get help identifying that section in order to register by contacting their Academic Advisor.

ACADEMIC CAREER PLANNING

When student are planning their academic careers, they should be familiar will all requirements of the mechanical engineering degree. Students should also consider securing a co-op or internship and/or participating in study abroad. Students need to be aware when technical electives are offered and the pre-requisites required to take those courses. In planning each semester, students should be aware that many courses in the mechanical engineering curriculum have accompanying labs and that the number of credits awarded for a course may not reflect the amount of time students are actually in class. For example, ME 2700 is a 3 credit course. However, students will be in class for approximately seven contact hours each week.

Do not forget to use options such as repeating a course and using **designated repeat credits**. Each student is allowed 18 credits worth of classes that they may repeat and have the most current grade used instead of the previous grade. Talk with an advisor about judiciously using designated repeats. Also, carefully consider the consequences of withdrawing from a course; withdrawing from a single course can potentially change the remaining semester plans. For example, if a student is enrolled in Math 1660 and Phys 2310, dropping Math 1660 would mean the student would need to drop Phys 2310, which is a co-requisite with Math 1660.

Transfer credit grades are not factored into a student's GPA! Transfer grades do not make a difference to a student's Iowa State University cumulative GPA or Basic Program/Foundations/Core GPA requirements. In order to transfer courses, you must have a C or better in the class.

To compute the GPA go to the University Gradepoint Calculator located at:
https://www.registrar.iastate.edu/students/grades/gpa-calc

READING THE ACADEMIC PROGRESS REPORT

An academic progress report (APR) is a record of the progress a student has made toward completing the degree requirements. APRs are accessible to students at any time in Workday. Students need to review the APR at least once each semester. Students should contact their advisor immediately if their APR is inaccurate.

Student Info: This information can be found on the main dashboard of Workday under "academics". Pieces of information in this area include curriculum, classification, email address, date of entry, graduation date, total credits, cumulative GPA, designated repeat credits, and advisor. If a student is going to graduate in the next academic year, the graduation date is ***very important***.

For questions/help navigating workday click the link listed here: https://iastate.service-now.com/esc?id=kb_article&table=kb_knowledge&sysparm_article=KB0022857#drop

GRADUATION REQUIREMENTS

Graduating seniors must file a graduation application on Workday **by the end of the semester prior to the graduation semester.** However, students may file one as early as the Workday registration period of the semester preceding the graduation term. Additional graduation information can be found at the following web site: **www.registrar.iastate.edu/graduation/**

Students should follow the following steps when planning for graduation:

1. Ensure that registration for the graduation term is complete and the date of graduation on the APR is correct.

2. Ensure that the Iowa State cumulative grade point average and Mechanical Engineering grade point average are at least a 2.00.
    - If a student entered Iowa State University with a quality point deficiency, the student must have earned sufficient quality points above a 2.00 to offset that deficiency.
    - If a student has taken courses at other colleges or universities, the student must submit all transcripts from the other schools to the Iowa State University Office of Admissions.

3. Incompletes in all courses must be resolved **prior to midterm** of the semester of graduation.

4. The final 32 credits must be taken at Iowa State University.

5. Resolve any outstanding financial obligations to the University.

Go through the following graduation checklist **one semester prior** to graduation term.

- ✓ The graduation date on the APR is accurate (if not, see an advisor).
- ✓ The APR is accurate, and sufficient credits in each area have been earned to ensure graduation (if a student is short credits in any area of the APR, talk with an advisor immediately).
- ✓ Graduation Application has been submitted to the Registrar's office.
- ✓ Plan to complete the Fundamentals of Engineering (F.E.) exam, if desired. Sign up and find more info here: http://ncees.org/Exams/
- ✓ All outstanding financial aid obligations have been resolved (i.e., parking tickets, library fines, tuition and fees).

PART 5: ACADEMIC STANDING

ACADEMIC PROBATION

Academic probation signifies that a student's grades are below an acceptable level. In fact, probation is an enrollment status for students who are not making satisfactory progress towards graduation.

