



Aerospace Engineering Undergraduate Handbook

Department of Mechanical and Aerospace Engineering
<https://mae.rutgers.edu>



July 2026

Undergraduate Program Handbook

BS in Aerospace Engineering

1. Introduction

The Aerospace Engineering degree in the Department of Mechanical and Aerospace Engineering is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>, under the commission's General Criteria and Program Criteria for Aerospace Engineering. The Aerospace Engineering degree underwent re-accreditation evaluation in the fall semester of 2024.

The Department of Mechanical and Aerospace Engineering offers a standard curriculum leading to a BS degree in Aerospace Engineering, covering the areas of aeronautical engineering and astronautical engineering with an optional Energy Systems, Packaging Engineering, or Robotics Concentration.

Students who select the Energy Systems, Packaging Engineering, or Robotics Concentration are required to take the appropriate departmental elective courses related to the energy, packaging engineering, or robotics fields, respectively. These courses may also count towards the technical electives for degree completion. Details of the standard AE curriculum and the energy, packaging engineering, or robotics concentrations are presented in the AE Curriculum section of this handbook.

Each student graduating from the Mechanical and Aerospace Engineering program would have demonstrated the following [Student Outcomes](#) (SOs):

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze, and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

2. AE Curriculum

The Department of Mechanical and Aerospace Engineering offers an Aerospace Engineering Curriculum leading to a BS degree in Aerospace Engineering. For aerospace students, the MAE Department also offers two additional concentrations in Energy Systems and Packaging.

Standard Aerospace Engineering Curriculum: Students following this concentration are required to take the courses described in the Aerospace Engineering section.

Aerospace Engineers may elect to do the Energy Systems or Packaging Engineering concentration in the following manners:

- **Energy Systems Concentration:** Students following this Concentration are required to select Energy Systems Elective Courses (3 courses). Students completing the requirements for this concentration receive an Energy Systems certificate in addition to their Aerospace Engineering Diploma.
- **Packaging Engineering Concentration:** Students following this Concentration are required to select Packaging Engineering Electives (4 courses). One of these four courses must be Introduction to Packaging Engineering (440:301). Students completing the requirements for this concentration receive a Packaging Engineering certificate in addition to their Aerospace Engineering Diploma.
- **Robotics Concentration:** Students following this Concentration are required to select Robotics Electives (3 Courses). Students completing the requirements for this concentration receive a Robotics certificate in addition to their Aerospace Engineering Diploma.

See course objectives and descriptions for further details on engineering (650) courses.

3. Capstone Design Projects

Aerospace Design Project I & II (required for Aerospace Engineering degree)

All Aerospace Engineering students (021) during the senior year should register for the sequence of two courses: 650:487 Aerospace Design Project I (2cr) during Fall Semester and 650:488 Aerospace Design Project II (2cr) during Spring Semester. Successful completion of these courses is a graduation requirement.

650:487 Prerequisites: 650: 312, 342 (w/291 & 388 prereqs), 350, & 351. 650:488 Prerequisite: 650:487.

Fall Registration

Student should select a section from the list of available projects available on the MAE website:

<https://mae.rutgers.edu/capstone-design-project>

Select the project you would like to work on and contact the corresponding Professor. The projects are by SP# only until the end of May. If there are any remaining slots, then they open to all students.

There is a limit of six students per section depending on the project. Once the limit is reached no more students can be added. The students in the section will constitute a group that will work together towards the design and manufacturing of the project prototype. If the section of your first preference is closed, please select your subsequent choice.

Spring Registration

Register for the same section as in the Fall semester.

Guidelines for Aerospace Design

Description

The culmination of every Rutgers MAE student's undergraduate academic career is the yearly Design Project. All that classroom learning gets put to real-life use as small groups work under one of our faculty members to design and build a device to accomplish a preset list of goals. Students present their projects in April of each year close to or on Rutgers Day. Past projects have included a mechanical bird, a propulsion system, unmanned aerial vehicles, and so much more.

During their projects, students have the opportunity to work with industry members as well as our faculty, gaining experience in real-world engineering. Many of these projects can lead to new technologies or other innovations outside of academia and they help our students transition to life after graduation.

Duration

Aerospace Design is a yearlong project, Fall 650:487 (AE) and Spring 650:488 (AE). In the fall semester, the students will design and budget the project while in the spring semester they will build a working prototype. *AEROSPACE ENGINEERING (021) STUDENTS SHOULD REGISTER FOR AEROSPACE PROJECTS.*

Team building

Each team is composed of five MAE students (larger teams can be formed upon discussion with the faculty) and one MAE faculty member.

