

Pathway to Masters Program (3+1+1 Program)
Engineering Science and Mechanics Department

For Pathway Program students intending to apply to the **Engineering Mechanics One Year M.Eng. Degree**:

Prerequisites for entry into the Pathway Program

Participating Departments will fully inform applicants of the prerequisite knowledge they need in order to be prepared for the required Penn State coursework, as demonstrated on their transcripts from the home institution.

Required prerequisite preparation to enroll in undergraduate Pathway Program courses

- Wave motion and quantum physics
- Strength of materials
- Differential equations
- Electric circuit analysis
- Physics, electricity and magnetism
- Calculus and vector analysis

Additional recommended prerequisite preparation to enroll in undergraduate Pathway Program courses

- Computer programming

Pathway Program Admission Requirements*

- Copies of Transcripts showing all previous coursework. Transcripts plus translated transcripts.
- Resume

**Students will be required to officially apply to the one year master's program in the fall semester of Year 1 once enrolled in Penn State courses.*

Courses offered through the Program for undergraduate students in Year 1

The Engineering Science and Mechanics Department has identified and will ensure availability in a minimum of 12 credits per semester for Pathway Program students. Courses for Pathway students intending to apply to the Engineering Mechanics One Year M.Eng. Degree are listed below:

FALL SEMESTER: Take the following four courses, and 6 credits Required

COURSE	CREDITS	TITLE
E SC 400H	3	Analysis in Engineering Science
E SC 404M	3	Elements of Material Engineering
E SC 407H	3	Computer Methods in Engineering Science
E SC 433H	1	Engineering Science Research Laboratory Experience

Select 6 credits from the following courses:

E MCH 400	3	Advanced Strength of Materials and Design
E MCH 409	3	Advanced Mechanics
E MCH 461	3	Finite Elements in Engineering
E MCH 471	3	Engineering Composite Materials

SPRING SEMESTER: Take 15 or 16 credits from the following courses*:

COURSE	CREDITS	TITLE
E MCH 402	3	Applied and Experimental Stress Analysis
E MCH 403	4	Strength Design in Materials and Structures
E MCH 416H	3	Failure and Failure Analysis of Solids
E MCH 440	3	Nondestructive Evaluation of Flaws
AERSP 308H	3	Mechanics of Fluids
E MCH 470	3	Analysis and Design in Vibration Engineering

*** Other courses may be selected with permission from the Undergraduate Officer**