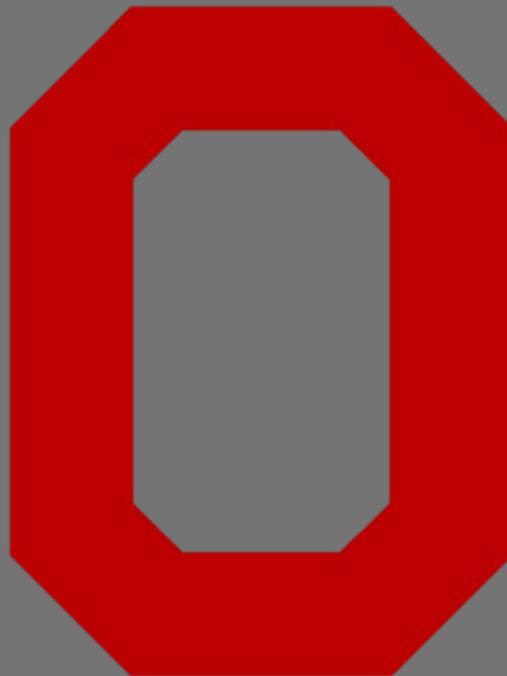


2018 -
2019

Department of Mechanical and Aerospace Engineering Undergraduate Student Handbook

Bachelor of Science in Aeronautical and
Astronautical Engineering
Bachelor of Science in Mechanical Engineering



Department of Mechanical and Aerospace Engineering
College of Engineering
The Ohio State University
201 W 19th Ave, Columbus, OH 43210



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Academic Advising

The Department of Mechanical and Aerospace Engineering (MAE) has five full-time undergraduate (UG) staff members dedicated to assisting students. Students are encouraged to email and/or meet with one of the advisors to discuss and resolve questions and concerns. Each student will be assigned to one of the advisors, who will appear on their My Buckeyelink; however, any of the advisors can assist any student.

Advisors are available to meet in-person, by appointment, and during walk-in hours.

Appointment Hours: Monday-Tuesday 1:00-4:00pm and Wednesday-Thursday 9:00am-12:00pm

Scheduling an Appointment: Appointments must be made at least one day in advance of the requested meeting date. To make an appointment, contact the MAE Advising Office via email, phone, or in-person.

Appointments are generally a half hour in length. Potential reasons to schedule an appointment include, but are not limited to: requesting information about academic programs; changing majors; clarifying academic requirements, policies, and procedures; petitioning for reinstatement or late withdrawal; discussing graduation requirements; and discussing academic difficulties and concerns.

Walk-In Hours: Monday-Tuesday 9:00am-12:00pm and Wednesday-Friday 1:00-4:00pm

Walk-in hours are intended for situations that can likely be resolved quickly. Potential issues that can be resolved during walk-in hours include, but are not limited to, clarifying general education requirements; verifying schedules for subsequent terms; or adding/dropping courses.

Undergraduate Advising Staff

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E-mail Guidelines

The primary mode of communication between advisors and students is email. When contacting an advisor by email, it is necessary to use an OSU e-mail account. Otherwise, advisors are unable to verify that the sender is the student (*because nobody else should have access to students' OSU e-mail account*). **Advisors will not discuss student information or process requests from outside email accounts.** Please allow up to two business days for a response. If necessary, an advisor may request that a student schedule an appointment to discuss an issue, as email is not always the most suitable mode of communication.

Advisor / Student Responsibilities

Academic advising is a partnership between the student and the advisor. Both parties have responsibilities in this partnership.

Advisor responsibilities include:

- providing current and accurate information about academic majors and requirements;
- providing information on opportunities that help enhance your academic program;
- helping to plan a course of study and give advice about courses and course loads;
- referring to other resources as appropriate.

Student responsibilities include:

- acquiring the information needed to assume final responsibility for course scheduling, program planning, and meeting graduation requirements;
- seeking academic career and information needed to meet educational goals;
- understanding policies and rules of the University;
- following through on an advisor's referral;
- being prepared with accurate information and materials when contacting an advisor;
- contacting an advisor at the onset of potential issues.

Degree Audits and Advising Reports

Helpful tools used by advisors that can be accessed by students are Degree Audits and Advising Reports. Degree Audits display all curriculum requirements a student has met and has yet to complete. Advising Reports can be used as unofficial transcripts. Each can be run from My Buckeyelink.

Aeronautical and Astronautical Engineering Undergraduate Program

Program educational objectives describe the expected accomplishments of graduates during the first few years after graduation. Program outcomes are statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that student acquire in their matriculation through the program.

Department Mission Statement

The mission of the Department of Mechanical and Aerospace Engineering is the education of professionals in mechanical, aerospace, and nuclear engineering, the dissemination of knowledge and technology, and the development of innovative solutions to problems in these fields.

Program Objectives

The Program Educational Objectives of the Aeronautical and Astronautical Engineering program are to matriculate graduates who conduct themselves in a responsible, professional and ethical manner (citizenship), and who upon the years following graduation, are engaged in:

1. Discovery

- a. actively embracing leadership roles in the practice of engineering in industry and government organizations (including both traditional and emerging technical areas)
- b. research and development across disciplines (via graduate study or industry) to advance technology and foster innovation in order to compete successfully in the global economy.
- c. applying their engineering problem solving skills to less traditional career paths (e.g., law, medicine, business, start-up ventures, and public policy, etc.).

2. Learning

- a. actively participating in professional development opportunities (conferences, workshops, short courses, graduate education, etc.).
- b. updating and adapting their core knowledge and abilities to compete in the ever changing global enterprise.
- c. developing new knowledge and skills to pursue new career opportunities.

3. Engagement

- a. serving as mentors for the engineering profession, helping others develop a passion for engineering.
- b. exchanging and applying knowledge to create new opportunities that advance our society and solve a variety of technical and social problems.
- c. entrepreneurial ventures and fostering activities that support sustainable

economic development that enhance the quality of life of people in the state, across the country, and around the world.

Program Outcomes

Our program outcomes are categorized into two groups, listed below:

1. Program Course Learning Outcomes (PCLO)

- a. Fundamentals: development and acquisition of strong physical insight into the fundamentals of air and space transportation system.
- b. Problem Solving: utilization of analytical and computational methods for applying core knowledge in aerodynamics, structures, propulsion and power, and dynamics and control to formulate and solve problems in engineering, including the use of current experimental and data analysis techniques
- c. Communication: ability to work collaboratively and creatively, and to communicate effectively, in applying discipline-specific knowledge in basic sciences and aerospace engineering
- d. Professional, Ethical and Societal Responsibility: ability to behave professionally and ethically, and to aid in the solution of societal problems using the aerospace engineering discipline

2. Broad ABET Educational Outcomes (AEO)

- a. an ability to apply knowledge of mathematics, science and engineering
- b. an ability to design and conduct experiments, as well as to analyze and interpret data
- c. an ability to design a system, component, or process to meet desired needs
- d. an ability to function on multi-disciplinary teams
- e. an ability to identify, formulate, and solve engineering problems
- 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 global and societal context
- i. a recognition of the needs 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

Application to the AAE Major

Admission to the Aeronautical and Astronautical Engineering major is by application only and is in accordance with the College of Engineering enrollment management plan approved by the University Council on Academic Affairs.

In order to apply to the major you must have:

- at least a **Cumulative Point Hour Ratio (CPHR)** (i.e. overall GPA) of 2.0
- at least an **Eligibility Point Hour Ratio (EPHR)** (i.e. "eligibility" GPA) of 2.0. This includes EPHR courses taken at a previous institution.
- also completed or be in progress of completing the EPHR courses below.

EPHR Under Semesters:

- CHEM 1250 **or** 1220 (1210* needed to take 1220, however only 1220 is an EPHR course)
- PHYSICS 1250 and 1251
- ENGR 1181.0x and 1182.0x **or** 1281.0x and 1282.0x **or** 1186, 1187, and 1188
- MATH 1172 (1152) and 2173 (2153), **or** 1161.0x, 2162.0x
- MECHENG 2040
- AEROENG 2200
- ENGLISH 1110.0x (C- or above). This grade is not part of your EPHR.

If an EPHR course is repeated, the most recent grade is taken.

*If you started your studies at OSU **summer or autumn semester 2012** and took **CHEM 1210 autumn semester 2012**, you do not have to take CHEM 1220. If you take CHEM 1210 spring semester 2013 onwards, you must either take CHEM 1250 or 1220. No exceptions.

How to apply:

Submit an application on-line through the [College of Engineering](#) or through the [MAE Department website](#).

Application deadline – third Friday of autumn semester

Selection Criteria

The admission cycle is held once a year. The number of places awarded per cycle is based on several factors which include the strength of the applicant pool and department resources. Admission to the major is currently competitive and based on the Eligibility Point Hour Ratio (EPHR).

Decision Notification and Class Scheduling

Students who have a completed EPHR of at least 3.2 at the time of application will be automatically admitted to the AAE major. Major admission decisions will be sent to you via email after all final grades for EPHR courses have been posted at the end of the semester.

Admitted students will not be able to add AEROENG 2201 or 2405 until after the admit decision is made.

AAE Curriculum "Bingo" Sheets

New First Year Freshman – Non-Honors

Year	Autumn		Spring	
1	MATH 1151 PHYSICS 1250 ENGR 1181.0X ENGR 1100.01 General Education	5 cr 5 cr 2 cr 1 cr 3 cr	MATH 1172 CHEM 1250 ENGR 1182 ENGR 1221 General Education	5 cr 4 cr 2 cr 2 cr 3 cr
	Total	16 cr	Total	16 cr
2	MATH 2173 PHYSICS 1251 AEROENG 2200 MECHENG 2040	3 cr 5 cr 4 cr 4 cr	MATH 2174 AEROENG 2201 AEROENG 2405 MECHENG 2030 ECE 2300	3 cr 4 cr 3 cr 3 cr 3 cr
	Total	16 cr	Total	16 cr
3	AEROENG 3520 AEROENG 3560 AEROENG 3542 AEROENG 3581 General Education	3 cr 3 cr 3 cr 3 cr 3 cr	AEROENG 3521 AEROENG 3543 AEROENG 3570 AEROENG 3580 General Education	3 cr 3 cr 3 cr 3 cr 3 cr
	Total	15 cr	Total	15 cr
4	AEROENG 4510 AEROENG 4515 OR AEROENG 4517 AEROENG 4550 Technical Elective General Education General Education	2 cr 3 cr 3 cr 3 cr 3 cr 3 cr 3 cr	AEROENG 4511 AEROENG 4516 OR AEROENG 4518 Technical Elective Technical Elective General Education General Education	2 cr 3 cr 3 cr 3 cr 3 cr 3 cr 3 cr
	Total	17 cr	Total	17 cr

Total Credit Hours: 128

While all of the indicated courses are required, this schedule should be used as a guide only. Courses in **bold face are only offered during the listed term.**

All students must satisfy a minimum of 32 credit hours for basic math and science. Students should consult with an MAE academic advisor to ensure the minimum is met. Students may be required to take extra coursework to meet graduation requirements.