A group of students may form a team and target a specific project that they like, or each student may register to one of the open (no special permission number, SP# required) projects found on the website <https://mae.rutgers.edu/capstone-design-project>

Students and advisors from other departments may join the teams upon agreement of all team members and advisors. Non-MAE student(s) will be added to the group of five MAE students, and they may register either in the 650:299/399/499 course(s) or can register in their department's senior design/undergraduate research course(s).

Projects

Each faculty has project(s) that are posted on our website on May 15th. The students should select one of those projects. There are instances that the faculty and students have planned prior to the spring break for certain ideas they have that they want translated to projects. These can be included in the program if the projects are finalized by the end of the spring break of Junior year so they can be cited on the website.

Registration

All the students register for 650:487 (AE 021 students) when registration opens. After that they should form groups and contact the faculty to secure a project. The faculty may request a project to be by special permission only at which instance the students will have to plan and meet the faculty before they register. Alternatively, the project will be open and then the students can register on a first-come-first-serve basis.

Your advisor should have the special permission numbers (SP#) for your group and they will assign them to you after you discuss the project with them.

Project selection begins in May of Junior year and should be completed by end of July of Junior year.

4. Electives for Aerospace Engineers: Departmental, Technical, Humanities/Social Science, General

- A. Departmental Electives are all 3-credit, 400 level MAE engineering (650:xxx) courses that are not already required in the curriculum.

Fall Courses (Annual)

- 443 – Vibrations (**Bi-Annual Odd Years**)
- 451 - Vehicle Dynamics (**Bi-Annual Odd Years**)
- 455 - Design of Mechanisms
- 462 - Power Plants¹
- 447 - Probabilistic Models in ME and AE Systems (**Bi-Annual Even Years**)
- 474 - Alternative Energy I¹

Spring Core Courses (Annual)

- 461 - Internal Combustion Engines¹
- 478 – Elements of Electronic Packaging
- 485 – Computing Environment
- 16:650:605-Renewable Energy² Grad course under special topics. Can be used for Energy Systems concentration, level of difficulty suitable for seniors/first-year MS students.

- B. All MAE Graduate Courses may count as Departmental Electives upon approval of the undergraduate director.

* This course is offered both semesters (Fall and Spring)

¹ This course may be used for the Energy Concentration

All above courses can be mixed for the Aerospace Engineering degree if you decide NOT to do a concentration.

- B. **Technical Electives** are upper-level technical courses appropriate for aerospace engineers. The AE curriculum requires two (2) technical electives to be chosen from the Technical Electives list in this booklet.

A student may take Undergraduate Research (650:298/299/398/399/498/499), Internship Experience (650:495), or Co-Op Experience (650:496/497), as technical electives with approval of a professor supervising the work, for up to 6 credits (see limitations and application procedure in the section 7 “Professional and Supplemental Programs” of this document).

A student may take MAE Graduate Courses as technical electives with approval of the undergraduate director.

- C. **Humanities/Social Science Electives** are intended to serve the objectives of a broad education, and to make engineers fully aware of their social responsibilities and better able to consider related factors in the decision-making process. A list of acceptable Humanities/Social Science Electives courses is provided on the School of Engineering website at <https://soe.rutgers.edu/oas/electives>
- D. **General Electives** may be almost any course taught for credit at Rutgers University qualifies as a general elective. There are, however, a few exceptions in certain subject areas. See the School of Engineering website for details <https://soe.rutgers.edu/oas/electives>

Course descriptions for MAE courses as well as courses on Sciences, Humanities, and Math can be found at the pertinent Rutgers Course Catalogues. For example, MAE course descriptions are found at the following site:

Aerospace Engineering

https://catalogs.rutgers.edu/generated/nb-ug_current/pg1285.html

5. Aerospace Engineering Curriculum



Aerospace Engineering at Rutgers



Hands-on Experience

Year-long aerospace capstone design experience includes students working in teams to conceptualize, design, and manufacture aerospace system prototypes.

Research and teaching facilities include the state-of-the-art Buehler Supersonic Wind Tunnel and desktop and stand alone sub-sonic wind tunnels.

Build autonomous and wired controls, robotic systems, and unmanned aerial vehicles.

The image is a composite of two photographs. The left photograph shows a young woman with long brown hair, wearing a white cable-knit sweater, working in a laboratory. She is holding a black rectangular component with a blue sensor or actuator attached to it. The right photograph shows a group of students in a workshop or lab setting. A young man in a maroon shirt is gesturing with his hand while talking to a young woman with long red hair. They are looking at documents on a table. In the background, there are various pieces of industrial equipment, including what appears to be a large cylindrical component of a wind tunnel.

