

# Fall 2021 Registration Notes

## Summary of Steps (see below for details):

1. *Schedule an advising appointment*
2. *Review your Academic Requirements Report (ARR) on SPIRE*
3. *Complete a fillable Course Selection Form (CSF)*
4. *Meet with your advisor via Zoom (March 23 – April 9)*
5. *Enroll in classes once your enrollment appointment opens (beginning April 5 for seniors)*
6. *Make-up advising (May 10 – 14 after finals)*

## Required Registration Process

See SPIRE to determine when your enrollment appointment opens. Students must meet with an advisor *before* they can enroll in fall classes. ME seniors (1 or 2 semesters remaining not including the current semester), IE, and ENGIN-IE students meet with their faculty advisor as shown on SPIRE. All other ME and ENGIN-ME students should meet with Graduate Student Advisors **Grace Kromah-Saydee**, [vkromahsayde@umass.edu](mailto:vkromahsayde@umass.edu) (non-transfer students with last names starting with A-G), **Noah Doerr**, [ndoerr@umass.edu](mailto:ndoerr@umass.edu), (non-transfer students with last names starting with H-O), or **Nick Tirrusa**, [ntirrusa@umass.edu](mailto:ntirrusa@umass.edu), (non-transfer students with last names starting with P-Z). You should be receiving a Navigate appointment invitation from your respective faculty or graduate student advisor shortly asking you to sign-up for an appointment; if you do not, please contact them after March 22. Post graduate, non senior transfer, and study-abroad students should contact the MIE Chief Undergraduate Advisor (CUA) Dr. Bernd F. Schliemann, [bfschlie@umass.edu](mailto:bfschlie@umass.edu). *General advising questions as well as ARR and other issues will be addressed by the MIE Academic Advisor, **Mindy Dow**, [mldow@umass.edu](mailto:mldow@umass.edu).*

## Admission to the Major

To be admitted to the ME or IE major, a student must complete, with a grade of C or better, the following courses: Math 131 and Math 132, Engineering 100, or any of the following: Engineering 100, 110-114; ECE 122, CS 121, or M&I-ENG 124; Physics 151; and either Chemistry 111 or Physics 152. A cumulative grade point average of 2.0 and the most recent semester GPA of 2.0 are also required. *NOTE: transfer students from on- or off-campus who have not completed the Introduction to Engineering course (100, 110-114) should contact the CUA to take a substitute course as the Introduction to Engineering courses are not recommended for other than first-year students.*

## Curriculum Planning

Advisors offer assistance, but they do not plan the student's course of study. Curriculum worksheets are only guides as not all required courses are offered every semester. *Please inform the MIE Academic Advisor now about any problems that arise from anticipated course offerings. NOTE: please see the included time scheduling grid if you are planning your schedule before classes are available in SPIRE.*

## Academic Requirements Report

This report is used for graduation clearance. Each student should check their Academic Requirements Report (ARR) on SPIRE and contact the *MIE Academic Advisor* if there are any errors or omissions, particularly regarding transfer credits, AP credits, elective courses, and GenEd courses. *Graduating seniors should check their SPIRE Graduation Date and Academic Requirements Report to verify that all degree requirements will be satisfied.*

## Wait Lists

In order to keep the enrollment process fair for all MIE students, we have implemented SPIRE waitlists in lieu of asking students to contact instructors. Please join the waitlist on SPIRE for any MIE classes that are full; waitlists represent only 10% of the class capacity. *NOTE: if the waitlist is also full, please check back or find an alternative class – please do not contact the instructor.*

## Enrollment Issues

Register as soon as your SPIRE enrollment appointment opens if you need a specific class or section. Many required courses are offered both semesters. Students who cannot enroll in a specific class this semester will be accommodated in the next semester. Students may register for either MIE 302 or MIE 313 and either MIE 402 or MIE 413; students who register for both will be dropped from one of the courses without prior notice. In addition, both MIE 313 and 413 enrollment will be capped in the fall semester so you are encouraged to take these courses in the spring if possible. *If a specific course is essential and you are not able to enroll for any reason, please contact the MIE Academic Advisor immediately.* Note that MIE 201 and 273 are essentially interchangeable and do not need to be completed in the semester indicated on the curriculum worksheet. *Send override requests to the MIE Academic Advisor – not course instructors.*

## Undergraduate Teaching Assistant Credit & LRC Tutoring Positions

You are invited to contact faculty anytime about future UTA opportunities; probably the best time is when you are getting ready for your advising appointment. Students can satisfy the MIE or IE Elective requirement by completing the UTA Practicum, MIE 398T. *Interested students should contact the faculty teaching the course for more information; faculty select UTAs for their course(s) and students can only serve as an UTA for one class per semester.* Students serving as UTAs for a second or greater time will not receive academic credit, but will be paid (typically for 5 hours per week). Students should also consider paid tutor positions for the Learning Resource Center. Individual and group tutoring as well as supplemental instructors are sought for sophomore and junior level MIE courses (<https://www.umass.edu/lrc/jobs.html>).