New First Year Freshman – Honors

Year	Autumn		Spring	
1	MATH 1151	5 cr	MATH 1172	5 cr
	PHYSICS 1260	5 cr	PHYSICS 1261	5 cr
	ENGR 1281.0X	5 cr	ENGR 1282.0X	3 cr
	ENGR 1100.01	1 cr	General Education	3 cr
	Total	16 cr	Total	16 cr
2	MATH 2173	3 cr	MATH 2174	3 cr
	CHEM 1250	4 cr	AEROENG 2201	4 cr
	AEROENG 2200	4 cr	AEROENG 2405	3 cr
	MECHENG 2040	4 cr	MECHENG 2030	3 cr
	General Education	3 cr	ECE 2300	3 cr
	Total	18 cr	Total	16 cr
3	AEROENG 3520	3 cr	AEROENG 3521	3 cr
	AEROENG 3560	3 cr	AEROENG 3543	3 cr
	AEROENG 3542	3 cr	AEROENG 3570	3 cr
	AEROENG 3581	3 cr	AEROENG 3580	3 cr
	General Education	3 cr	General Education	3 cr
	Total	15 cr	Total	15 cr
4	AEROENG 4510	2 cr	AEROENG 4511	2 cr
	AEROENG 4515	3 cr	AEROENG 4516	3 cr
	OR		OR	
	AEROENG 4517	3 cr	AEROENG 4518	3 cr
	AEROENG 4550	3 cr	Technical Elective	3 cr
	Technical Elective	3 cr	Technical Elective	3 cr
	General Education	3 cr	General Education	3 cr
	General Education	3 cr	General Education	3 cr
	Total	17 cr	Total	17 cr

Total Credit Hours: 130

While all of the indicated courses are required, this schedule should be used as a guide only. Courses in **bold face are only offered during the listed term.**

All students must satisfy a minimum of 32 credit hours for basic math and science. Students should consult with an MAE academic advisor to ensure the minimum is met. Students may be required to take extra coursework to meet graduation requirements.

General Education Requirements

The College of Engineering requires students to complete eight general education courses and satisfy two additional requirements.

The College of Engineering General Education Requirements:

1. First Writing Course: English 1110.0X
2. Second Writing Course: *subject 2367*
3. Social Science Course A
4. Social Science Course B
5. Historical Study
6. Literature
7. Visual/ Performing Art
8. Cultures and Ideas **or** Second Historical Study

Additional Requirements:

1. Professional Ethics
2. Diversity

Ethics and Social Diversity may be covered within certain General Education courses with proper planning. The following courses “double-count” as described:

- Ethics and Social Science
 - ECON 3048 – Social Science group A
 - SOC 3302, 3464 – Any Social Science group
- Ethics and Cultures and Ideas
 - PHILOS 1332, 1337, 1338
 - BIOETHICS 2010
 - COMPSTD 2341
- Social Diversity
 - There are second writing, social science group A, historical study, literature, visual/performing arts, and cultures and ideas general education courses that are designated as social diversity. These courses have their course number underlined in the College of Engineering General Education list.

Students may have to take more than eight general education courses to meet the requirements. If a student takes multiple general education courses in the same sub-category (i.e. PSYCH 1100 and COMM 1100 – Social Science group A), then only one course will count towards the degree. General Education requirements can be

checked by running a Degree Audit or contacting an advisor. See Appendix for full list of approved GE courses.

AAE Technical Elective Program

Undergraduates who are majoring in Aerospace Engineering are required to take 3 technical elective classes. There are 3 technical elective programs that are available for students to fulfill their Technical Elective course requirement:

Option A: Standard Elective Track

Option B: Honors Research Track

Option C: Research Track

Option A: Standard Elective Track

All Aeronautical and Astronautical Engineering Majors are required to take 9 credit hours of Technical elective classes. At least 6 hours must come from AAE courses.

Eligible Courses:

You may take any 5000, 6000, or 7000 level Aerospace Engineering (AAE) courses to fulfill your requirement. Please refer to the Registration and Permissions section below for more details. Current offerings may include:

- AAE 5610 Helicopter Aerodynamics
- AAE 5612 Aircraft Performance and Flight Test Engineering
- AAE 5615 Introduction to Computational Aerodynamics
- AAE 5616 Advanced Flight Vehicle Design
- AAE 5620 Stability and Control of Flight Vehicles
- AAE 5621 Guidance, Navigation, and Control of Aerospace Vehicles
- AAE 5626 Orbital Mechanics for Engineers
- AAE 5645 Introduction to Structural Dynamics and Aeroelasticity of Aerospace Vehicles
- AAE 5751 Advanced Air Breathing Propulsion
- AAE 5752 Advanced Space Propulsion
- AAE 5771 Viscous Fluid Flow: Laminar and Transitional
- AAE 5775 Hypersonic Flow

Not all courses are offered every year, see website for graduate level classes.

You may also count one course from outside the AAE curriculum from the following list as partial fulfillment of your technical elective requirement:

- ME 5139 Applied Finite Element Method
- ME 5144 Engineering Fracture Mechanics

- ME 5162 Introduction to Laminated Composite Materials
- ME 5240 Vibration and Acoustic Design
- ME 5372 Design and Control of Mechatronic Systems
- ME 5539 Applied Computational Fluid Dynamics and Heat Transfer
- ME 5716/NE 5716 Probabilistic Reliability and Safety Assessment
- ME 5751 Design and Manufacturing of Compliant Mechanisms and Robots
- NE 4505 Intro to Nuclear Science and Engineering
- NE 5606 Radiation Protection and Shielding
- CE 5420 Remote Sensing of Environment
- CE 5441 Introduction to GPS: Theory and Applications

Please keep in mind that some of these courses may have pre-requisites or co-requisite requirements outside of the normal AAE curriculum. Please refer to the course description in the OSU course catalog for details. You are responsible for meeting these requirements for the course

Not all courses on this list are offered in every academic year; see the schedule of classes for offering information.

Option B: Honors Research Distinction Track

This track is intended for students with at least a 3.4 GPA who wish to perform undergraduate research. Under this track, students may apply 3 hours of AEROENG 4999H towards their undergraduate technical elective program; the other 2 classes must be approved technical electives that meet the requirement for Option B. The steps listed below allow a student to meet the College of Engineering Requirements for Honors Research Distinction.

1. A total of 6 cr-hrs of AEROENG 4999H. While only 3 hours can count towards the TE program, it is a requirement of the College to take 6 hours of 4999H
2. 2 other technical elective courses
3. Successful defense of thesis and submission of thesis to Knowledge Bank
4. Completion of an Honors Contract in Engineering or performing at least 1 action from the following list:
 - A. Presentation of the research at one OSU-sponsored event (e.g., Denman Undergraduate Research Forum, CoE Research Forum, etc.) or at a national conference
 - B. Submission of a manuscript to a peer-reviewed research journal or conference proceedings with the student as a co-author
 - C. Submission of a manuscript to an undergraduate research journal or non-peer-reviewed journal or proceedings with the student as lead author
 - D. Completion and submission of a patent disclosure application
 - E. Other appropriate activity that has been approved via petition by the Honors Committee in Engineering

Option C: Research Distinction Track

This track is intended for students with at least a 3.0 GPA who wish to perform undergraduate research. Under this track, students may apply 3 hours of AEROENG 4999 towards their undergraduate technical elective program; the other 2 classes must be approved technical electives that meet the requirement for Option A. The steps listed below allow a student to meet the College of Engineering Requirements for Research Distinction

1. A total of 6 cr-hrs of AEROENG 4999. While only 3 hours can count towards the TE program, it is a requirement of the college to take 6 hours of 4999
2. 2 other technical elective courses
3. Presentation of the research at a local conference (e.g., Denman Undergraduate Research Forum, CoE Research Forum, etc.) or a national conference
4. Successful defense of thesis and submission of thesis to Knowledge Bank

Note: Combined Degree Track (Mechanical or Aerospace)

Success in graduate school is determined by a student's ability to perform research. Students in the Combined Degree program who also perform undergraduate research spend less time in graduate school obtaining an MS or PhD degree after the completion of the undergraduate degree than students in the Combined Degree program who do not have undergraduate research experience. Therefore, students who are interested in this combined-degree program are encouraged to speak with the Combined Degree program coordinator to learn how to coordinate the Honors Research Distinction Track (Option B) with the coursework of the Combined Degree program. Combined Degree program students who do not perform undergraduate research under Option B or C must follow the Standard Track (Option A).

AAE Combined Degree Program

Students that have maintained a 3.5 cumulative grade-point average or better in all previous undergraduate courses taken at OSU, may apply to the Combined Degree Program. It is an efficient way to earn a Master's degree by double-counting undergraduate credit hours as graduate credit hours towards a M.S. in Aerospace Engineering.

How the Combined Degree Program Works

Students applying to the Aeronautical and Astronautical Engineering Graduate Program can double-count up to six (6) hours towards their undergraduate and graduate degrees.

In order to receive graduate credit hours the courses must meet the following requirements:

1. Technical elective courses taken at Ohio State after acceptance into the combined degree program.
2. Only ME/AAE/NE courses 5000-level and above can be used as long as they meet the course requirements for the graduate degree being pursued. 6000-level and above courses require permission from the Graduate School. See an MAE UG advisor for details.
3. Relevant graduate courses in other subjects, such as Mathematics (as allowed by the ME/AAE technical electives program) may be included. Refer to the technical electives program for guidelines.

Students can also take graduate level courses for graduate credit hours, but only once admitted to the combined degree program which can further reduce the time to a graduate degree.

Who Can Apply

Students who have earned at least 90 total semester hours in the Mechanical Engineering, Aerospace Engineering, or related engineering disciplines, and have a 3.5 cumulative grade-point average or better in all previous undergraduate courses taken at Ohio State, may apply. **This program is only available to Ohio State undergraduates.**

Application Requirements

- Submit an application
- Submit the Combined Degree Form
- Submit a Statement of Purpose
- Submit a CV/Resume
- Submit **ALL** post-secondary transcripts for credit received at any institution except those from Ohio State.
 - Any coursework you have completed at Ohio State will be obtained internally.
- Submit three letters of recommendation
- Must submit an honor's undergraduate research proposal and pursue honor's research
- GRE Scores are **NOT REQUIRED** for students applying to the combined degree program, however if you have any interest in possibly pursuing a PhD, students are strongly encouraged to take the GRE's as more funding opportunities become available for students interested in a PhD.