AEROSPACE ENGINEERING CURRICULUM

Freshman Year

| | | | | | |
|-----------|--|---|--------------------------|---|---|
| 160:159 | Gen Chem for Engrs | 3 | 160:160 ^{&} | Gen Chem for Engrs | 3 |
| 160:171 | Intro Experimentation | 1 | 440:102 | Intro Engineering - ID ³ EA II | 2 |
| 355:101 | Expository Writing | 3 | 440:221* | Eng'g Mech (Statics) | 3 |
| 440:101 | Intro Engineering - ID ³ EA I | 2 | 640:152 | Calculus for Eng'g | 4 |
| 640:151 | Calculus for Eng'g | 4 | 750:124 | Analytical Physics IB | 2 |
| 750:123 | Analytical Physics IA | 2 | ___ - ___ | Hum/Soc Elective | 3 |
| ___ - ___ | Hum/Soc Elective | 3 | | | |

Sophomore Year

| | | | | | |
|-----------|------------------------|----|-----------|------------------------|----|
| 440:222* | Eng'g Mech (Dynamics) | 3 | 540:343* | Engineering Econ | 3 |
| 640:251 | Multivariable Calculus | 4 | 640:244 | Differential Equations | 4 |
| 650:210 | Intro to Aerospace Eng | 3M | 650:351* | Thermodynamics | 3M |
| 750:227 | Analyt Physics IIA | 3 | 650:361*/ | Mechatronics | 4M |
| 750:229 | Analyt Physics IIA Lab | 1 | 650:388*/ | CAD in MAE | 3M |
| 650:291*/ | Mechanics of Materials | 3M | 650:291* | Mechanics of Materials | 3M |
| 650:388*/ | CAD in MAE | 3M | | | |
| 650:361* | Mechatronics | 4M | | | |

Junior Year

| | | | | | |
|-----------|-------------------------|----|-----------|--------------------------|----|
| 640:421* | Advanced Calculus | 3 | 650:401*/ | Dynamic Sys & Controls | 3M |
| 650:312* | Fluid Mechanics | 3M | 650:342* | Design Mech Components | 3M |
| 650:342*/ | Design Mech Components | 3M | 650:449 | Aerospace Materials | 3M |
| 650:401* | Dynamic Sys & Controls | 3M | 650:458 | Aerospace Structures | 3M |
| 650:350* | ME Measurements | 4M | 650:460 | Aerodynamics | 3M |
| ___ - ___ | Hum/Soc Elective (200+) | 3 | 650:471 | Aircraft Flight Dynamics | 3M |

Senior Year

| | | | | | |
|-----------|--------------------------|----|-----------|--------------------------|----|
| 650:431 | MAE Lab I | 2M | 650:433 | AE Lab | 2M |
| 650:439*+ | Multiphysics Simulations | 3M | 650:459 | Aerospace Propulsion | 3M |
| 650:457 | Spacecraft Mission Des | 3M | 650:463 | Compr Fluid Dynamics | 3M |
| 650:465 | Orbital Mechanics | 3M | 650:488 | Aerospace Design Proj II | 2M |
| 650:487 | Aerospace Design Proj I | 2M | ___ - ___ | Hum/Soc Elective (200+) | 3 |
| ___ - ___ | Technical Elective | 3 | ___ - ___ | Technical Elective | 3 |

- The MAE courses marked with (*) above can be taken either fall or spring semester.
- All MAE Departmental Electives can count for Technical Electives.
- ([&]) Not required for Class of 2030 and beyond
- (*+) 650:439 requires 650:312 as a co-rec/pre-rec among other prereqs. 439 cannot be taken earlier than Spring Junior Year.
- (/): The "/" denotes that this course and the one right below can be taken in either spring or fall semester.

Departmental Electives

| | | | |
|----------------------|----------------------|----------------------|-----------------------|
| 650:443 | Vibrations | 650:462 [#] | Power Plants |
| 650:447 | Probabilistic Models | 650:474 [#] | Alt Energy I |
| 650:451 | Vehicle Dynamics | 650:477 [#] | Alt Energy II |
| 650:455 | Des Mechanisms | 650:478 | ME Aspects Elec Packg |
| 650:461 [#] | Int Comb Engines | 650:481 | Heat Transfer |

Departmental Certificates

Energy Departmental Electives

| | |
|---------|-----------------------------|
| 650:461 | Internal Combustion Engines |
| 650:462 | Power Plants |
| 650:474 | Alternative Energy I |
| 650:477 | Alternative Energy II |