## Independent Study

It is often possible to arrange an independent study which can be used as an ME or IE Tech Electives. Students are encouraged to approach faculty to discuss topics of mutual interest or visit: <http://mie.umass.edu/research/independent-study-topics>. Note that *only one* Tech Elective can be satisfied with MIE 396 or 496 *and honors students may not complete an independent study to meet a technical elective requirement.* See <http://mie.umass.edu/mie/degree-requirements> for the independent study request form.

## Study Abroad

Many MIE students have and are studying abroad. The spring semester of your sophomore or fall semester of your senior years are best suited for this opportunity. Please see an International Programs Office advisor if you are interested. Students interested in the 5-year double major in German and engineering iSTEP program which includes a year in Germany (one semester of classes and then an internship with a German manufacturing company) should visit <https://www.umass.edu/german/iSTEP>. *Upon return from abroad, students should meet with the MIE Academic Advisor to ensure all courses transfer correctly.*

## Summer Internships

Internships do not replace a class. You can earn pass/fail credit for an internship, but you do not need any additional credits to graduate (since you will exceed the 120 minimum regardless). To earn P/F credit, you will need to pay for a summer course (independent study) – this is particularly relevant for international students and the CUA will sponsor your independent study.

## Summer or Winter Classes

If you are interested in UMass Amherst summer or winter classes, request an enrollment appointment through SPIRE. Classes offered during summer 2021 are CEE 310 (IE Level 1 and ME technical elective), ECE 122 (in lieu of MIE 124 or CS 121), ENGIN 351, MIE 211, MIE 273, MIE 375, MIE 422 (IE core course or ME technical elective), MIE 573 (technical elective), MIE 597vr (technical elective), and the following Level 2 IE technical electives: MIE 654, MIE 670, and MIE 697u. To enroll in a summer or winter class, first logon to SPIRE: *Enrollment > Summer/Wtr/Non-deg Enroll Appt*; then add the appropriate summer or winter session.

## Transfer Credit

Before taking classes at another campus, students must complete a prior approval form: <https://www.umass.edu/registrar/sites/default/files/PriorApprovalforTransferWork.pdf>; this is to prevent students from spending time and money on a class that will not transfer in for credit towards your undergraduate degree. Classes completed elsewhere do not impact your UMass cumGPA and will not count for credit unless a grade of “C-” or above is earned. The Registrar’s Office approves all general education requirements, the Office of Student Affairs in 126 Marston Hall approves all science and math courses, and the CUA approves all MIE courses. If you have any problems with transfer credit, email your name, student ID, and course information (both course description and syllabus) to the CUA. *Note: course(s) you completed elsewhere must appear on your UMass transcript before MIE course credit can be awarded. Courses taken elsewhere for the 3<sup>rd</sup> or greater time need approval from the Academic Dean.*

## Departmental Honors

The requirements for departmental honors are:

1. MIE H313 & MIE H413 (for ME) and MIE H379, MIE 397DH, & MIE H460 (for IE) each with their parent course (e.g., MIE 313); students must complete these courses or substitute ENGIN 351H for one of them. *ENGIN 351H is specifically designed to initiate your honors thesis or project.*
2. Honors Thesis. MIE 499Y Honors Research with MIE 499T/P Thesis/Portfolio (note that you can find potential advisors and topics here: <http://mie.umass.edu/research/independent-study-topics>).

Students can request exceptions to the offerings in 1 above through the MIE Honors Program Director, Dr. Jae-Hwang Lee, [leejh@umass.edu](mailto:leejh@umass.edu). In addition, MIE 499Y and 499T/P each satisfy a ME Tech Elective or a Level 1 IE Tech Elective. *Note: the Supermileage vehicle course does not satisfy a technical elective for departmental honors students.*

## iCons Concentration

The requirements for the Integrated Concentration in Science (<https://icons.cns.umass.edu/>) have some overlap with both the industrial and mechanical engineering curriculum: iCons 1 satisfies an interdisciplinary (I) gened, iCons 2 satisfies ENGIN 351, and iCons 3 satisfies the IE or MIE elective.