When to Apply

Applicants should submit and complete their application by the appropriate deadline below:

- Spring Semester: November 1
- Autumn Semester: June 1

Honors

University Honors and Scholars Center

The University Honors & Scholars Center is the administrative hub for each college that offers an honors program. In other words, the University Honors and Scholars Center works closely with the College of Engineering Honors Program, which has its own set of requirements as opposed to, for example, The College of Arts and Sciences. Although honors programs vary from college to college, there are common features which include:

- the ability to take honors courses;
- the opportunity to live in honors residence halls;
- the encouragement to pursue original research with faculty;
- access to the programming and staff of the University Honors & Scholars Center, and
- University priority scheduling.

For more information about the University Honors and Scholars Center go to:
<http://honors-scholars.osu.edu/>.

Graduating with Honors in Engineering

The Graduating with Honors in Engineering (GHIE) program provides eligible students access to more advanced levels of study and promotes scholarly development. The program's objectives challenge creative abilities and foster the interest in advanced education and research. Successful completion of the College of Engineering Honors Program will make you eligible to graduate *with honors in engineering*.

For more information about the GHIE program go to:
<https://advising.engineering.osu.edu/current-osu-students/engineering-honors-distinctions>

Aeronautical and Astronautical Engineering Honors Program & Undergraduate Research

The MAE Undergraduate Research Program is a structured program which gives you the ability to pursue a multi-semester (nominally 2-4 semesters) undergraduate research project one-on-one with a faculty advisor, very much like a graduate student pursuing a Master's degree. This individual research experience leads to the completion of

an Undergraduate Research Thesis. The thesis allows for students with a cumulative GPA of 3.4 or higher to graduate with “Honors Research Distinction in Mechanical and Aerospace Engineering;” and for students with a cumulative GPA from 3.0-3.399 to graduate with “Research Distinction in Mechanical and Aerospace Engineering”.

Any student may also engage in undergraduate research outside of this structured program by finding a faculty member to work with them.

Please note: A student does not have to be a designated Honors student in order to be eligible for the MAE Undergraduate Research Program; however, students may participate in both.

Curriculum Substitutions

Aerospace Engineering students may substitute up to three credit hours of AAE 4999(H) for technical elective credit.

Requirements of the AAE Honors Research Program:

- Must have a GPA of 3.0 to participate in the undergraduate research program and a 3.4 or above to participate in the honors undergraduate research program.
- Must select an advisor and a project in full collaboration with the faculty advisor (see details below).
- The research project spans a minimum 2 semesters (3 or 4 typically).
- Students who wish to complete an undergraduate research thesis must first submit a proposal. Your proposal for undergraduate research must include a recommendation letter from the Project Advisor who will supervise it. The proposal will also identify the planned research course credits and projected schedule. The proposal submission can be submitted here: <https://advising.engineering.osu.edu/current-students/honors-undergraduate-research>.
- The submission of the proposal automatically enters that student into a competition for competitive awards of research scholarships by the College.
- Must enroll in 6 hours of AAE 4999H (for the honors undergraduate research program) or AAE 4999 (for the non-honors program). This provides a mechanism to ensure that your research experience is academically recognized as a letter graded ‘course’. This enrollment in AAE 4999H or AAE 4999 is for a total of 6 credit hours distributed over the length of your project.
- Additional information can be found here: https://advising.engineering.osu.edu/sites/advising.engineering.osu.edu/files/uploads/Honors/Research/research_distinction_info_packet_1.pdf.

Latin Honors

Latin Honors are awarded based on students' cumulative point-hour ratio at the university. Additionally, in order to be eligible for these honors, a student must also have 90 graded credit hours of Ohio State courses. The CPHR requirements to graduate with Latin honors are as follows (do not round):

- Cum Laude (3.5-3.69)
- Magna Cum Laude (3.70-3.89)
- Summa Cum Laude (≥ 3.90)

AAE Standards of Academic Performance (SAP)

General Information

All undergraduate students must meet standards of academic progress. Students who do not meet these standards are subject to probation and dismissal. Dismissed students have an opportunity to apply for reinstatement.

As described in University Rules, the responsibility for administering these rules is split between the college and the student's program. It is the purpose of this document to show how these provisions are implemented in the College of Engineering (COE) and the individual programs.

Probation

There are three kinds of probation, "academic probation" (AP), "special action probation" (SAP), and University Academic Probation by Special Action.

A) Academic Probation (University Rule 3335-9-25A)

Any student whose cumulative point-hour ratio has fallen below a 2.00 shall be placed on probation. The probation shall continue provided the student's college considers the student's progress to be satisfactory and shall be removed when the cumulative point-hour ratio has reached a 2.0. The student shall be notified of probationary status by the dean of the college or the director of the school in which the student is registered, except as provided in rule 3335-9-27 of the Administrative Code. Such notification shall include a clear statement of what shall be considered to be satisfactory progress.

In the COE, the dean has appointed a designee to perform this notification. The designee presents academic probation cases to the Academic Standards and Progress (ASAP) Subcommittee at the semester meeting after grades are submitted.

University academic probation and dismissal policies supersede all other college actions.

B) Probation by Special Action (University Rule 3335-9-25B)

If at any time the preparation, progress, or success of a student in an academic program is determined to be unsatisfactory, the college or school in which the student is registered shall be empowered to place the student on academic probation. An undergraduate student admitted with conditions and who has not satisfied the conditions after earning thirty semester credit hours through regular course enrollment at this university shall be placed on probation.

C) University Academic Probation by Special Action

All students in the COE will be placed on University Academic Probation by Special Action once their Cumulative Point-Hour Ratio (CPHR) falls below 2.0. This academic review will be performed by the College Office.

The conditions for University Academic Probation by Special Action are as follows:

- Student must earn at least a 2.3 term point-hour ratio (TPHR) for every subsequent term of enrollment during probation.
- Student may not receive a "W" as a final mark in any class without permission.

Students who fail to meet these conditions can be dismissed from the college or academically dismissed from the University, as approved by the ASAP committee.

The probationary conditions above only apply for review of students for University Academic Probation actions. The student must also meet any probationary terms established by the student's pre-major/major program for review of department-specific actions (Departmental Special Action Probation, Departmental Dismissal).

The conditions for leaving University Academic Probation by Special Action are as follows:

- Student attains a Cumulative Point-Hour Ratio (CPHR) of 2.0 or higher, and meets all probationary terms.

Notification

Engineering students will be notified of their status (University Academic Probation by Special Action, College Dismissal, University Academic Dismissal, and Return to Good University Academic Standing) via OSU email by the College Office of their status and the terms of their probation/dismissal.

In the COE, academic degree programs also set the policies for SAP for students in their major. In addition, some programs set SAP policy for their pre-majors, other programs

have no SAP policies for pre-majors in which case the college administers Academic Probation when so needed.

AAE Special Action Probation

Aerospace Engineering has three forms of SAP:

1. SAP for grades
2. SAP for lack of progress
3. SAP after reinstatement

SAP eligibility is determined at the end of each semester.

After being placed on SAP, the satisfaction of SAP terms, return to good academic standing, continuation of SAP, and departmental or college dismissals are determined at the end of the student's next semester of enrollment. All exceptions to the SAP policies below are brought before the Academic Standards and Progress subcommittee of the College of Engineering CCAA.

SAP for Grades

Students can be put on SAP for failure to meet the conditions to be considered in good academic standing.

Students are eligible for SAP for Grades if they fail to maintain a 2.00 TPHR, CPHR, and MPHR (major students).

- Students on SAP for Grades will be required to earn at least a 2.00 TPHR during their next semester of enrollment.

Students on SAP for Grades will be continued on SAP for Grades:

- until they achieve at least a 2.0 CPHR and MPHR (major students), as long as they continue to earn at least a 2.00 TPHR.
- if they withdrawal from or receive an incomplete for a course ("W" or "I" marks on transcript).

Students on SAP for Grades will return to good academic standing when they achieve at least a 2.0 TPHR, CPHR, and MPHR (major students) without receiving any "W" or "I" marks on their transcript.

Students on SAP for Grades will be dismissed from the Aerospace Engineering program (DD) if they fail to earn at least a 2.00 TPHR.

- Major students who are dismissed from the Aerospace Engineering program with less than a 2.0 CPHR are also subject to College Dismissal (CD).

SAP for Lack of Progress

Students can be put on SAP for failure to make progress towards a degree in Aerospace Engineering.

Students are eligible for SAP for Lack of Progress if they are in good academic standing but have:

- multiple "W" or "I" marks that prevent them from making progress in the AAE curriculum.
- enrolled in consecutive semesters without taking courses in the AAE curriculum.

Students on SAP for Lack of Progress, during their next semester of enrollment, will be required to:

- enroll in at least one course in the AAE curriculum, earn at least a 2.0 TPHR, and complete all AAE curriculum courses in which they enroll (no "W" or "I" marks); or
- transfer to another department or college by the first Friday of the semester.

Students on SAP for Lack of Progress will be continued on SAP for Grades if they:

- complete a semester that includes courses in the AAE curriculum without receiving any "W" or "I" marks on their transcript.
- earn at least a 2.00 TPHR but do not have at least a 2.00 CPHR and MPHR (major students).

Students will be removed from SAP for Lack of Progress and will be in good academic standing if they:

- complete a semester that includes courses in the AAE curriculum without receiving any "W" or "I" marks on their transcript.
- achieve at least a 2.0 TPHR, CPHR, and MPHR (major students).

Students on SAP for Lack of Progress will be dismissed from the College of Engineering (CD) if they fail to meet the terms to continue on SAP or return to good academic standing.

SAP for Reinstated Students

All students who are reinstated to the Department of Mechanical and Aerospace Engineering are automatically placed on SAP for their next semester of enrollment.

A student dismissed from the department may petition to be reinstated after two academic semesters. Students may apply during the second semester. The academic advisor will receive the petition and forward it to the MAE Undergraduate Studies Committee. Students can be reinstated a maximum of two times.

- Students on SAP for Reinstated Students will be required to earn at least a 2.00 TPHR at the end of their next semester of enrollment.

Students on SAP for Reinstated Students will be continued on SAP for Grades:

- until they achieve at least a 2.0 CPHR and MPHR (major students), as long as they continue to earn at least a 2.00 SPHR.
- if they withdrawal from or receive an incomplete for a course ("W" or "I" marks on transcript).