Packaging Engineering Technical Electives *

| | |
|---------|--|
| 440:301 | Introduction to Packaging Engineering (required) |
| 440:371 | Packaging Evaluation Methods |
| 440:373 | Packaging Manufacturing |
| 440:378 | Sustainable Packaging |
| 650:388 | Computer-Aided Design in Mechanical and Aerospace Engineering |
| 440:403 | Safety Engineering in Packaging and General Industry |
| 440:406 | Packaging, Printing, and Decoration |
| 440:468 | Packaging Machinery |
| 440:471 | Distribution Packaging |
| 440:477 | Packaging Manufacturing II |

Robotics Electives &

| | |
|--------------|--|
| Choose (I): | One or two from the following: |
| 650:455 | Design of Mechanisms |
| 16:650:512 | Introduction to Robotics |
| Choose (II): | One or two from the following: |
| 16:650:504 | Mathematical Methods in Engineering I |
| 650:451 | Vehicle Dynamics |
| 650:443 | Vibrations |
| 332:443 | Machine Learning for Engineering |

To earn the Energy Systems Certificate, select three (3) courses from the Energy Departmental Electives.

* The Undergraduate Certificate in Packaging Engineering (PE) is a comprehensive 12-credit program developed to deliver specialized training in the dynamic field of packaging to students within Rutgers School of Engineering. Designed to enhance the educational and career opportunities of engineering students who are not pursuing the packaging degree, this certificate equips them with a distinct competitive advantage.

The completion of 14:440:301 "Introduction to Packaging," along with three additional 3-credit packaging courses (packaging engineering technical electives shown above), is the benchmark for acquiring the Undergraduate Certificate in Packaging Engineering. Seniors are also eligible to take one synchronous packaging graduate course (16:731:xxx) toward their packaging engineering certificate.

& To earn the Robotics Certificate, select three (3) courses from the Robotics Electives.

6. Technical Electives

Take two at least 3-credit courses from the science/math/engineering courses offered by the departments below that are not already required.

| Code | Dept | Courses |
|------|---|---|
| 105 | Astrophysics | 300+, 400+ |
| 115 | Biochemistry | 300+, 400+ (excluding 321) |
| 117 | Bioenvironmental Engineering | 413, 414, 462, 468, 474, 492, 494, 495, 496 |
| 119 | Biological Sciences | 115, 116, 155, 408, 409 |
| 125 | Biomedical Engineering | 200+, 300+, 400+ |
| 146 | Cell Biology and Neuroscience | 200+, 300+, 400+ |
| 155 | Chemical and Biochemical Engineering | 200+, 300+, 400+ |
| 160 | Chemistry | 209, 251, 300+, 400+ |
| 180 | Civil and Environmental Engineering | 200+, 300+, 400+ |
| 198 | Computer Science | 200+, 300+, 400+ |
| 216 | Ecology, Evolution, and Natural Resources | 240, 401, 405, 431, 454, 486 |
| 332 | Electrical and Computer Engineering | 200+, 300+, 400+ (excluding 221/223, 222/224, 373/375) |
| 375 | Environmental Sciences | 202, 203, 302, 303, 307, 322, 340, 346, 360, 406, 407, 411, 421, 423, 424, 430, 434, 444, 453 |
| 390 | Finance | 380, 400, 420 |
| 400 | Food Science | 201, 202, 301, 302, 304, 411, 419 |
| 440 | General Engineering (Packaging) | 301, 371, 373, 378, 403, 406, 408, 419, 420, 468, 471 |
| 447 | Genetics | 200+, 300+ (excluding 354), 400+ |
| 460 | Geology | 301, 304, 306, 402, 407, 414, 418 |
| 540 | Industrial and Systems Engineering | 200+, 300+, 400+ (excluding 461) |
| 550 | Landscape Architecture | 301 |
| 628 | Marine Sciences | 320, 472 |
| 635 | Materials Science and Engineering | 200+, 300+, 400+ |
| 640 | Mathematics | 250, 300+, 400+ |
| 650 | Mechanical and Aerospace Engineering | 298, 299, 300+, 400+ (except 467/468/487/488) |
| 680 | Microbiology | 390, 480, 481, 494 |
| 694 | Molecular Biology and Biochemistry | 200+, 300+ (excluding 383), 411-414 |
| 700 | Music | 311, 312, 469 |
| 750 | Physics (Physics and Astronomy) | 300+, 400+ (excluding 443, 444) |
| 762 | Planning and Public Policy | 420, 451, 472, 473, 475, 492 |
| 776 | Plant Science | 242, 305 |
| 799 | Supply Chain Management | 300, 301, 320, 380, 460 |
| 960 | Statistics | 211, 212, 285, 379, 381, 382, 384, 400+ |
| 971 | Urban Planning | 201, 315, 316 |

Note 1: All seminar courses, survey courses, special topics, independent studies, undergraduate and graduate research courses, internships, and co-ops taken in departments other than MAE are EXCLUDED from technical electives credits in the MAE department.