## Full-time Student Status

Undergraduate students must take a minimum of 12 credits per semester to retain full-time student status. If you fall below this minimum, you are not eligible for campus housing, risk any financial aid you have been awarded, and may lose any UMass health coverage; see the appropriate campus office if you have any questions.

## Fundamentals of Engineering Exam

Although not required for most ME and IE jobs, students should consider taking the FE exam during their last semester while undergraduate course knowledge is still familiar. The 8-hour exam consists of 180 multiple choice questions. After passing the FE exam, one must obtain at least 4 years of experience (accepted by specific state licensing board) and then take the Principles and Practice (PE) exam. See <http://ncees.org/engineering/> for more information. *Chi Epsilon from CEE typically offers free review sessions taught by CEE faculty every spring semester.*

## Certified SolidWorks Associate Exam

SolidWorks CAD software is installed on computers in the Exploratorium (Elab 203). In addition, you can download the SolidWorks: <https://umass.box.com/s/utgpfl8juzvzh2nb7jgpzcmminjtdwn>; there are tutorials included. Students should also consider taking the no-cost CSWA exam before seeking an internship, co-op, or job. See <https://www.solidworks.com/sw/support/cswa-academic.htm> for more information and a sample exam. Once you are ready to take the self-administered CSWA exam, request a voucher code(s) from Jennifer Blake, [jblake@umass.edu](mailto:jblake@umass.edu); the exam instructions are available at <https://solidworks.virtualtester.com/#home>. Note that exam vouchers expire after approximately 2 months.

## 4 + 1 Programs

There are currently three MIE 5-year BS/MS programs (<https://mie.umass.edu/node/18084>): MS in Engineering Management, MS in Industrial Engineering, and MS in Mechanical Engineering (MSEM). Interested students should plan to take up to two graduate courses in their senior year. Two MIE technical electives (at the 500 level or above) will also satisfy 2 of the 10 graduate courses (30 graduate credits) required to earn your MS in the aforementioned 4+1 programs.

## Industrial Engineering Technical Electives

As courses are not offered every semester, students should consider taking the IE required courses for which they qualify. Students should also consider using free or MIE elective courses to satisfy prerequisites for higher level IE Tech Electives. All IE students should discuss the selection of IE Electives with their advisors; *e-mail your student number, major, and a course description to the CUA for approval of electives not listed below.* There is no limit to how many electives, including technical electives, you can take outside of the department.

1. A Level 1 IE Tech Elective can be any 200 or higher level MIE course except MIE 398T and the MSEM courses listed in the Level 2 IE Tech Electives. One Independent study can be used if neither MIE 499Y or 499T/P are used. Other acceptable courses are: CEE 310, 370, 410, 411, 418, 450, 470; ECE 242, 597c, 597D, 597SE; Computer Science 187, 250, 311; Kinesiology 460; Math 455, 537, 551, 552; Resource Economics 471; Statistics 516; BCT 520, 540, 550; OIM 321, 413; ISOM 597LG.

2. A Level 2 IE Tech Electives include any Level 1 Tech Elective course; Math 300, 456; Economics 309, 394IO; Resource Economics 452, 462, 472; Informatics 397F, OIM 451, Psychology 391RJ,; EMM capstone courses; **MSEM courses** (MIE 520, 564, 597EP, 645, 654, 664, 670, 697EP, 697U).
3. An IE Elective course includes any Level 1 or 2 IE Tech Elective courses; MIE 398T; Chemical Engineering 290A; Chemistry 112; Computer Science 119, 121 (if you completed MIE 124; Resource Economics 202, 312, 313; Psychology 209H, 304, 307, 330, 380; Kinesiology 270, 272; Management 341; Math 412, 425; EMM core courses: Accounting 221, Finance 301, Management 301, Marketing 301.
4. The free elective can be any course at the university except one that is a prerequisite for a required course (e.g., Math 104) or which overlaps significantly with a required course (e.g., Math 127).

