

A. JAMES CLARK SCHOOL OF ENGINEERING AT SHADY GROVE

The Universities at Shady Grove

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Biocomputational Engineering

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Cyber-Physical Systems Engineering

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Discipline-defying combustion experiments aboard the International Space Station. New advanced technologies that help farmers tap the economic potential and environmental benefits of shellfish aquaculture. Wood transformed into something clear, bouncy, bulletproof, and that might help save our planet.

These and other research innovations poised to benefit millions are borne from the A. James Clark School of Engineering, one of the premier engineering schools in the United States.

Maryland Engineering's mission is to be a place where students make a positive impact on the world. We believe in practicing engineering as a public service: innovating for people in communities we may never see or meet, but whose quality of life will be improved through our innovation.

Located a few miles from Washington, D.C., the Clark School is at the center of a constellation of high-tech companies and federal laboratories, offering students access to one of the most vibrant research programs in the country. With industry-leading expertise in areas that are shaping society such as quantum technology, energy, robotics, communications and networking, life cycle and reliability engineering, disaster resilience, and intelligent transportation systems, Clark School students conduct research relied upon by federal agencies, major companies, and other academic institutions alike.

We combine rigorous classroom learning with opportunities for hands-on experience, including the autonomous vehicle project in freshman year and capstone courses in junior and senior years; participation in numerous national and international engineering competitions in which the school is consistently successful; a vibrant entrepreneurial ecosystem; and extensive internship opportunities.

With one of the nation's most active chapters of Engineers Without Borders, Clark School students can apply their skills and energies in the service of others all around the world. Service options closer to home are available through the many student societies, alternative spring breaks, and targeted initiatives started by fellow students.

Society needs solutions to its grand challenges; engineers will play a part in every solution: <http://eng.umd.edu>.

Admission Requirements

Transfer Admission

Direct Admissions Requirements

Transfer admission to the A. James Clark School of Engineering is limited for all majors except Biocomputational Engineering (located at the Shady Grove campus). Internal and external transfer students will be directly admitted to the Clark School if they meet the following Gateway requirements: MATH141 with a "B-" or higher, PHYS161 with a "B-" or higher, either CHEM135 or CHEM271 or CHEM134 with a minimum grade of "C-" or higher (Students who take CHEM134 must also have completed CHEM131 with a minimum grade of "C-"). Students must also have a minimum cumulative GPA of 3.0 in all college-level coursework, and have not previously been admitted to the Clark School of Engineering. Only one repeat of a single Gateway course, either at the University of Maryland or at any other university or college, will be considered to meet the review requirements. A course in which a grade of "W" (withdrawn) is earned is counted as an attempt. Students should wait until all gateway requirements are complete before applying for admission to the School.

Transfer Admission Appeal Process

All students denied admission to the Clark School may appeal the decision in writing directly to the Associate Dean of Undergraduate Student Affairs in the Clark School.

Maryland Community College Transfer Students

Students who complete an associate's at a Maryland community college may be prepared to enter into the sophomore or junior year in engineering at the University of Maryland if they have completed the required engineering coursework. To ensure that you are enrolling in the correct courses to transfer, please consult the Engineering four-year plans and the Transfer Credit Services website. There may be some courses which are not offered at Maryland community colleges. Students should investigate the feasibility of completing these courses during the summer session at the University of Maryland before starting their junior coursework in the fall semester. Students transferring in Fall 2022 and after may apply up to 70 credits from a MD community college to their degree. Any student transferring prior to Fall 2022 may apply up to one half of the degree credits (approximately 60 semester hours) to their degree.