7. Professional and Supplemental Programs

Dual Degree, Double Major, and Minor programs

Minors, majors, and dual degrees provide students with the opportunity to broaden skill sets outside of engineering. These programs are offered in conjunction with various other undergraduate schools at Rutgers University, including the School of Arts and Sciences and the School of Environmental and Biological Sciences. For more information about these programs, see <https://soe.rutgers.edu/oas/minors-majors>

BS/Master's programs

There are three special joint programs offering the opportunity for engineering students to obtain a Master's degree within one calendar year of completing the baccalaureate degree requirements. Qualified School of Engineering students are eligible to apply for admission to these accelerated Master's Programs in their junior year. For more information, see <https://soe.rutgers.edu/oas/BS-Masters>

The James J. Slade Scholars Program

In the third year, students who have maintained a 3.2 university cumulative grade-point average may apply to the undergraduate director of their major department to be admitted into the James J. Slade Scholars Program. The Slade Scholar Program honors long-time School of Engineering faculty member James J. Slade who was a noted researcher, mathematician, and professor for 36 years. His commitment to teaching, scholarly excellence, and impact on students was legendary, and continues to resonate through this prestigious research program.

Each Slade Scholar prepares a plan of study under the guidance of a three-member faculty committee and the Honors Committee of the School of Engineering.

The chairperson of the student's committee shall be the research thesis adviser and should be a member of their major department. For more information, see <https://soe.rutgers.edu/slade>.

MAE Department Requirements:

1. GPA 3.2
2. Independent research and a thesis giving a total of six credits, **650:542/543 graduate level credits** which may be transferred in MS program, beyond the minimum required for graduation.
3. Thesis presented to advisor's group.
4. Participation at Poster Session in the end of the Spring semester.

JJ SLADE Experience is a [letter grade](#) course.

Study Abroad

Many engineering students take advantage of Rutgers' Study Abroad educational opportunities choosing to study for a semester, a summer, or an academic year at one of the many international programs open to Rutgers students. Students can study abroad as early as sophomore year at locations including Hong Kong, Australia, London, South Africa, and more. Orientation sessions provide valuable information for making the necessary educational and logistical plans. For more information, see <https://soe.rutgers.edu/student-experience/study-abroad>.

Cooperative Experience (Co-Op)

Engineering students who have completed required major courses through the sophomore year and have a cumulative GPA of at least 2.5 are eligible to participate in the Co-op program.

The MAE Co-op requires that students complete a 6-month, full-time (40 hrs./wk.) work experience in a corporate engineering position, which may earn **6 credits towards technical electives** (see *Note 6*) upon student's request and if the student registers for the Co-op in Mechanical and Aerospace Engineering course (650:496/7). The MAE department requires continuous summer-fall or spring-summer experience.

After a student finds an engineering position in the company of their liking the following steps should be accomplished for technical elective credits in MAE:

- Submit job description for approval to the MAE undergraduate office.
- Complete [Co-Op MAE form](#) (this form is different from the Career Services one).
- After approval of job description, register for 650:496/497.
- Upon completion of the co-op the student should submit at the MAE undergraduate office the following using the [MAE Internship/Co-Op Completion Form](#):
 - A technical report of a minimum length of 20 pages, including tables, figures, and references.
 - Technical report is due the ***first day of final exams*** in the semester you are register for the course.
 - An evaluation letter from their supervisor indicating: 1) length and full-time employment of the student, 2) their duties, and 3) assessment of his performance.

Note 2: Since this is a full-time job, the students are not encouraged to take courses during their co-op experience. If under extenuating circumstances a student is to take a course during their Co-Op, the student is reminded that all MAE classes have mandatory attendance, and no credit will be given for missed classes.

The Office of Career Exploration and Success provides listings of co-op opportunities, but students may also obtain positions on their own. For more information, see: <https://soe.rutgers.edu/oas/coop>

Note 3: No credit towards electives in MAE will be given if the student is not registered for 650:496/7.

Co-Op Experience is a Pass/Fail course.

Procedure to request Co-Op Credits:

Please go to mae.rutgers.edu Then go to the **Academics** tab -> **Forms** -> **MAE Forms** and complete the online **Co-op Application Form**.