Students will be removed from SAP for Reinstated Students and will be in good academic standing if they achieve at least a 2.0 TPHR, CPHR, and MPHR (major students).

Students on SAP for Reinstated Students will be dismissed from the Department of Mechanical and Aerospace Engineering (DD) if they fail to earn at least a 2.00 TPHR at the end of their next semester of enrollment.

- Major students who are dismissed from the Department of Mechanical and Aerospace Engineering with less than a 2.0 CPHR are also subject to College Dismissal (CD).

Appeal of Departmental Actions

A student who feels that their performance may have been affected by special circumstances may petition in writing to the Chair of the Mechanical Engineering Program Undergraduate Studies Committee. If a student finds this review unsatisfactory, an appeal may be made directly to the College of Engineering Academic Standards and Progress Committee (ASAP) through the program designee to this committee.

Notification of Departmental Policy for Academic Standards to Students

All incoming freshman, transfer students, and students new to the major review and accept the academic standards policy.

Mechanical Engineering Undergraduate Program (ME)

The mission statement for the Department of Mechanical and Aerospace Engineering and the program educational objectives for the mechanical-engineering (ME) program are described below. Program educational objectives describe the expected accomplishments of graduates during the first few years after graduation. Program outcomes are statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that student acquire in their matriculation through the program.

These program objectives and outcomes were written and reviewed by the full department faculty, the ME External Advisory Board, and our ASME student section. They are reviewed every three years by the same groups.

Department Mission Statement

The mission of the Department of Mechanical and Aerospace Engineering is the education of professionals in mechanical, aerospace, and nuclear engineering, the dissemination of knowledge and technology, and the development of innovative solutions to problems in these fields.

Program Objectives

The program educational objectives of the ME undergraduate program are to educate graduates who will be ethical, productive, and contributing members of society. As they progress professionally after graduation, our alumni will do the following:

- 1. Use their engineering foundation for success in any of a variety of career paths:**
 - a. technical careers in industry, academia, government, or other organizations.
 - b. attend graduate school in engineering
 - c. nontechnical careers in areas such as law, medicine, business, public policy, secondary education, service industries, etc.
 - d. careers involving engineering practice, research and development, or engineering education, management, or service.
 - e. careers involving management or entrepreneurship.

- 2. Use lifelong skills by**
 - a. taking advantage of professional development opportunities in their disciplines.
 - b. acquiring new knowledge and skills and pursue new areas of expertise or careers.
 - c. adapting to changing global markets and work force trends.

3. *Engage in professional service by*

- a. using their engineering background to advance society and to help solve technical and societal problems.
- b. developing new knowledge and products that will promote sustainable economic development to improve the quality of life.
- c. promoting the practice of engineering as a source of societal good.

Program Outcomes

The mechanical engineering program will give our graduating seniors the skills and knowledge base to allow them to achieve our program objectives after graduation. By the time of graduation, our students will possess:

- a. an ability to apply knowledge of mathematics, science, and engineering
- b. an ability to design and conduct experiments, as well as to analyze and interpret data
- 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
- d. an ability to function on multi-disciplinary teams
- e. an ability to identify, formulate, and solve engineering problems
- 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.
- l. the ability to apply principles of engineering, basic science, and mathematics to model and analyze components or processes.
- m. the ability to apply principles of engineering, basic science, and mathematics to design and realize physical systems, components, or processes.
- n. an ability to work professionally in thermal systems areas.
- o. an ability to work professionally in mechanical systems areas.

Application to the ME Major

Admission to major in Mechanical Engineering is by application only and is in accordance with the College of Engineering enrollment management plan approved by the University Council on Academic Affairs.

In order to apply to the major you must have:

- at least a **Cumulative Point Hour Ratio (CPHR)** (i.e. overall GPA) of 2.0
- at least an **Eligibility Point Hour Ratio (EPHR)** (i.e. "eligibility" GPA) of 2.8. This includes EPHR courses taken at a previous institution.
- also completed or be in progress of completing the EPHR courses below.

EPHR Under Semesters:

- CHEM 1250 **or** 1220 (1210* needed to take 1220, however only 1220 is an EPHR course)
- PHYSICS 1250 and 1251
- ENGR 1181.0x and 1182.0x **or** 1281.0x and 1282.0x **or** 1186, 1187, and 1188
- MATH 1172 (1152) and 2173 (2153), **or** 1161.0x and 2162.0x
- STATISTICS 3450
- MECHENG 2010 **or** 2010H
- ENGLISH 1110.0x (C- or above). This grade is not part of your EPHR.

If an EPHR course is repeated, the most recent grade is taken.

*If you started your studies at Ohio State **summer or autumn semester 2012** and took, CHEM 1210 autumn semester 2012 you do not have to take CHEM 1220 or CHEM 1250. If you take CHEM 1210 spring semester 2013 onwards, you must either take CHEM 1250 or 1220. No exceptions.

How to apply:

Submit an application on-line through the [College of Engineering](#) or through the [MAE Department website](#).

Application Deadline:

For Autumn Semester - third Friday of spring semester

For Spring Semester- third Friday of autumn semester

Selection Criteria:

The admission cycle is held twice a year. The number of places awarded per cycle is based on several factors which include the strength of the applicant pool and department resources. Admission to the major is currently competitive and based on the Earned Point Hour Ratio (EPHR).

Decision Notification and Class Scheduling

Major admission decisions will be sent to you via email after all final grades for EPHR courses have been posted at the end of the semester.

Important applicant information regarding MECHENG 2850.01 and MECHENG 2900:

Admitted students will not be able to add MECHENG 2850.01 and MECHENG 2900 until after the admit decision is made. Seats will be made available according to the priority and rank of an admitted student's registration window.

If you are concerned about being enrolled full time, we advise you to enroll in alternative classes until the admit-to-major decision is made.

Students denied admission may reapply one time.

ME Curriculum “Bingo” Sheets

New First Year Freshman – Non-Honors

Year	Autumn		Spring	
1	___ MATH 1151 ___ PHYSICS 1250 ___ ENGINEERING 1181 ___ ENGINEERING 1100 ___ General Education	5 cr 5 cr 2 cr 1 cr <u>3 cr</u> 16 cr	___ MATH 1172 ___ CHEM 1250 ___ ENGINEERING 1182 ___ ENGLISH 1110.OX	5 cr 4 cr 2 cr <u>3 cr</u> 14 cr
2	___ MATH 2173 ___ PHYSICS 1251 ___ MECHENG 2010 ___ ISE 2040 ___ STAT 3450 ___ Additional Science*	3 cr 5 cr 2 cr 2 cr 2 cr <u>3-5 cr</u> 17-19 cr	___ MATH 2174 ___ MECHENG 2020 ___ MECHENG 2030 ___ MECHENG 2900 ___ MECHENG 2850.01 ___ General Education	3 cr 3 cr 3 cr 3 cr 3 cr <u>3 cr</u> 18 cr
3	___ MECHENG 3260 ___ MECHENG 3501 ___ MECHENG 3670 ___ MECHENG 3571 ___ ECE 2300 ___ General Education	3 cr 3 cr 2 cr 2 cr 3 cr <u>3 cr</u> 16 cr	___ MECHENG 3360 ___ MECHENG 3503 ___ MECHENG 3671 ___ MECHENG 3870 ___ General Education	3 cr 3 cr 3 cr 3 cr <u>3 cr</u> 15 cr
4	___ MECHENG 4510 ___ MECHENG 4900 ___ MECHENG 490x.01 ___ ISE 4500 ___ Technical Elective ___ Technical Elective ___ General Education	3 cr 1 cr 1.5 cr 3 cr 3 cr 3 cr <u>3 cr</u> 17.5 cr	___ MECHENG 490x.02 ___ MECHENG 4870 ___ Technical Elective ___ Technical Elective ___ General Education ___ General Education	2.5 cr 2 cr 3 cr 3 cr 3 cr <u>3 cr</u> 16.5 cr

Total Hours to complete the degree program = 130

While all of the indicated courses are required, this schedule should be used as a guide only.

All students must satisfy a minimum of 32 credit hours for basic math and science. Students should consult with an MAE academic advisor to ensure the minimum is met. Students may be required to take extra coursework to meet graduation requirements.

New First Year Freshman – FEH

Year	Autumn		Spring	
1	___ MATH 1151 ___ PHYSICS 1260 ___ ENGR 1281.03H ___ ENGR 1100.13	5 cr 5 cr 5 cr <u>1 cr</u> 16 cr	___ MATH 1172 ___ PHYSICS 1261 ___ ENGR 1282.01H ___ ENGLISH 1110.0X ___ MECHENG 2010H*	5 cr 5 cr 3 cr 3 cr <u>2 cr</u> 16 cr
2	___ MATH 2173 ___ CHEM 1250 ___ MECHENG 2010 ___ ISE 2040 ___ STAT 3450 ___ Additional Science**	3 cr 4 cr 2 cr 2 cr 2 cr <u>3-5 cr</u> 16-19 cr	___ MATH 2174 ___ MECHENG 2020 ___ MECHENG 2030 ___ MECHENG 2900 ___ MECHENG 2850.01 ___ General Education	3 cr 3 cr 3 cr 3 cr 3 cr <u>3 cr</u> 18 cr
3	___ MECHENG 3260 ___ MECHENG 3501 ___ MECHENG 3670 ___ MECHENG 3751 ___ ECE 2300 ___ General Education	3 cr 3 cr 2 cr 2 cr 3 cr <u>3 cr</u> 16 cr	___ MECHENG 3360 ___ MECHENG 3503 ___ MECHENG 3671 ___ MECHENG 3870 ___ General Education	3 cr 3 cr 3 cr 3 cr <u>3 cr</u> 15 cr
4	___ MECHENG 4510 ___ MECHENG 4900 ___ MECHENG 490x.01 ___ ISE 4500 ___ Technical Elective ___ Technical Elective ___ General Education	3 cr 1.5 cr 1 cr 3 cr 3 cr 3 cr <u>3 cr</u> 17.5	___ MECHENG 490x.02 ___ MECHENG 4870 ___ Technical Elective ___ Technical Elective ___ General Education ___ General Education	2.5 cr 2 cr 3 cr 3 cr 3 cr <u>3 cr</u> 16.5 cr

Total Hours to complete the degree program = 130

*ME 2010H is only available spring semester. Honors students may take the non-honors version, ME 2010, offered every term.

**Additional Science options: MSE 2010 (3 hr.), BIO 2100 (4 hr.) or Chemistry 2000+

While all of the indicated courses are required, this schedule should be used as a guide only.

All students must satisfy a minimum of 32 credit hours for basic math and science. Students should consult with an MAE academic advisor to ensure the minimum is met. Students may be required to take extra coursework to meet graduation requirements

General Education Requirements

The College of Engineering requires students to complete eight general education courses and satisfy two additional requirements.

