ELECTRICAL ENGINEERING AREA OF CONCENTRATION, ENGINEERING SCIENCE AS

Total Credits: 66
Catalog Edition: 2025-2026

Program Description

This curriculum is designed to provide the first two years of a four-year program leading to the award of a BS in engineering. A student planning to transfer to any baccalaureate degree granting institution should follow the appropriate area of concentration listed below in consultation with an engineering advisor. The student should also visit the Montgomery College Engineering Advising website www.montgomerycollege.edu/engineeringadvising for up-to-date comprehensive information on transfer requirements for all universities and colleges with which we have an articulated transfer program.

Completion of all requirements for any area of concentration in engineering science will lead to the award of the AS in engineering science.

This area of concentration will prepare students to transfer to a four-year university with a major in electrical engineering. Specific requirements in colleges vary, and the student preparing for a particular institution may, with approval, change the sequence listed below; this sequence of courses is articulated with the electrical engineering program at the University of Maryland, College Park. A suggested course sequence for full-time students follows; all students should consult an engineering advisor. The student should also visit the Montgomery College Engineering Advising website at www.montgomerycollege.edu/engineeringadvising for up-to-date comprehensive information.

Program Outcomes

Upon completion of this program, a student will be able to:

- Identify, formulate, and solve basic physics and engineering problems in analog and digital circuits.
- Design simple systems and circuits using analytical and numerical methods in the area of Electrical Engineering.
- Use appropriate computer application software in electrical engineering.

Program Advisors

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For more information, please visit https://www.montgomerycollege.edu/engineering-advising

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Suggested Course Sequence

A suggested course sequence for full-time students follows. All students should review this advising guide and consult an advisor.

First Semester

ENGL 102 - Critical Reading, Writing, and Research *3 semester hours* (ENGF)

MATH 181 - Calculus I *4 semester hours* (MATF)

ENES 100 - Introduction to Engineering Design *3 semester hours* (NSND/GEEL)

CHEM 135 - General Chemistry for Engineers *4 semester hours*

OR

CHEM 132 - Principles of Chemistry II *4 semester hours*

ENEE 140 - Introduction to Programming Concepts for Engineers *2 semester hours*

Second Semester

Behavioral and Social Sciences Distribution*3 semester hours (BSSD)* **

PHYS 161 - General Physics I: Mechanics and Heat *3 semester hours* (NSND)

ENEE 150 - Intermediate Programming Concepts for Engineers *3 semester hours*

ENEE 244 - Digital Logic Design *3 semester hours*

MATH 182 - Calculus II *4 semester hours*

Third Semester

Arts Distribution*3 semester hours (ARTD)*

Humanities Distribution *3 semester hours (HUMD)*

PHYS 262 - General Physics II: Electricity and Magnetism *4 semester hours* (NSLD)

ENEE 290 - Introduction to Differential Equations and Linear Algebra for Engineers *4 semester hours* ***

OR

MATH 282 - Differential Equations *3 semester hours*

MATH 280 - Multivariable Calculus *4 semester hours*

Fourth Semester

Behavioral and Social Sciences Distribution *3 semester hours (BSSD)* **

ENEE 207 - Electric Circuits *4 semester hours*

ENEE 222 - Elements of Discrete Signal Analysis *4 semester hours*

ENEE 245 - Digital Circuits and Systems Laboratory *2 semester hours*

PHYS 263 - General Physics III: Waves, Optics, and Modern Physics *4 semester hours*

Total Credit Hours: 66

Advising Notes

The pre-requisite for ENGL 102 is ENGL 101 or ENGL 101A. English course placement is determined by the Accuplacer English/Reading Test.

** Behavioral and Social Science Distribution (BSSD) courses must come from different disciplines.

The co-requisite for ENES 100 is MATH 165 or higher.

Most engineering students will start at MC missing one or more pre-requisites for CHEM 131, CHEM 132, CHEM 135, ENGL 102, ENES 100, MATH 181, or ENEE 150.

The appropriate initial chemistry courses will be determined by the student's score on the Chemistry Placement Exam, mathematics level, AP/IB credits, or transfer credits. Possible courses include CHEM 099, CHEM 131, CHEM 132, or CHEM 135. Either CHEM 132 or CHEM 135 satisfies the required chemistry credit for UMCP. CHEM 131-CHEM 132 satisfies the required chemistry credit for UMBC, but CHEM 135 does not.

The pre-requisite for MATH 181 is MATH 165 (Precalculus). Mathematics initial course placement will be determined by the ALEKS Math Placement, Accuplacer Math Test, AP/IB credit, or transfer credits.

The pre-requisites for ENEE 150 are MATH 181 and ENEE 140 or consent of instructor if you have structured programming experience.

*** Students planning to transfer to UMD should take ENEE 290, where ENEE 290 is a prerequisite of ENEE 222.

Students: please make an appointment for an advising checkup with ENEE faculty program advisors prior to registration for the third semester.

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AA and AS programs require one global and cultural perspectives (GCP) General Education course.

Transfer Opportunities

Montgomery College has partnerships with multiple four-year institutions and the tools to help you transfer. To learn more, please visit https://www.montgomerycollege.edu/transfer or http://artsys.usmd.edu .

Get Involved at MC!

Employers and Transfer Institutions are looking for experience outside the classroom.

MC Student Clubs and Organizations: https://www.montgomerycollege.edu/life-at-mc/student-life/
Engineering Student Professional Groups: https://www.montgomerycollege.edu/academics/programs/engineering-science/resources.html

Related Careers

Some require a Bachelor's degree.
Electronics Engineer, Except Computer, Electrical Engineer, Electrical Engineering Technician, Electronics Engineering Technologist.

Career Services

Montgomery College offers a range of services to students and alumni to support the career planning process. To learn more, please visit https://www.montgomerycollege.edu/career

Career Coach

A valuable online search tool that will give you the opportunity to explore hundreds of potential careers or job possibilities in Maryland and the Washington D.C. metropolitan area. Get started today on your road to a new future and give it a try. For more information, please visit https://montgomerycollege.emsicc.com

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