The screenshot shows the website for the Department of Mechanical and Aerospace Engineering at Rutgers. The navigation menu includes: About, Admissions, Academics, Research, Student Experience, and People. Under the Academics tab, there is a list of forms:

| Form Name | Link |
|--|--|
| Special Permission Request | Special Permission Request |
| Prerequisite Override Request | Prerequisite Override Request |
| Internship Application Form | Internship Application Form |
| Co-op Application Form | Co-op Application Form |
| Internship/Co-op Completion Form | Internship/Co-op Completion Form |
| Energy Certificate Application | Energy Certificate Application |
| Aerospace Certificate Application | Aerospace Certificate Application |
| James J. Slade Scholars Program Certification Form | James J. Slade Scholars Program Certification Form |
| James J. Slade Scholars Program Application | James J. Slade Scholars Program Application |
| Application for MAE BS/MS Program | Application for MAE BS/MS Program |

An email from the department will be sent to you with the decision on your request. Please allow 72 hrs. for a response.

If you do not receive a response within a reasonable amount of time, send an email to the Undergraduate Office Administrator Andrea Olarte andrea.olarte@rutgers.edu with your name on the subject line, your type of request (e.g., SPN) and the data of the online request.

Course descriptions for MAE courses as well as courses on Sciences, Humanities, and Math can be found at the pertinent Rutgers Course Catalogues. For example, MAE course descriptions are found at the following site:

Aerospace Engineering

https://catalogs.rutgers.edu/generated/nb-ug_current/pg1285.html

Internship Experience

Engineering students who have completed required major courses through the sophomore year and have a cumulative GPA of at least 2.5 are eligible to participate in the Internship program.

The **full-time MAE Internship** requires that students complete a 3-month, full-time (40 hrs/wk) work experience in a corporate engineering position, which may earn **3 credits towards a technical elective** (see *Note 6*) upon student's request and if the student registers for the Internship in Mechanical and Aerospace Engineering course (650:496/497). Full-time interns cannot be full-time students.

The **part-time MAE Internship** requires that students complete a part-time work experience in a corporate engineering position, which may earn up to **3 credits** (see *Note 6*) by arrangement and if the student registers for the Internship in Mechanical and Aerospace Engineering course (650:495). Part-time interns may be full-time students.

After a student finds an engineering position in the company of their liking the following steps should be accomplished to earn technical elective credits in MAE:

- Submit job description for pre-approval to the MAE undergraduate office before internship begins.
- Complete the [MAE Internship Form](#) (this form is different from the Career Services one.)
- After approval of job description, register for 650:495/496/497.
- Upon completion of the internship the student should submit at the MAE undergraduate office the following using the [MAE Internship/Co-Op Completion Form](#):
 - A technical report of a minimum length of 15 pages (including tables, figures, and references.)
 - Technical report is due the ***first day of final exams*** in the semester you are register for the course.
 - An evaluation letter from their supervisor indicating: 1) length and full-time employment of the student, 2) their duties, and 3) assessment of their performance.

Note 4: With a full-time job, students should not be full-time students. If under extenuating circumstances a student is to take a course during their internship, the student is reminded that all MAE classes have mandatory attendance, and no credit will be given for missed classes.

The Office of Career Services provides listings of internship opportunities, but students may also obtain positions on their own. *MAE's internship/co-op is different than the SAS Rutgers Internship/Co-op program (RICP). The RICP program counts as a general elective only. Technical elective credits will not be earned towards the AE degree through the RICP program.*

Note 5: No credit towards electives in MAE will be given if the student is not registered for 650:495.

Internship Experience is a Pass/Fail course.

Procedure to request Internship Credits:

Please go to mae.rutgers.edu Then go to the **Academics** tab -> **Forms** -> **MAE Forms** and complete the online **Co-op/Internship Application (full-time, tech elective)** or **Internship Application Form (part-time, general credits)**.

The screenshot shows the website for the Department of Mechanical and Aerospace Engineering at Rutgers School of Engineering. The navigation menu includes About, Admissions, Academics, Research, Student Experience, People, and Alumni. The 'Academics' section is expanded, showing options like Academic Advising, Aerospace Engineering, Mechanical Engineering, Packaging Engineering, Certificate Options, Internships and Co-ops, Capstone Senior Design, Academic Policies, and Registration and Scheduling. The 'Forms' section is highlighted, with 'Undergraduate Department Forms' selected. The main content area displays 'Undergraduate SPN Forms' and a list of 'Course Applications' including Certificates and Concentrations, Co-op/Internship Application, Internship Application Form, Internship/Co-op Completion Form, James J. Slade Scholars Application Program, James J. Slade Scholars Program Certification, SPN, Research Registration, and Transfer Special Permission Request.

An email from the department will be sent to you with the decision on your request. Please allow 72 hrs. for a response.

If you do not receive a response within a reasonable amount of time, send an email to the Undergraduate Office Administrator Andrea Olarte andrea.olarte@rutgers.edu with your name on the subject line, your type of request (e.g., SPN) and the data of the online request.