The College of Engineering General Education Requirements:

1. First Writing Course: English 1110.0X
2. Second Writing Course: *subject 2367*
3. Social Science Course A
4. Social Science Course B
5. History Course
6. Literature Course
7. Visual Performing Arts Course
8. Cultures and Ideas **or** Second History Course

Additional Requirements:

1. Ethics
2. Social Diversity

Ethics and Social Diversity may be covered within certain General Education courses with proper planning. The following courses “double-count” as described:

- Ethics and Social Science
 - ECON 3048 – Social Science group A
 - SOC 3464 – Any Social Science group
 - SOC 3302 – Any Social Science group
- Ethics and Cultures and Ideas
 - PHILOS 1332
 - COMPSTD 2341
- Social Diversity
 - There are second writing, social science group A, history, literature, visual/performing arts, and cultures and ideas general education courses that are designated as social diversity. These courses have their course number underlined in the College of Engineering General Education list.

Students may have to take more than eight general education courses to meet the requirements. If a student takes multiple general education courses in the same sub-category (i.e. PSYCH 1100 and COMM 1100 – Social Science group A), then only one course will count towards the degree. General Education requirements can be checked by running a Degree Audit or contacting an advisor. See Appendix for the full list of approved GE courses.

ME Senior Capstone Sequence Options

The Capstone Sequence is the primary culminating piece of the Mechanical Engineering curriculum. Students will carry out a formal design experience that takes them from design requirements to idea/design generation and on through prototyping and testing. The sequence is intended to give students experience in the design process and bring together and reinforce the skills obtained in the analysis, modeling and measurement of engineering systems. Students will also continue to refine their communication and teaming skills and be introduced to concepts in project management that need to be utilized to successfully complete their projects. The courses also touch on other important aspects of real-world engineering practice.

There are three choices of Capstone Sequences: A, B, or C described below.

Capstone Sequence A

MECHENG 4900 ME Capstone Design I (1.5 cr.)

MECHENG 490X.01 ME Capstone Design II (1 cr)

MECHENG 490X.02 ME Capstone Design III (2.5 cr)

Total 5 credit hours

Capstone Sequence A Schedule Options

Autumn Semester	Spring Semester
ME 4900 and ME 490X.01	ME 490X.02

or

Spring Semester	Autumn Semester
ME 4900 and ME 4901.01	ME 4901.02

The X=1, 2, 3, or 5 indicates the different types of projects. Students may only choose one project.

- This Capstone Sequence starts with MECHENG 4900, which lasts seven weeks.
- MECHENG 490X.01 follows MECHENG 4900 through the end of the semester.
- At registration, students must enroll in both MECHENG 4900 and 490X.01.
- They must finish the sequence (MECHENG 490X.02) the following semester or Term.

MECHENG 4900: Introduction to Engineering Design

- Over the first seven week of the semester students will learn the fundamentals of the engineering design process. One weekly lecture and 2 hands-on recitations per week will prepare students in understanding the overall engineering design

process and specific skills needed at each level of design. A short mini-project will also be completed to reinforce these skills. These skills will be applied to the specific Project Option that is selected. Toward the end of this class one of the two recitations per week will be with the student's specified project team.

Project Options include:

MECHENG 4901.01 and 4901.02: General Projects

- Students participate in a diversity of projects including community and industry projects, instructor-suggested projects, and student conceived projects. Project options may touch upon any fundamental area of mechanical engineering, and while some may be purely mechanical, others may involve mechatronics or other interdisciplinary work, topically speaking. There are opportunities to partner with subject-matter experts external to the department who are interested in supporting student projects.

MECHENG 4902.01 and 4902.02: Student Design Competitions

- Students work on design projects arising from various student team competitions in engineering. The emphasis will be on automotive projects similar to Baja SAE, EcoCAR2, Buckeye Electric Motorcycle, Buckeye Bullet, among others. Note that these projects are tightly formulated to aid student teams in the design and manufacture of specific components or systems for the vehicle. Some examples include advanced braking systems, high performance composite structures, and creation of real-time vehicle telemetry. Student teams also document their designs so a record can be created of the various vehicle systems.

MECHENG 4904.01 and 4904.02: Humanitarian Projects

- Students work together and use engineering to solve real-world problems that also fulfill a humanitarian purpose. There is an emphasis on detailed design, prototype, evaluation and documentation on each of the humanitarian projects.

MECHENG 4905.01 and 4905.02: Assistive Devices

- Students will create assistive devices for persons with disabilities. These devices will aid in the quality of life for many types of disabilities. These projects emphasize working with the customer and understanding the specific needs and wants of a variety of patients. Project teams of three to five students will be presented with an unmet need for an assistive device or technology, and will work through the entire project design process over the two course sequence.

This project will also be done in collaboration with senior capstone students from the Department of Biomedical Engineering. Project teams will have faculty mentors from both the College of Engineering and the College of Medicine. The project will culminate with the creation of working prototypes which will be tested and used in a clinical setting.

Capstone Sequence B

The College of Engineering multidisciplinary engineering capstone design program is an integrated sequence which will utilize principles of multiple engineering and non-engineering disciplines for industry-sponsored design projects.

ENGR 5901.01 Multidisciplinary Capstone Design I (3 cr)

ENGR 5901.02 Multidisciplinary Capstone Design II (3 cr)

*One credit hour of the six earned credit hours is automatically applied toward the ME Technical Elective Requirement

Capstone Sequence B Scheduling

Autumn Semester	Spring Semester
ENGR 5901.01	ENGR 5901.02

- This capstone sequence lasts one full year (two consecutive semesters).
- No student will be permitted to start in a different capstone and switch to this option.
- This sequence only begins in autumn semester.
- Permission from the instructor is required to be enrolled in this capstone.

ENGR 5901.01 and 5901.02: Multidisciplinary Capstone

- This [course sequence](#) is designed to prepare students with the engineering and professional skills and techniques needed to complete a real-world project using a design process. Students will learn a multidisciplinary design process, which includes defining the problem; conceptualizing solutions; designing a solution; building or modeling a prototype; and creating and implementing a validation plan. Students will demonstrate technical communication skills and professional practices in a multidisciplinary environment. Students will also learn project management and teamwork skills.
- Teams of students (typically four to six students) from various engineering programs (i.e. CBE, CSE, ECE, Engineering Physics, FABE, ISE, etc.) and other disciplines (i.e. Business, Chemistry, Finance, Industrial Design, Psychology, etc.)

work on these real-world projects, which represent those that might be encountered upon graduation and entering a professional working environment. The project topics range from product and process improvement to new product development, humanitarian and socially innovative product design. A faculty or staff advisor is assigned to each team and each sponsor supplies a liaison for the entire length of the project.

Capstone Sequence C

MECHENG 4684: Fundamentals of Product Design Engineering (4 cr)

MECHENG 4685: Product Capstone Design II (2 cr)

*Total 6 credit hours

*One credit hour of the six earned credit hours is automatically applied toward the ME Technical Elective Requirement

Capstone Sequence C Scheduling Option

Autumn Semester	Spring Semester
MECHENG 4684	MECHENG 4685

- Sequence begins with MECHENG 4684 in autumn semester and ends with MECHENG 4685 in spring semester.

MECHENG 4684 and 4685: Product Design Capstone

- Students work in teams of three or four for the entire two-semester sequence to take a product idea from the initial conceptualization stage to a patent-ready prototype at the end of spring semester. The emphasis in the course is on product design, as compared to engineering design. Students will be expected to do extensive fieldwork and design research before beginning the project, and to build several prototypes over the course of the two-semester sequence.

ME Technical Elective Program

Undergraduates who are majoring in Mechanical Engineering are required to take 12 credit hours of technical electives. There are 3 technical elective programs that are available for students to fulfill their Technical Elective course requirement:

Option A: Standard Elective Track

Option B: Honors Research Track

Option C: Research Track

Option A: Standard Elective Track

To graduate, students must complete:

1. Minimum of 6 hours (two courses) from the Design, Computational or Application Categories

- The two courses must be from different categories.
- To complete a category, a minimum of 3 credit hours must be taken. For example, if a course is less than three credit hours, then you must take another course in that same category to meet the 3 credit hour limit in a category.

2. The remaining credit hours may be chosen from:

- Any 5000 level Mechanical Engineering, Aerospace Engineering, or Nuclear Engineering course, including those from the Design, Computational, or Application Categories above. This does not include MECHENG courses from the Professional Skills Category.
- NUCLREN 4505

Note: A maximum of 3 credit hours can be chosen from the following options:

- Pre-Approved Independent study: 4193 or 5193
- Any courses in the Professional Skills Category
- Engineering courses other than MECHENG, AEROENG, NUCLREN, or ENGR
 - All 5000 level courses
 - BIOMEDE 4x10, FABENG 3481, 3510, 3610, or 3810
- Chemistry: CHEM 2310 & above
- Evolution, Ecology, and Organismal Biology: EEOB 2520
- Neuroscience: NEUROSC 3000
- Mathematics: MATH 4000 & above
- Physics: PHYSICS 3470, 4700, and 5000 & above
- Physiology and Cell Biology: PHYSIO 3101, 3102
- Statistics: STAT 4201 & above

IMPORTANT: None of the science courses (CHEM, EEOB, NEUROSC, PHYSICS, and PHYSIO) can double count for the additional science requirement.

For a list of MECHENG, AEROENG, and NUCLREN courses and terms each course is offered, refer to the schedule of classes - <http://mae.osu.edu/courses>.

Option B: Honors Research Distinction Track

This track is intended for students with at least a 3.4 GPA who wish to perform undergraduate research. Under this track, students are still required to take 12 hours of technical elective credit, but they may apply 6 hours from undergraduate research (ME 4999H) towards that total. The steps listed below allow a student to meet the College of Engineering Requirements for Honors Research Distinction.

1. A total of 6 cr-hrs of ME 4999H
2. At least 1 MECHENG 5000-level or above class
3. Other MECHENG 5000-level or above (with permission) technical elective courses to bring the total of TE cr-hrs to at least 12
4. Successful defense of thesis and submission of thesis to Knowledge Bank

Completion of an Honors Contract in Engineering **or** performing at least 1 action from the following list:

- a. Presentation of the research at one OSU-sponsored event (e.g., Denman Undergraduate Research Forum, CoE Research Forum, etc.) or at a national conference
- b. Submission of a manuscript to a peer-reviewed research journal or conference proceedings with the student as a co-author
- c. Submission of a manuscript to an undergraduate research journal or non-peer-reviewed journal or proceedings with the student as lead author
- d. Completion and submission of a patent disclosure application
- e. Other appropriate activity that has been approved via petition by the Honors Committee in Engineering

Option C: Research Distinction Track

This track is intended for students with at least a 3.0 GPA who wish to perform undergraduate research. Under this track, students are still required to take 12 hours of technical elective credit, but they may apply 6 hours from undergraduate research (ME 4999) towards that total. The steps listed below allow a student to meet the College of Engineering Requirements for Research Distinction.