Once a student is placed on academic probation, that student must show improvement to remain enrolled at ISU. How much improvement and in how much time the improvement must be seen depends upon a student's classification. If a student fails to show academic progress, they will be dismissed from the University. ***The first time a student is dismissed, they must remain out of school at least one semester. If a student is dismissed more than once, the student will not be allowed to enroll for at least one full year.*** Students are not guaranteed reinstatement; the College of Engineering Academic Standards Committee will consider the student's petition and proposed program of study, and, based on these, will decide whether to permit the student to enroll in classes.

Contrary to popular belief, being placed on probation, or being dismissed because of probation, is not a punishment. It is the university's way of telling a student that things are not working out at the moment and if nothing changes, the probability for continued failure is high. Probation is an opportunity for students to identify the factors that are contributing to poor academic performance. If a student is unable to identify the factors that are causing poor academic performance, the University will give that student the needed time to address each of the problems that is keeping them from meeting their academic goals.

Therefore, students that are placed on probation are advised to think about their situation carefully and work with their academic advisors to analyze their options and develop an academic plan to help them find a way out of probation.

More detailed information about ISU's Academic Probation Policies can be found at:
https://catalog.iastate.edu/academic_standing/

Students should also take advantage of the various resources available to them which are outlined in the "Student Resources" section of this handbook. Also, students who find themselves placed on Academic Warning or Probation must complete the ***Academic Intervention Self-Assessment form***. This tool can be located on the Grades & Transcripts link within AccessPlus through Fall 2024.

How does ISU determine if a student should be placed on academic warning or academic probation?

Academic Warning Status
While a warning (W) is the least severe of the negative academic actions, it serves as a reminder that future semesters below 2.00 may result in more serious consequences. In fact, a student on warning whose subsequent term GPA is below a 2.00 will be placed on probation (P) the following term. Students on academic warning status are required to work in consultation with their academic advisor or the Academic Success Center to develop a plan for academic improvement. The academic warning is not part of the student's permanent academic record.

Students will receive an academic warning (W) at the end of any fall or spring semester when they earn a GPA of 1.00 – 1.99 for that semester. At the end of the next semester of enrollment, one of the following actions will be taken for students on academic warning status:

- Students will be placed on academic probation if they earn less than a 2.00 GPA for the next fall or spring semester, OR
- They will be removed from warning status if they earn at least a 2.00 semester GPA for the next fall or spring semester and are not subject to academic probation based on cumulative GPA (over 75 credits).

Academic Probation Status
Academic probation is an indication of very serious academic difficulty which may result in dismissal from the university. Students may be placed on academic probation as a result of either semester GPA, cumulative GPA, or both. Students who are placed on academic probation are required to work with their academic advisor to develop a plan for academic improvement. Academic probation status is not a part of the student's permanent academic record.

Students will be placed on academic probation (P) at the end of a semester/term for either of the following two reasons:

1. Semester GPA: Students who earn less than a 1.00 at the end of any fall or spring semester, or less than a 2.00 in two consecutive semesters, will be placed on academic probation. Students will not be placed on academic probation at the end of the summer term due to summer term GPA only.
2. Cumulative GPA: Students with 75 or more credits attempted or earned, whichever is greater, will be placed on academic probation at the end of any fall, spring, or summer term when their cumulative GPA is less than 2.00. Students with 75 or more credits attempted or earned who have a transfer GPA < 2.00 will be placed on academic probation at the end of any fall or spring semester or summer term when their combined transfer/ISU cumulative GPA is less than 2.00.

At the end of the next fall or spring semester of enrollment, one of the following actions will be taken for students on academic probation status:

- Students will be academically dismissed if they fail to earn at least a 2.00 semester GPA, OR
- They will continue on academic probation if they earn at least a 2.00 semester GPA, but are subject to continued academic probation based on their cumulative GPA (over 75 credits), OR
- They will be removed from probation if they earn at least a 2.00 semester GPA and are not subject to continued academic probation based on their cumulative GPA (over 75 credits).

What happens after a student is dismissed?

Junior or Senior students who are dismissed can petition to have the decision reconsidered. However, in the absence of extenuating circumstances, chances of the dismissal being reversed are highly unlikely. Petitions for having the academic dismissal decision reconsidered must be made to the College of Engineering Academic Standards Committee. These petitions are placed through a student's academic advisor. Petitions must include a written statement from the student, a plan of study for the next two semesters, and a letter from an academic advisor.