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Aerospace Engineering

http://catalogs.rutgers.edu/generated/nb-ug_current/pg1285.html

Undergraduate Research

This experience seeks to expand student participation in research projects with mechanical and aerospace engineering faculty. It features high-quality interaction of students with faculty, access to appropriate facilities, and other professional development opportunities.

Students may earn up to **3 credits (total) counting towards a technical elective** upon student's request (see *Note 6*) in MAE if they register under 298, 398, 498 Undergraduate research during the Fall semester and/or 299, 399, 499 Undergraduate research during the Spring semester of their sophomore, junior and senior years, respectively.

The students are required to make a poster presentation of their research project and findings at the end of the academic year if they elect to use their undergraduate research experience for Technical Elective credits.

Note 6: **Total number** of Undergraduate Research/Full-time Internship/Co-Op experience credits that may count towards a Technical Elective is limited to **6 credits** (2 TEs).

Undergraduate research is a [letter grade](#) course.

Procedure to request Undergraduate Research Credits:

Please go to mae.rutgers.edu Then go to the **Academics** tab -> **Forms** -> **MAE Forms** and complete the online **Research Registration** form.

The screenshot shows the website for the Department of Mechanical and Aerospace Engineering at Rutgers School of Engineering. The navigation menu includes About, Admissions, Academics, Research, Student Experience, People, and Alumni. The 'Academics' section is expanded, showing options like Academic Advising, Aerospace Engineering, Mechanical Engineering, Packaging Engineering, Certificate Options, Internships and Co-ops, Capstone Senior Design, Academic Policies, and Registration and Scheduling. The 'Forms' section is also expanded, with 'Undergraduate Department Forms' selected. The main content area displays 'Undergraduate SPN Forms' and a list of 'Course Applications' including Certificates and Concentrations, Co-op/Internship Application, Internship Application Form, Internship/Co-op Completion Form, James J. Slade Scholars Application Program, James J. Slade Scholars Program Certification, SPN, Research Registration, and Transfer Special Permission Request.

An email from the department will be sent to you with the decision on your request. Please allow 72 hrs for a response.

If you do not receive a response within a reasonable amount of time, send an email to the Undergraduate Office Administrator Andrea Olarte andrea.olarte@rutgers.edu with your name on the subject line, your type of request (e.g., SPN) and the data of the online request.

Course descriptions for MAE courses as well as courses on Sciences, Humanities, and Math can be found at the pertinent Rutgers Course Catalogues. For example, MAE course descriptions are found at the following site:

Aerospace Engineering

http://catalogs.rutgers.edu/generated/nb-ug_current/pg1304.html

8. Departmental Student Advising

At the beginning of the academic year, each student is assigned an MAE faculty advisor. Both faculty and students are notified via e-mail with their advisor/advisee information. There is no formal requirement that students obtain advice, but students are encouraged to contact their advisor. Students are not required to see advisors to register for courses (all course registration is done online during a pre-assigned period during the semester). Advising is available throughout the semester rather than restricted to a particular week of the semester. Advisors are available to discuss career paths, major requirements, prerequisites, organization of course load, and other relevant academic and professional issues. The type of advice sought ranges from planning a curriculum to meet the requirements of the student, to specific questions about rules, to professional and career advice.

Information about student advising is available on the website <https://mae.rutgers.edu/student-advising> under the tab "Student Advising".

9. SPECIAL PERMISSION NUMBERS/PREREQUISITE OVERRIDES

Requests for special permission numbers (SPN) and prerequisite overrides are accepted ONLY electronically.

Procedure to request a Special Permission#:

Please go to mae.rutgers.edu Then go to the **Academics** tab -> **Forms** -> **MAE Forms** and complete the online **SPN** form.

The screenshot shows the Rutgers School of Engineering website. The header includes the Rutgers logo and the text 'RUTGERS Department of Mechanical and Aerospace Engineering'. The navigation menu includes 'About', 'Admissions', 'Academics', 'Research', 'Student Experience', 'People', and 'Alumni'. The 'Academics' section is active, and the sidebar shows 'Forms' expanded to 'Undergraduate Department Forms'. The main content area is titled 'Undergraduate SPN Forms' and lists several course applications:

- [Certificates and Concentrations](#) (to be filled out senior year spring)
- [Co-op/Internship Application](#) (full-time, tech elective)
- [Internship Application Form](#) (part-time, general credits)
- [Internship/Co-op Completion Form](#) (to earn your grade)
- [James J. Slade Scholars Application Program](#)
- [James J. Slade Scholars Program Certification](#)
- [SPN](#)
- [Research Registration](#)
- [Transfer Special Permission Request](#)

An email from the department will be sent to you with the decision on your request. Please allow 72 hrs. for a response.