1. A total of 6 cr-hrs of MECHENG 4999
2. Other 5000-level and above courses to bring the total of cr-hrs to at least 12

3. Presentation of the research at a local conference (e.g., Denman Undergraduate Research Forum, CoE Research Forum, etc.) or a national conference
4. Successful defense of thesis and submission of thesis to Knowledge Bank

Registration and Permissions for Technical Electives:

- Students are able to enroll in any 5000 level course for which pre-requisites have been met.
- In order to enroll 6000 level courses and 7000 level courses, undergraduate students must complete a petition to the Graduate School to enroll in graduate level coursework for undergraduate credit. The petition requires signatures of your instructor and faculty advisor and a CPHR of 3.30. Please meet with a MAE academic advisor for assistance with the petition.

ME Combined Degree Program

Students that have maintained a 3.5 cumulative grade-point average or better in all previous undergraduate courses taken at OSU may apply to the Combined Degree Program. It is an efficient way to earn a Master's degree by double-counting undergraduate credit hours as graduate credit hours towards a M.S. in Mechanical Engineering.

How the Combined Degree Program Works

Students can take classes that can be counted toward both their undergraduate and graduate degree.

- Students applying to the Mechanical Engineering Graduate Program can double-count up to two courses towards their undergraduate and graduate degrees.

All undergraduate requirements in the student's respective program must still be met. In order to receive graduate credit the courses must be letter-graded and meet the following requirements:

- Must be 5000-level or higher
- Must meet the course requirements for the graduate degree being pursued
- Must be taken upon enrolling in the combined degree program
- Must not be a capstone course

Technical electives are the most frequent means of satisfying the requirements above, but relevant graduate courses in other subjects, such as Mathematics, are an option as

well. Coursework taken prior to joining the combined degree program cannot be counted for graduate credit under any means.

Students can also take graduate level courses for graduate credit only once admitted to the combined degree program as well. This can be utilized to further reduce the time to a graduate degree.

Who Can Apply

Students who have earned at least 90 cumulative semester hours and are enrolled in the Mechanical Engineering, Aerospace Engineering, or a related engineering disciplines, and have a 3.50 cumulative grade-point average or better in all previous undergraduate coursework, may apply.

Students considering the combined degree program should have an advisor in mind before joining the program. Students who wish to complete their graduate degree in the shortest amount of time typically have an advisor in place by the semester they start the combined degree program.

When to Apply

Applicants should submit and complete their application by the appropriate deadline below:

- **Spring Semester:** November 1
- **Autumn Semester:** June 1

The application can be found here: <https://mae.osu.edu/combined-degree-program>.

Honors

University Honors and Scholars Center

The University Honors & Scholars Center is the administrative hub for each college that offers an honors program. In other words, the University Honors and Scholars Center works closely with the College of Engineering Honors Program, which has its own set of requirements as opposed to, let us say, The College of Arts and Sciences. Although honors programs vary from college to college, there are common features which include:

- the ability to take honors courses,
- the opportunity to live in honors residence halls,
- the encouragement to pursue original research with faculty,
- access to the programming and staff of the University Honors & Scholars Center, and

- University priority scheduling.

For more information about the University Honors and Scholars Center go to:

<https://honors-scholars.osu.edu/>

Graduating with Honors in Engineering

The Graduating with Honors in Engineering (GHIE) program provides eligible students access to more advanced levels of study and promotes scholarly development. The program's objectives challenge creative abilities and foster the interest in advanced education and research. Successful completion of the College of Engineering Honors Program will make you eligible to graduate *with honors in engineering*.

For more information about the GHIE program go to:

<https://advising.engineering.osu.edu/current-osu-students/engineering-honors-distinctions>

Mechanical Engineering Honors Program and Undergraduate Research

The MAE Undergraduate Research Program is a structured program which gives students the ability to pursue a multi-semester (nominally 2-4 semesters) undergraduate research project one-on-one with a faculty advisor, very much like a graduate student pursuing a Master's degree. This individual research experience leads to the completion of an Undergraduate Research Thesis. The thesis allows for students with a cumulative GPA of 3.4 or higher to graduate with "Honors Research Distinction in Mechanical and Aerospace Engineering;" and for students with a cumulative GPA from 3.0-3.399 to graduate with "Research Distinction in Mechanical and Aerospace Engineering".

Any student may also engage in undergraduate research outside of this structured program by finding a faculty member to work with them.

Please note: A student does not have to be a designated Honors student in order to be eligible for the MAE Undergraduate Research Program; however, students may participate in both.

Curriculum Substitutions

Mechanical Engineering students may substitute up to six credit hours of ME 4999(H) for technical elective credit.

Requirements of the ME Undergraduate Research Program:

- Must have a GPA of 3.0 to participate in the undergraduate research program and a 3.4 or above to participate in the honors undergraduate research program

- Must select an advisor and a project in full collaboration with the faculty advisor (see details below).
- The research project spans a minimum 2 semesters (3 or 4 typically)
- Students who wish to complete an undergraduate research thesis must first submit a proposal. Your proposal for undergraduate research must include a recommendation letter from the Project Advisor who will supervise it. The proposal will also identify the planned research course credits and projected schedule. The proposal submission can be submitted here: <https://advising.engineering.osu.edu/current-students/honors-undergraduate-research>.
- The submission of the proposal automatically enters that student into a competition for competitive awards of research scholarships by the College.
- Must enroll in 6 hours of ME 4999H (for the honors undergraduate research program) or ME 4999 (for the non-honors program). This provides a mechanism to ensure that your research experience is academically recognized as a letter graded 'course'. This enrollment in ME 4999H or ME 4999 is for a total of 6 credit hours distributed over the length of your project.
- Additional information can be found here: https://advising.engineering.osu.edu/sites/advising.engineering.osu.edu/files/uploads/Honors/Research/research_distinction_info_packet_1.pdf.

Latin Honors

Latin Honors are awarded based on students' cumulative point-hour ratio at the university. Additionally, in order to be eligible for these honors, a student must also have 90 graded credit hours of Ohio State courses. The CPHR requirements to graduate with Latin honors are as follows (do not round):

- Cum Laude (3.5-3.69)
- Magna Cum Laude (3.70-3.89)
- Summa Cum Laude (≥ 3.90)

ME Standards of Academic Performance (SAP)

General Information

All undergraduate students must meet standards of academic progress. Students who do not meet these standards are subject to probation and dismissal. Dismissed students have an opportunity to apply for reinstatement.

As described in University Rules, the responsibility for administering these rules is split between the college and the student's program. It is the purpose of this document to show how these provisions are implemented in the College of Engineering (COE) and the individual programs.

Probation

There are three kinds of probation, "academic probation" (AP), "special action probation" (SAP), and University Academic Probation by Special Action.

A) Academic Probation (University Rule 3335-9-25A)

Any student whose cumulative point-hour ratio has fallen below a 2.00 shall be placed on probation. The probation shall continue provided the student's college considers the student's progress to be satisfactory and shall be removed when the cumulative point-hour ratio has reached a 2.0. The student shall be notified of probationary status by the dean of the college or the director of the school in which the student is registered, except as provided in rule 3335-9-27 of the Administrative Code. Such notification shall include a clear statement of what shall be considered to be satisfactory progress.

In the COE, the dean has appointed a designee to perform this notification. The designee presents academic probation cases to the Academic Standards and Progress (ASAP) Subcommittee at the semester meeting after grades are submitted.

University academic probation and dismissal policies supersede all other college actions.

B) Probation by Special Action (University Rule 3335-9-25B)

If at any time the preparation, progress, or success of a student in an academic program is determined to be unsatisfactory, the college or school in which the student is registered shall be empowered to place the student on academic probation. An undergraduate student admitted with conditions and who has not satisfied the conditions after earning thirty semester credit hours through regular course enrollment at this university shall be placed on probation.

C) University Academic Probation by Special Action (effective Summer Term 2013)

All students in the COE will be placed on University Academic Probation by Special Action once their Cumulative Point-Hour Ratio (CPHR) falls below 2.0. This academic review will be performed by the College Office.

The conditions for University Academic Probation by Special Action are as follows:

- Student must earn at least a 2.3 term point-hour ratio (TPHR) for every subsequent term of enrollment during probation.
- Student may not receive a "W" as a final mark in any class without permission.

Students who fail to meet these conditions can be dismissed from the college or academically dismissed from the University, as approved by the ASAP committee.

The probationary conditions above only apply for review of students for University Academic Probation actions. The student must also meet any probationary terms established by the student's pre-major/major program for review of department-specific actions (Departmental Special Action Probation, Departmental Dismissal).

The conditions for leaving University Academic Probation by Special Action are as follows:

- Student attains a Cumulative Point-Hour Ratio (CPHR) of 2.0 or higher, and meets all probationary terms.

Notification

Engineering students will be notified of their status (University Academic Probation by Special Action, College Dismissal, University Academic Dismissal, and Return to Good University Academic Standing) via OSU email by the College Office of their status and the terms of their probation/dismissal.

In the COE, academic degree programs *also* set the policies for SAP for students in their major. In addition, some programs set SAP policy for their pre-majors, other programs have no SAP policies for pre-majors in which case the college administers Academic Probation when so needed.

ME Special Action Probation

Mechanical Engineering has three forms of SAP:

4. SAP for grades
5. SAP for lack of progress
6. SAP after reinstatement

SAP eligibility is determined at the end of each semester.

After being placed on SAP, the satisfaction of SAP terms, return to good academic standing, continuation of SAP, and departmental or college dismissals are determined at the end of the student's next semester of enrollment. All exceptions to the SAP policies below are brought before the Academic Standards and Progress subcommittee of the College of Engineering CCAA.

SAP for Grades

Students can be put on SAP for failure to meet the conditions to be considered in good academic standing.

Students are eligible for SAP for Grades if they fail to maintain a 2.00 TPHR, CPHR, and MPHR (major students).

- Students on SAP for Grades will be required to earn at least a 2.00 TPHR during their next semester of enrollment.

Students on SAP for Grades will be continued on SAP for Grades:

- until they achieve at least a 2.0 CPHR and MPHR (major students), as long as they continue to earn at least a 2.00 TPHR.
- if they withdrawal from or receive an incomplete for a course ("W" or "I" marks on transcript).