If the academic dismissal decision is not reversed, or if the student chooses not to request reconsideration of the decision, the student will be considered for reinstatement only after at least one academic semester has elapsed. The procedure for reinstatement consideration is the same as that for having the academic dismissal decision reconsidered.

For more information on academic probation, academic dismissal, and reinstatement procedures please refer to the University Catalog, **http://catalog.iastate.edu/**. For reinstatement forms and information regarding deadlines, students can contact their academic advisor or go to: https://www.provost.iastate.edu/academic-programs/policies/academic-standing

PART 6: INFORMATION FOR FACULTY

ENROLLMENT VALIDATION

To validate enrollment in a class, students must attend either the first or second class meeting of the semester. If a student attends either or both of the first two class meetings, then that student's enrollment is said to be "validated." Professors have the option of offering registered places in a course to other students when registered students fail to validate their enrollment. A student who has not validated enrollment may be advised by the professor to initiate a drop. If the student does not proceed as advised, the professor of the course has the prerogative of issuing an "F" grade to the student.

Enrollment validation is particularly important for courses with long waiting lists.

PERSISTENT STUDENT ABSENCE

If a student is persistently absent, the advisor, if notified by the instructor, will attempt to contact the student and make the student aware of the professor's concerns. Additionally, the student will be advised to contact the professor to discuss absences and missed assignments.

If a student attends either or both of the first two class periods of the semester, and is absent for the remainder of the term, an "F" grade will be issued to the student. If a student is enrolled in a course but never attends it (i.e., never validates their enrollment), the student may petition the College to have the course retroactively dropped. In this instance, "not attending" should be noted for a midterm grade.

ENFORCEMENT OF PRE-REQUISITES

The Kiewit Undergraduate Student Services Center makes every attempt to check that students meet course pre-requisites. If a student wishes to take a course without meeting prescribed pre-requisites, the student should complete the ME Prerequisite Waiver form that can be found via their Academic Advisor. If a student is enrolled in a course and does not meet course pre-requisites and the prerequisite waiver has not been approved, then the student should be advised by the instructor to initiate a drop. Although most students will proceed as advised, if a student refuses to drop, the instructor has the right to issue an "F" grade to that student, regardless of the work the student has completed during the semester.
Instructors are not required to grade the offending student's course work or even acknowledge that the student is enrolled in the course.

Course pre-requisites should be announced on the first day of class and/or spelled out on a syllabus.

AUDITS

Auditing a course means that a student is enrolled without receiving credit for the course. The instructor of the course approves the audit request. Students are assessed fees as though they are taking the course for credit, but the audited course does not count in determining full-time student status. However, an audited course does count towards the maximum allowable credits per semester. Students may not audit a course after the 10th day of classes.

STUDENTS WITH DISABILITIES

Students desiring accommodations because of a documented disability must have been diagnosed as having that disability by a physician. After the student's disability has been diagnosed, the student must contact the Student Accessibility Services Office, 1076 Student Services Building, if the student requests academic accommodation. Documentation of the disability is required. Student Accessibility Services will provide the student with a Student Academic Accommodation Request (SAAR) form. The request form spells out the specific accommodation that is being requested of the instructor.
The student is responsible for requesting services, meeting with the instructor, completing and returning the form.

It is the student's responsibilities to:

1) Self-identify and disclose by contacting Student Accessibility Services staff.
2) Provide up-to-date and complete documentation of disability to Student Accessibility Services staff.
3) Meet with Student Accessibility Services staff to identify reasonable accommodations.
4) Complete Student Academic Accommodation Request (SAAR) form(s).
5) Discuss accommodations with the faculty member.
6) Abide by student code of conduct set by the University.
7) Maintain academic standards set by the college.

Please refer to the following web page for resources: https://sas.dso.iastate.edu/campus-accessibility-resources

For further information or elaboration, contact:

Student Accessibility Services
Dean of Students Office
1076 Student Services Building
Ames, IA 50011
Phone: 515-294-7220
Email: accessibility@iastate.edu