If you do not receive a response within a reasonable amount of time, send an email to the Undergraduate Office Administrator Andrea Olarte andrea.olarte@rutgers.edu with your name on the subject line, your type of request (e.g., SPN) and the data of the online request.

***PLEASE NOTE: SPECIAL PERMISSION NUMBERS WILL ONLY BE ISSUED FOR CRITICAL SITUATIONS AND ONLY THROUGH E-MAIL REQUESTS.**

Department of Mechanical and Aerospace Engineering

Rutgers, The State University of New Jersey

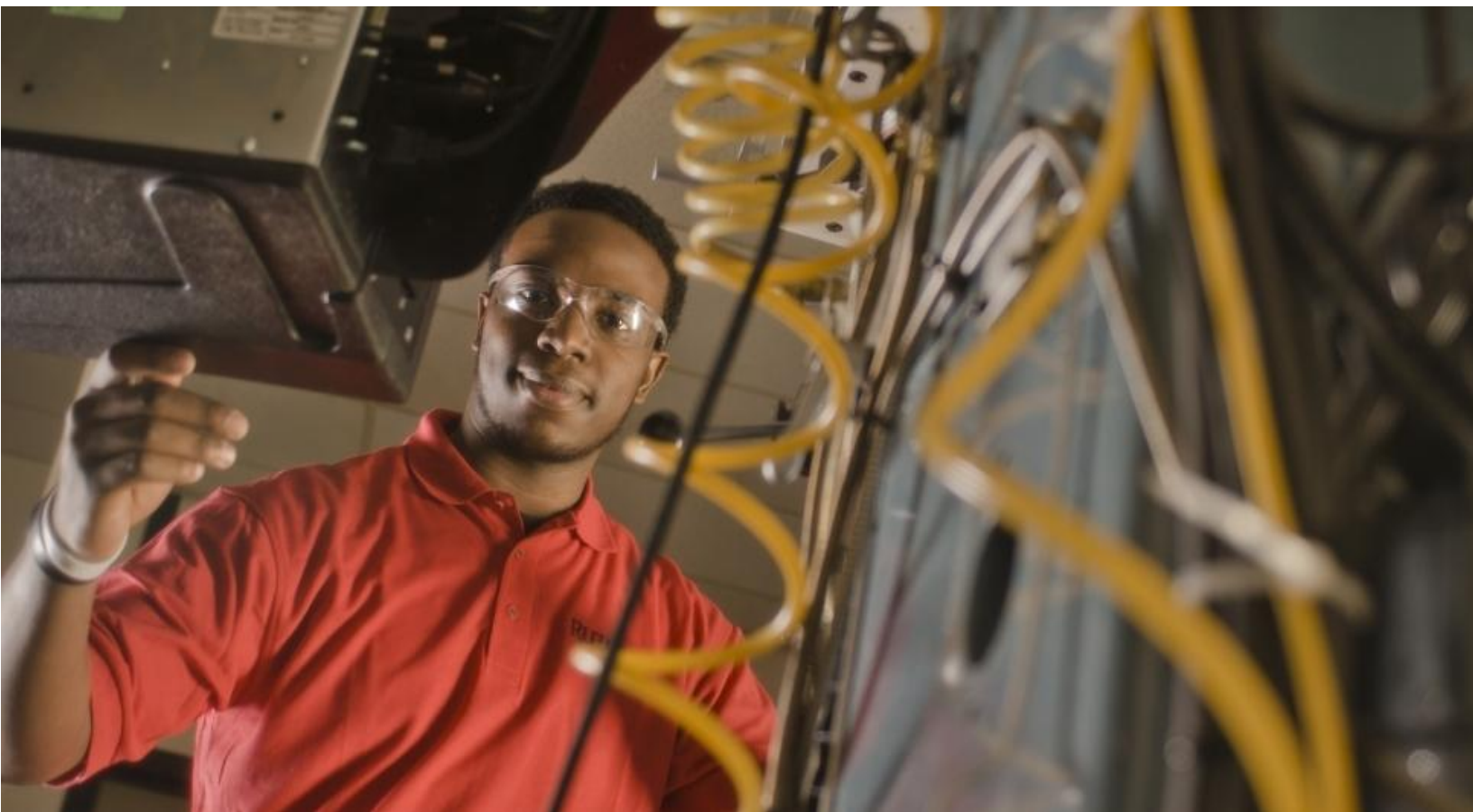
98 Brett Road

Piscataway, NJ 08854-8058

Phone: 848-445-2248/3514

Fax: 732-445-3124

<http://mae.rutgers.edu>



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