Engineering Science, A.S.

HEGIS: 5609.00
PROGRAM CODE: 87212
PROGRAM DIRECTOR: Dr. John Mikalopas

DEPARTMENT: PHYSICAL SCIENCES

The Engineering Science AS is designed to provide students the foundation in engineering and related physical sciences and mathematics courses in preparation for transfer to baccalaureate programs. Courses focus on understanding the principles and methods of engineering, application of mathematics, science, and computing techniques to the study of and solution to engineering problems, the importance of professional and ethical responsibilities of engineers, and support quantitative reasoning, scientific writing, and research.

The curriculum presented here applies to students who started the major in Fall 2025 or Spring 2026. If you enrolled as a matriculant prior to that, please see the *College Catalog* for the year you started the major as a matriculant for the curriculum requirements that apply to you.

Consultation with the Program Advisor is required.

Degree Maps:

Degree Map for Engineering Science, A.S. - MAT 9010 or MAT 9B0 or MAT 900 Placement
Degree Map for Engineering Science, A.S. - MAT 1500 Placement - Calculus I

Your Degree Map contains the suggested term-by-term course sequence for your academic path towards graduation.

To ensure successful and timely completion of your degree, it is recommended that you meet with your academic advisor to discuss your unique map.

Please note some courses *may* only be offered once an academic year.

Program Learning Outcomes:

Upon successful completion of the Engineering Science degree program requirements, graduates will:

1. employ mathematics, science, and computing techniques to support the study and solution of engineering problems
2. understand the principles and methods of engineering
3. demonstrate practical skills in modern laboratory techniques, methods, instrumentation, and data analysis

4. communicate clearly their understandings of engineering and of their specific activity in the field orally and in writing
5. understand the importance of professional and ethical responsibilities of engineers
6. recognize environmental constraints and safety issues in engineering
7. exhibit good teamwork skills and serve as effective members of teams
8. be prepared for a lifetime of continuing education

College Requirements:

English and Math proficient as determined by the CUNY Proficiency Index, unless otherwise exempt, or successful completion of any required developmental course(s).

Civic Engagement Experiences:

One (1) Civic Engagement experience satisfied by Civic Engagement Certified or Civic Engagement Component course or approved outside activity.

Writing Intensive Requirement:

One (1) Writing Intensive Course in any discipline is required.

Required Core (4 Courses, 13 Credits):

When Required Core Courses are specified for a category, they are required for the major

- ENG 1200 - Composition I 3 Credit(s)
- ENG 2400 - Composition II 3 Credit(s)
- **Mathematical & Quantitative Reasoning Course ***
  - MAT 9010 - Introduction to Mathematics with College Algebra 3 Credit(s) **or**
  - MAT 9B0 - College Algebra for STEM Majors 3 Credit(s) **or**
  - MAT 900 - College Algebra 3 Credit(s) **or**
  - MAT 1400 - Analytic Geometry and Pre-Calculus Mathematics 3 Credit(s) **or**
  - MAT 1500 - Calculus I 3 Credit(s)
- **Life & Physical Sciences Course ***
  - CHM 1100 - General Chemistry I 4 Credit(s)

Flexible Core (6 Courses, 20 Credits):

When Flexible Core Courses are specified for a category, they are required for the major

One course from each Group A to D (Group E is satisfied by the courses shown). **No more than two courses can be selected from the same discipline.**

A. World Cultures and Global Issues Designated Course

B. U.S. Experience in its Diversity Designated Course

C. Creative Expression Designated Course

D. Individual and Society Designated Course

E. Scientific World Designated Course*

- CHM 1200 - General Chemistry II 4 Credit(s)
- PHY 1300 - Advanced General Physics I 4 Credit(s)

Major Requirements (9 to 12 Courses, 28 to 37 Credits):

Additional Physical Sciences Requirements (4 Courses, 13 Credits)

- PHY 1400 - Advanced General Physics II 4 Credit(s)
- EGR 2100 - Engineering Design 3 Credit(s)
- EGR 2200 - Introduction to Electrical Engineering 3 Credit(s)
- EGR 2300 - Introduction to Engineering Thermodynamics 3 Credit(s)

Additional Mathematics Requirements (5 to 8 Courses, 15 to 24 Credits)

Select **five (5)** to **eight (8)** additional courses beyond the Mathematical and Quantitative Reasoning (MQR) course from the following:

- CS 1200 - Introduction to Computing 3 Credit(s)
- MAT 1000 - College Trigonometry 3 Credit(s) ^
- MAT 1400 - Analytic Geometry and Pre-Calculus Mathematics 3 Credit(s) (Recommended)
- MAT 1500 - Calculus I 3 Credit(s) (Recommended)
- MAT 1600 - Calculus II 3 Credit(s) (Recommended)
- MAT 2100 - Calculus III 3 Credit(s)
- MAT 5500 - Differential Equations 3 Credit(s)
- MAT 5600 - Linear Algebra 3 Credit(s)

Electives:

0 credits sufficient to meet required total of 61 to 70 credits

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Notes:

^ Depending on Math placement, students may be required to select MAT 1000

*This program has a waiver to require particular courses in the Common Core, otherwise more than the minimum credits for the degree may be necessary.

Total Credits: 61 to 70