Students on SAP for Grades will return to good academic standing when they achieve at least a 2.0 TPHR, CPHR, and MPHR (major students) without receiving any "W" or "I" marks on their transcript.

Students on SAP for Grades will be dismissed from the Mechanical Engineering program (DD) if they fail to earn at least a 2.00 TPHR.

- Major students who are dismissed from the Mechanical Engineering program with less than a 2.0 CPHR are also subject to College Dismissal (CD).

SAP for Lack of Progress

Students can be put on SAP for failure to make progress towards a degree in Mechanical engineering.

Students are eligible for SAP for Lack of Progress if they are in good academic standing but have:

- multiple "W" or "I" marks that prevent them from making progress in the ME curriculum.
- enrolled in consecutive semesters without taking courses in the ME curriculum.

Students on SAP for Lack of Progress, during their next semester of enrollment, will be required to:

- enroll in at least one course in the ME curriculum, earn at least a 2.0 TPHR, and complete all ME curriculum courses in which they enroll (no "W" or "I" marks); or
- transfer to another department or college by the first Friday of the semester.

Students on SAP for Lack of Progress will be continued on SAP for Grades if they:

- complete a semester that includes courses in the ME curriculum without receiving any "W" or "I" marks on their transcript.
- earn at least a 2.00 TPHR but do not have at least a 2.00 CPHR and MPHR (major students).

Students will be removed from SAP for Lack of Progress and will be in good academic standing if they:

- complete a semester that includes courses in the ME curriculum without receiving any "W" or "I" marks on their transcript.
- achieve at least a 2.0 TPHR, CPHR, and MPHR (major students).

Students on SAP for Lack of Progress will be dismissed from the College of Engineering (CD) if they fail to meet the terms to continue on SAP or return to good academic standing.

SAP for Reinstated Students

All students who are reinstated to the Department of Mechanical and Aerospace Engineering are automatically placed on SAP for their next semester of enrollment.

A student dismissed from the department may petition to be reinstated after two academic semesters. Students may apply during the second semester. The academic advisor will receive the petition and forward it to the MAE Undergraduate Studies Committee. Students can be reinstated a maximum of two times.

- Students on SAP for Reinstated Students will be required to earn at least a 2.00 TPHR at the end of their next semester of enrollment.

Students on SAP for Reinstated Students will be continued on SAP for Grades:

- until they achieve at least a 2.0 CPHR and MPHR (major students), as long as they continue to earn at least a 2.00 SPHR.
- if they withdrawal from or receive an incomplete for a course ("W" or "I" marks on transcript).

Students will be removed from SAP for Reinstated Students and will be in good academic standing if they achieve at least a 2.0 TPHR, CPHR, and or MPHR (major students).

Students on SAP for Reinstated Students will be dismissed from the Department of Mechanical and Aerospace Engineering (DD) if they fail to earn at least a 2.00 TPHR at the end of their next semester of enrollment.

- Major students who are dismissed from the Department of Mechanical and Aerospace Engineering with less than a 2.0 CPHR are also subject to College Dismissal (CD).

Appeal of Departmental Actions

A student who feels that their performance may have been affected by special circumstances may petition in writing to the Chair of the Mechanical Engineering Program Undergraduate Studies Committee. If a student finds this review unsatisfactory, an appeal may be made directly to the College of Engineering Academic Standards and Progress Committee (ASAP) through the program designee to this committee.

Notification of Departmental Policy for Academic Standards to Students

All incoming freshman, transfer students, and students new to the major review and accept the academic standards policy.

Transfer Credit

Students who are considering transferring from another institution to The Ohio State University often have additional questions and concerns about their previous coursework and about starting their major courses.

For detailed information regarding the Transfer Credit process and how to interpret your Transfer Credit Report, go to https://registrar.osu.edu/transfer_credit/index.asp

Transferology (www.transferology.com) is a valuable tool for transfer students who wish to see how their coursework at another institution will correlate to OSU coursework. Most equivalencies from this site will cover basic math and science courses, General Education courses, and in a few instances, Statics (MECHENG 2010), Mechanics of Materials (MECHENG 2020) and Dynamics (MECHENG 2030).

Mechanical Engineering Transfer Credit will be awarded according to the following criteria:

ABET Accredited Schools

- All Mechanical Engineering courses will receive General Credit unless an established equivalency exists. Establish equivalencies are listed on the Transfer Credit Report.
- For a current list of ABET accredited programs go to www.abet.org

US Non-ABET Accredited Schools

- Mechanical Engineering courses with the following titles will receive General Credit: Statics, Dynamics, and Strength (or Mechanics) of Materials
- All other Mechanical Engineering courses will receive Technical Credit and will be subject to further evaluation by the MAE Department.

International Non-ABET Accredited Schools

- Mechanical Engineering courses with the following titles will receive General Credit: Statics, Dynamics, and Strength (or Mechanics) of Materials
- There will be no transfer credit awarded for all other Mechanical Engineering courses.

When submitting a department transfer credit review request, please provide the following:

- Current Transfer Credit Report
- Course Syllabus and Description

To facilitate the review process each syllabus must include the following:

- Topics that were covered in the course
- Textbook(s) used
- Amount of time spent on different topics
- Hours of lecture/recitation per week
- The nature of any projects
- The frequency of exams and homework

Further evaluation may require evidence of the standard of the work. Examples of evidence are copies of examinations and assignments.

The process for submitting a transfer credit request may be found here:

<https://mae.osu.edu/undergraduate/admissions/transfer-credit>.

Proficiency Exams

If a transfer credit or substitution evaluation is denied, but the student believes that he/she has covered the material in question, he/she may have the option to take a proficiency exam for a specific class. This type of request is handled only on a case-by-case basis. Students interested in attempting to receive credits hours by examination should discuss the option with a MAE advisor.

Nuclear Engineering Minor

The nuclear industry expanded rapidly in the 1960s and early 1970s and during that time hired thousands of engineers and scientists. Those people are now approaching retirement age, and the nuclear industry needs to replace them. Electric utilities, national laboratories and government regulatory agencies need both nuclear engineers and scientists and engineers in other fields who also have some knowledge of nuclear technology. Because so many senior people are retiring, there will be many opportunities for rapid advancement in the nuclear industry over the next several years. Ohio State now offers an undergraduate minor in Nuclear Engineering to provide

students with the knowledge and skills they will need for many entry-level positions in the nuclear industry.

The undergraduate Minor in Nuclear Engineering requires 2 core courses and a minimum of 6 credit hours of additional courses selected from a list of options for a total of 12 credit hours. The courses offered in the Nuclear Engineering minor are:

Required Course#	Required Course Description	Credit Hours	Semester Offered
NUCLREN 4505	Nuclear Science and Engineering	3	AU and SP
NUCLREN 4536	Nuclear Reactor System	3	SP

Elective Course#	Elective Course Description	Credit Hours	Semester Offered
NUCLREN 4506	Undergraduate Nuclear Engineering Lab	3	AU
NUCLREN 4701	Intro to Reactor Physics	3	AU
NUCLREN 5606	Radiation Protection and Shielding	3	AU and SP
NUCLREN 5610	Reactor Safety	3	SP
NUCLREN 5716	Probabilistic Risk Assessment	3	AU
NUCLREN 5735	Nuclear Power Plant Operations	3	May
NUCLREN 5742	Nuclear Radiations and Their Measurements	3	SP
NUCLREN 5776	Radioactive Waste Management/Nuclear Fuel Cycles	3	AU

Registering for the Nuclear Engineering Minor Program

If interested in pursuing the undergraduate minor in Nuclear Engineering, simply complete the NE Minor Application Form.

Students must list the Nuclear Engineering courses they plan to take and the semester and year in which they plan to take the courses. The Minor Program Form is not binding and does not commit a student to taking the courses during the indicated term. It simply informs the MAE Department and helps us plan our teaching loads.

After you complete the Minor Program Form, please submit it to Professor [Vaibhav Sinha](#). If you have questions about the Minor in Nuclear Engineering, please contact Professor Sinha at sinha.181@osu.edu or 614-292-3571.

Graduation

All students need to submit an application in order to be eligible to graduate from The Ohio State University. The Department of Mechanical and Aerospace Engineering uses the College of Engineering's online application for graduation. All students are ultimately responsible for meeting all degree requirements. Applications should be submitted one year prior to expected graduation.

This deadline allows advisors to check a student's plan for the last year of major coursework and make any necessary changes to the plan well before they become issues affecting graduation. Late applications are accepted, but on-time graduation will not be guaranteed in such cases.

Students who submit their application to graduate on time benefit in two ways:

1. Senior priority scheduling for the final semester before graduation.
2. Verification that with courses they plan to take their final two semesters do indeed meet all requirements to graduate.

Once a graduation application is approved students are expected to follow the approved plan. It is recommended that students see an advisor regarding any changes to the plan to ensure graduation requirements will be met. Changes that are not approved by an academic advisor may result an incomplete requirement for graduation and may not be caught until the planned semester of graduation, *at which time it may be too late to correct any mistakes.*

Once a graduation application has been approved, further instructions for the graduation class can be found at www.commencement.osu.edu and through the College of Engineering. Graduating seniors will also receive an email from the College of Engineering during their semester of graduation with further instructions. If you are planning to graduate but do not receive this email, contact College of Engineering at (614) 292-2651.

Degree Enrichment

The path to a B.S. degree and future career should include some thoughtful allocation of time for internships or co-ops, to study abroad, or to prepare for graduate school.

Whether a student is planning for graduate or professional school or would like to prepare for professional licensure, they'll want to be aware of the types of opportunities available to supplement the Bachelor of Science degree and beyond.

Internships and Co-ops

Engineering Career Services (ECS) offers services to all OSU engineering students. For new first year students, it is recommended that they register with the Co-op and Internship Program at the beginning of their second year. For transfer students, inquire with ECS about registering for their services. Students continue with the Graduating Students Program as senior year approaches.

Engineering Career Services	Phone: 614-292-6651
199 Hitchcock Hall	Fax: 614-292-4794
2050 Neil Avenue	Email: ecs@osu.edu
Columbus, OH 43210	web: http://ecs.osu.edu

Why should everyone register with ECS?

In engineering disciplines, relevant co-op and internship experiences is a near necessity for employment at graduation. While ECS can't guarantee everyone a job, ECS provides the best opportunities for students to get co-ops and internships, and ultimately to land that perfect job after graduation.