PROGRAMS

Majors

- Biocomputational Engineering Major at Shady Grove (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/universities-shady-grove/engineering/biocomputational-engineering/>)
- Cyber-Physical Systems Engineering Major at Shady Grove (<https://academiccatalog.umd.edu/undergraduate/colleges-schools/universities-shady-grove/engineering/cyber-physical-systems-engineering/>)

COLLEGE REQUIREMENTS

Undergraduate Degree Requirements

Structure of Engineering Curricula: The section below describes the requirements and the prescribed credit hours leading to the Bachelor of

Science degrees awarded in the Clark School of Engineering. The courses in each curriculum may be classified in the following categories:

1. Courses in the General Education Program;
2. Courses in Basic Sciences (mathematics, chemistry, and physics);
3. Related technical courses, engineering sciences and other courses approved for one curriculum but offered by another department;
4. Courses in the major department. The courses in each engineering curriculum, as classified below, form a sequential and developmental pattern in subject matter. In this respect, curricula in engineering may differ from curricula in other colleges. Some regulations which are generally applicable to all students may need clarification for purposes of orderly administration among engineering students (see Academic Regulations (<https://academiccatalog.umd.edu/undergraduate/registration-academic-requirements-regulations/academic-records-regulations/>)). Moreover, the Clark School of Engineering establishes policies that supplement university regulations.

School Regulations

1. The responsibility for proper registration and for satisfying stated prerequisites for any course must rest with the student as does the responsibility for proper achievement in courses in which the student is enrolled. Each student should be familiar with the provisions of this catalog, including the Academic Regulations.
2. Required courses in mathematics, physics, and chemistry have highest priority. It is strongly recommended that every engineering student register for mathematics and chemistry or mathematics and physics each semester until the student has fully satisfied the requirements of the Clark School of Engineering in these subjects.
3. To be eligible for a bachelor's degree in the Clark School of Engineering, a student must have an overall cumulative grade point average of at least a 2.0 and a "C-" or better in all engineering degree requirements (including all technical coursework but not limited to courses taken in MATH, PHYS, CHEM). Students matriculating to UMD in the fall of 2012 or after must also have a 2.0 cumulative GPA in their major courses, minor courses and classes used to satisfy certificate programs.
4. A course taken at UMD in which a grade has been earned may not be repeated via transfer from another institution.
5. Students in the Clark School of Engineering must have a minimum 2.0 University of Maryland GPA to enroll in courses at another institution.
6. All students are required to complete a number of general education courses and must follow the university's requirements regarding completion of the General Education Program. Consult the Academic Regulations section of this catalog for additional information. Engineering students are required to complete a Professional Writing course.
7. All degree programs in the Clark School of Engineering require a minimum of 120 credits plus satisfaction of all department, School, and University general education program requirements. Students should be aware that, for all currently existing engineering programs, the total number of credits necessary for the degree exceeds 120 by some number that depends on the specific major.

All undergraduate programs offered at USG begin at the junior (300) level. Students interested in attending a program at USG must complete approximately 60 credits elsewhere and then transfer. Representatives for

each program offered at USG can assist students in learning about their respective prerequisites and admissions criteria.

Curricula for the various engineering departments are given in this catalog to illustrate how the programs may be completed. These curricula are rigorous and relatively difficult. It is not uncommon for a student to extend their curriculum; this may be necessary or desirable for a variety of reasons. However, students should seek academic advising in order to ensure that courses are taken in the proper sequence.

All students are encouraged to utilize the university's degree auditing system, uAchieve, and to review the audit with their departmental advisor throughout the course of their academic career. The purpose of the audit is to discuss academic progress and to confirm that graduation requirements are met.

Departments and Degrees

The Clark School of Engineering consists of eight academic departments and offers the degree of Bachelor of Science in the following fields of study: Aerospace Engineering, Bioengineering, Biocomputational Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Cyber-Physical Systems Engineering, Electrical Engineering, Fire Protection Engineering, Materials Science and Engineering, and Mechanical Engineering. All of the above programs are accredited by the Engineering Accreditation Commission of ABET, <http://abet.org> (with the exception of Biocomputational Engineering and Cyber-Physical Systems Engineering).

Freshmen-Sophomore Years

The freshmen and sophomore years in engineering are designed to lay a strong foundation in mathematics, physical sciences, and the engineering sciences upon which the student will later develop a professional program during the upper division (junior and senior) years. During the first two years, students are introduced to the concepts of engineering design and work in multidisciplinary teams.

Advising is mandatory prior to registration each semester for all students in the Clark School. Each engineering department has a representative who advises students in their respective discipline. Refer to the individual program for additional advising information.

During orientation to the university, all students will receive advising from their departmental representatives.

ADVISING

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