### **Mechanical Engineering Technical Electives**

Students should determine the area of ME that most interests them as early as possible in their undergraduate careers and consider elective courses whenever they qualify. To assist in that endeavor, the following themes are offered with potential Tech Electives to support your interests (including the upcoming semesters they will *tentatively* be offered):

1. Advanced Fluids:
  - a. MIE 440 – Aerospace Fluid Mechanics: S23
  - b. MIE 441 – Internal Combustion Engines: F21, F22
  - c. MIE 442 – Propulsion Systems Performance, Analysis & Design: S22
  - d. MIE 497NM – Introduction to Numerical Methods: S22
2. Biomedical:
  - a. MIE 458 – Connections in Medicine, Biology, & Engineering: S22
  - b. MIE 497R – Mechatronics: every spring
  - c. MIE 597MB – Molecular, Cellular, & Tissues Biomechanics: F21, F22
  - d. MIE 597MD – Practical Medical Device Design: F21
3. Design:
  - a. MIE 497M – Industry-Sponsored Mechanical Design (prior to MIE 415): every fall
  - b. MIE 497s – Automotive Engineering (Supermileage Vehicle, limited to 25): all
  - c. MIE 562 – Power Systems Design: S22
  - d. MIE 597AV – Vehicle Automation: F22
4. Dynamic Systems and Control:
  - a. MIE 379 – Deterministic Operations Research: every fall
  - b. MIE 485 – Vibrations: S22
  - c. MIE 597ME – Introduction to MEMS & Microsciences: F21, F22
  - d. MIE 597RS – Human Robot Systems: S23
5. Energy Conversion:
  - a. MIE 570 – Solar & Direct Energy Conversion: every spring
  - b. MIE 573 – Engineering Windpower Systems: every fall
  - c. MIE 597CE – Ocean Renewable Energy: S22
6. Manufacturing:
  - a. MIE 422 – Statistical Quality Control: every spring
  - b. MIE 477 – Production Planning & Control: every spring
  - c. MIE 597L – Supply Chain Logistics; every fall
  - d. MIE 597AU – Industrial Automation: every spring
  - e. MIE 597MA – Intelligent Manufacturing: every fall

7. Materials (certificate program):
  - a. MIE 571/572 – Physical & Chemical Processing of Materials with Project
  - b. MIE 579 – Advanced Materials Engineering (or other 500-level advanced materials course)
  - c. ChE 573 – Materials Science & Engineering Project
  - d. ChE 590c – Mechanical Behavior of Materials
8. Materials (non-certificate):
  - a. MIE 597c – S23
  - b. MIE 597EM – Extreme Materials for Life Protection Applications: S22
  - c. MIE 597MM – Metamaterials: F21
  - d. MIE 597MP – Advanced Manufacturing Polymers: S22, S23

*Note that these electives will be capped at 40 students and some are only offered every 2 years. Students accepted onto the Supermileage Vehicle team will be registered for MIE 497s in the fall and spring; it is a three credit course that will count as the MIE Elective in the fall (or your first semester) and as a ME Technical Elective in the spring (or your second semester). Other technical courses in Engineering, Math, CS, Kinesiology, OIM, and science departments may be acceptable as Tech Electives; however, only one ME Technical Elective can be satisfied with a non-MIE course; e-mail your student number, major, and a course description to the CUA for approval. Examples of previously approved non-MIE technical electives are: Astronomy 337; Biomedical Engineering 597A; Building & Construction Technology 540; Chemical Engineering 555, 589, 597M; Civil & Environmental Engineering 310, 331, 462, 597A; Computer Science 187, 335, 403; Electrical & Computer Engineering 241, 331; Environmental Conservation 697sb; Kinesiology 460, 530; and Math 425, 456, 532H, 545, 551, 552. Lastly, students with strong GPAs can request permission to take non-MSEM 600-level courses to satisfy technical electives. **Note that none of the MIE Electives listed below satisfy a ME Technical Elective.***

### **MIE Elective**

ME students can take one of the following courses to satisfy their MIE Elective requirement: Computer Science 119, 121 or ECE 122 (if not used to satisfy MIE 124); EMM courses; Building & Construction Technology 550; Chemistry 112; Environmental Science 397R; Kinesiology 236, 430; Math 235; and MIE 353, 398T (UTA practicum), MSEM courses (see Level 2 IE Tech Elective section). Other technical courses in Engineering, Math, CS, Kinesiology, OIM, and science departments may be acceptable as the MIE Elective; e-mail your student number, major, and a course description to the CUA for approval.