ECS has established relationships with hundreds of local, regional, and national employers including several top companies. When these employers come to Engineering Careers Services, they are there to *hire* and they *want* Ohio State engineering students. Compare that to a career fair where not all the employers present are actually hiring or to a "wanted" ad where a student is potentially competing against hundreds of experienced applicants. If looking for a co-op, internship, or full-time position, ECS offers the greatest yield of opportunities for a student's effort, and that is something any engineering student can appreciate.

Need another reason to join?

- Knowledgeable, experienced, and a caring professional staff are available for individual consultations to help with resumes and any aspect of job searching.
- The web-based software used to help students and employers connect is the finest currently available. Students search through opportunities targeted at them from their own home.

- Students can learn and improve their interviewing skills through workshops, individual feedback, mock interviews, and coaching.
- ECS provides print and online resources for all aspects of the job search.
- Further information can be found here: <https://ecs.osu.edu/>.

Education Abroad

An education abroad experience is a great way to enhance undergraduate education by being exposed to different cultures and ideas, meeting new people, and earning course credit hours. Engineering students may be able to earn course credit hours for general or technical elective coursework; however, the availability of engineering core coursework that will transfer is limited. The College of Engineering and the Department of Mechanical and Aerospace Engineering are committed to supporting students who wish to pursue these opportunities. More information on the University's study abroad programs can be found at <http://oia.osu.edu/study-abroad.html>.

Graduate or Professional School

Why might a student want to go to graduate or professional school?

- Further engineering studies through a graduate program will help students specialize in a specific area, which they are free to choose.
- It will more than likely lead to an increased number of job opportunities.
- It will more than likely lead to an increased starting salary.
- To further improve problem solving skills.
- Looking for new challenges.
- Develop public speaking and writing skills.
- To teach at a college or university.
- Required for a specific job and/or research opportunity

There are a lot of resources available to students who wish to move on to graduate or professional school. Planning early is often key, especially to prepare for professional school (law, education, medical). Unlike graduate studies in engineering, where undergraduate work has automatically prepared a student to move on, preparation for a professional school often requires coursework outside of the engineering curriculum. An undergraduate and graduate advisor can help you determine how to incorporate these extra courses into your schedule.

There are some common requirements to move on past an undergraduate degree. A strong undergraduate GPA is generally required, along with letters of recommendation from past instructors. Research is an important aspect of graduate school as well as some professional programs, and so having research experience as an undergraduate will often help to make for a more competitive applicant. Finally, graduate school

applications generally require a statement of purpose, which should identify the program in which a student wishes to continue their studies and where their interests lie. A strong statement of purpose is very important to match a student's interests with appropriate research opportunities.

The best way to prepare for these options is to look into the requirements for various programs early in the academic career, as well as consult with an advisor in that area. The following are offices at OSU that will be of assistance to a student wishing to learn more about common graduate and professional paths for engineering students.

The Ohio State University Graduate Admissions

Admission requirements and contact information for every graduate program offered at OSU, as well as information about the admissions process, financial aid, and answers to frequently asked questions can be found at <http://gradadmissions.osu.edu>.

College of Engineering Information for New Graduate Students

Contact information for all the graduate programs offered through the College of Engineering can be found at <http://engineering.osu.edu/graduate>.

Department of Mechanical and Aerospace Engineering Graduate Program

Would you like to stay at OSU awhile longer? Information about the graduate programs in the MAE Dept. at OSU is found at <http://mae.osu.edu/graduate>.

Pre-Professional Advising

Pre-health, pre-law, and pre-education aren't majors at OSU, but are official areas of academic interest. A wealth of information about preparing for these programs, as well as contact information for advisors who specialize in these areas of academic interest can be found at <http://preprofessional.osu.edu/>.

Professional Licensure and FE Exam

Students within six months of graduation should consider taking the Fundamentals of Engineering (FE) Exam. The FE Exam is the first step towards professional licensure. Why might it be important to be a licensed engineer?

- Demonstrate an accomplished recognized standard.
- Set a student apart from others in the profession.
- Open the door for career options and opportunities that might not have otherwise been available.
- In addition, professional licensure is a must for anyone wishing to work on projects that affect public safety.

The Licensure Process

1. Graduation (from an ABET-accredited engineering program – all OSU engineering programs are ABET-accredited)
2. The Fundamentals of Engineering (FE) Exam
 - The best time to take the FE Exam is before or immediately after graduation while the technical information is still fresh in a student’s mind. Students are eligible to take the exam as soon as you are within six months of graduation.
 - Statistics show that 95% of ME students who take this exam within six months of graduation pass the test. Pass rate decreases over time.
 - The exam is offered bi-annually in April and October. To learn more about the test, visit <http://ncees.org/exams/fe-exam/>.
 - Students will need to start the application process approximately 4 months ahead of when they wish to take the exam.
3. Work experience
4. The Professional Engineering (PE) Exam

Student Organizations, Honor Societies and Project Teams

Students often look to get involved in OSU organizations and engineering project teams. New group and projects are always forming. If a current group does not fit a student’s interest, then they may look into forming their own organization. Participation in organizations can help students develop skills in leadership, communication, organization, and many more. Project teams offer practical hands-on engineering work that is desired by employers at graduation. The lists below are just some of the mechanical and aerospace engineering related organizations and project teams to consider. For a list of student organizations, honor societies, and project teams within the COE and OSU, please visit <https://mae.osu.edu/resources/student-organizations-and-project-teams>.

Scholarships

To maximize aid, make sure to submit the FAFSA and apply for all University, College of Engineering, and Department of Mechanical and Aerospace Engineering scholarships.

Go to <http://sfa.osu.edu/howtoapply/index.asp> for instructions on applying for University aid. To be eligible for aid, submit both the FAFSA and the Application for Special Scholarships.

Engineering Student Scholarships

All currently enrolled students who wish to apply for College of Engineering and engineering departmental scholarships must complete the Special Scholarships

Application. Please read the following helpful hints before completing your application for scholarships.

Helpful Hints

- Be prepared to answer a variety of questions in the following areas: OSU ID and e-mail address, enrollment plans, a listing of school activities, work experience, and areas of interest (such as defense work, etc.) Students will need to answer a wide variety of questions which may not seem relevant, but keep in mind that the application is designed to match students with as many scholarship opportunities as possible.
- Prepare a Personal Statement before starting the application. You will have the opportunity to cut and paste the information into the application (MS Word is preferred). Please note that the Personal Statement is expected to be no longer than 300 words. The essays should be well organized, concise, and provide the scholarship committee with relevant information about the student that is not already included on the application form or that might need further explanation.
- Please make sure that you certify the application at the end of the process. It is critical that you complete this section. IF IT IS NOT COMPLETED, YOUR APPLICATION WILL NOT BE EVALUATED. Upon successful certification and submission of the application, you will receive an email confirmation.

Scholarship Contacts Available in the College of Engineering

For questions about engineering scholarships, you should contact the College of Engineering Scholarship Coordinator, Marian Carter, at carter.733@osu.edu.

Computer Lab Privileges

Students admitted to the AAE or ME major automatically receive access to the computer labs in Scott Laboratory. The computer labs are located on the second floor in the west, east, and north buildings of Scott Lab and are accessible 24 hours a day; however, a valid Buck ID is required to enter. There is also a computer lab on the first floor next to the student lounge area.

When a student is given access to the computer labs, they will also be expected to adhere to all published computer lab policies. The purpose of these policies is to create a good study environment for all students and to maintain the condition of the labs for future students, and they are actively enforced.

Academic Misconduct

Academic misconduct is defined in Section 3335-23-04 of the Ohio State University Code of Student Conduct as “ Any activity that tends to compromise the academic integrity of the university, or subvert the educational process. Examples of academic misconduct include, but are not limited to:

1. Violation of course rules as contained in the course syllabus or other information provided to the student; violation of program regulations as established by departmental committees and made available to students;
2. Knowingly providing or receiving information during examinations such as course examinations and candidacy examinations; or the possession and/or use of unauthorized materials during those examinations;
3. Knowingly providing or using assistance in the laboratory, on field work, in scholarship or on a course assignment;
4. Submitting plagiarized work for an academic requirement. Plagiarism is the representation of another's work or ideas as one's own; it includes the unacknowledged word-for-word use and/or paraphrasing of another person's work, and/or the inappropriate unacknowledged use of another person's ideas;
5. Submitting substantially the same work to satisfy requirements for one course or academic requirement that has been submitted in satisfaction of requirements for another course or academic requirement, without permission of the instructor of the course for which the work is being submitted or supervising authority for the academic requirement;
6. Falsification, fabrication, or dishonesty in creating or reporting laboratory results, research results, and/or any other assignments;
7. Serving as, or enlisting the assistance of a substitute for a student in the taking of examinations;
8. Alteration of grades or marks by the student in an effort to change the earned grade or credit hours;
9. Alteration of academically-related university forms or records, or unauthorized use of those forms or records; and
10. Engaging in activities that unfairly place other students at a disadvantage, such as taking, hiding or altering resource material, or manipulating a grading system.”

(http://studentaffairs.osu.edu/resource_csc.asp)

The Ohio State Committee on Academic Misconduct (COAM) states that “ Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, students are expected to complete all academic and scholarly assignments with fairness and honesty.”

(<http://oaa.osu.edu/coam/ten-suggestions.html>) On their website (<http://oaa.osu.edu/coam/ten-suggestions.html>) COAM publishes a list of Ten Suggestions for Preserving Academic Integrity. We recommend that you read this list and the Code of Student Conduct, because as a student you are held to these policies. ("I didn't know" is not an excuse when it comes to academic misconduct!)

Engineering students often work in groups, and sometimes have difficulties distinguishing between acceptable and unacceptable collaboration. All work should be completed individually unless given permission otherwise.

When in doubt about academic misconduct, ASK your instructor what is acceptable collaboration!

Department Grievances

Resolution of grievances about academic problems or complaints about faculty, such as violations of university requirements, incompetence, and misconduct, begin first with speaking with the faculty member or instructor. If the difficulty is not resolved, the student may make an appointment with the department's Undergraduate Program Coordinator. The Coordinator will attempt to resolve the issues causing concern by assisting the student in discussing issues with the faculty member. If satisfactory resolution does not occur after this meeting, the student may take the grievance to the department's Undergraduate Studies Committee Chair. If the student nor the Coordinator nor the Chair feels that a satisfactory resolution has been reached, the student should notify the Department Chair. The Chair, in consultation with appropriate university offices, will evaluate the complaint and determine the appropriate resolution.

Information regarding specific procedures for handling grade grievances (Faculty Rule 3335-7-23) can be obtained from the Office of Undergraduate Academic Advising.

Grievances concerning graduate teaching and research associates should be submitted first to the supervising instructor, then to the Undergraduate Program Coordinator, and if necessary, to the department's UGSC Chair.