A. JAMES CLARK SCHOOL OF ENGINEERING AT SHADY GROVE

These programs are offered exclusively at the Universities at Shady Grove campus location, centered in the Biomedical Sciences and Engineering (BSE) Education Facility (https://shadygrove.umd.edu/student-affairs/career-development/about/bse-education-facility/).

The Universities at Shady Grove

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http://eng.umd.edu

Biocomputational Engineering
Biomedical Sciences and Engineering Facility 4119
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Cyber-Physical Systems Engineering
Biomedical Sciences and Engineering Facility 5104
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Mechatronics Engineering
Biomedical Sciences and Engineering Facility
mechatronics@umd.edu

Dean: Samuel Graham, Jr., Ph.D.
Associate Deans: Akua Asa-Awuku, Ph.D.; Hugh Bruck, Ph.D.; Ken Kiger, Ph.D.; Jelena Srebric, Ph.D.; Min Wu, Ph.D.

Deploying energy solutions for climate change. Launching companies that reshape the economy. Growing the nation's semiconductor industry. Setting trends in engineering and medicine.

When the world looks for solutions to society's grand challenges, it comes to Maryland Engineering.

As one of the country's top engineering schools, we empower our students to innovate for the public good, improving people's lives with great engineering design. 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 quantum technology, energy, robotics, health care, life cycle and reliability engineering, disaster resilience,intelligent transportation systems, and more, Clark School students conduct research relied upon by federal agencies, major companies, and other academic institutions alike.

We combine our classroom learning with hands-on experiences; participation in numerous national and international engineering competitions in which the school is consistently successful; a vibrant entrepreneurial ecosystem; and an extensive internship and career placement program.

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 and Mechatronics 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 graduation 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.

Pathways to Shady Grove Programs

The A. James Clark School of Engineering offers three degrees at the Universities at Shady Grove, located in Rockville, MD – Biocomputational Engineering, Cyber-Physical Systems Engineering, and Mechatronics Engineering. Because these degree programs are exclusively available at Shady Grove, students eligible for admission to the Clark School and who are currently attending the University of Maryland, College Park, may indicate interest in these degree programs by declaring the pre-major.

The Pre-Biocomputational Engineering, Pre-Cyber-Physical Systems Engineering, and Pre-Mechatronics Engineering majors are not degree-granting programs. Rather, these pre-majors are specifically designed for students who plan to transition from the College Park campus to the Shady Grove campus to pursue the Biocomputational Engineering, Cyber-Physical Engineering, and Mechatronics Engineering majors at Shady Grove.

The Universities at Shady Grove only offer the 300 and 400-level degree requirements. Therefore, prior to transitioning to the Shady Grove

campus, students must complete all 100 and 200-level prerequisites and must complete their general education requirements.

Prospective freshmen and transfer students are invited to apply into the pre-majors. Applicants for the pre-major codes will be reviewed based on the Clark School of Engineering LEP requirements. If admissible to the college, they would be invited to pursue the pre-majors at College Park until the time when they are ready to transition to the Shady Grove campus.

Students who are pursuing the pre-major codes will be advised as follows: Pre-Biocomputational Engineering will be advised by Bioengineering, Pre-Cyber-Physical Systems Engineering will be advised by the Electrical & Computer Engineering Department, and Pre-Mechatronics Engineering will be advised by Aerospace Engineering.

Students may only remain in the pre-majors up until they have earned 60 cumulative credits (including any prior learning and/or transfer credit). Once 60 credits have been earned, students will be required to change their major to a degree-seeking program. Students will be advised on the steps necessary to transition to the majors at Shady Grove by the Program Coordinators. Any request for an extension on this timeline will be considered an Exception to Policy and must be reviewed by the college and department for consideration.

Students in the Pre-Biocomputational Engineering, Pre-Cyber-Physical Systems Engineering, and Pre-Mechatronics Engineering majors are welcome to change their major into any other engineering degree program.

Due to seat limitations on the College Park campus, the Pre-Biocomputational Engineering and Pre-Mechatronics Engineering major are Limited Enrollment Programs and require that students meet our minimum requirements for admission. However, the Biocomputational Engineering and Mechatronics Engineering degrees at Shady Grove are not limited. Therefore, students who meet the 100 and 200-level course prerequisites for Biocomputational Engineering and Mechatronics Engineering may apply directly to the Shady Grove program. Students interested in both Pre-Cyber-Physical Systems Engineering at College Park and Cyber-Physical Systems Engineering at Shady Grove must meet the LEP admission requirements for both campuses.

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/)
- Mechatronics Engineering Major at Shady Grove (https://academiccatalog.umd.edu/undergraduate/colleges-schools/universities-shady-grove/engineering/mechatronics-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, Mechanical Engineering, and Mechatronics Engineering. All of the above programs are accredited by the Engineering Accreditation Commission(s) of ABET, https://www.abet.org (with the exception of Mechatronics Engineering).

Entering freshmen may enroll in the Clark School as Undecided Engineering. Students declared as Undecided Engineering are advised by the Engineering Academic Services Office. No later than their third semester a student should select an academic degree program. The student's newly declared major department assumes the responsibility for the student's academic guidance, counseling, and program planning from that point until the completion of the degree requirements. For the specific requirements, see the curriculum listing in each engineering department.

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

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.

During orientation to the university, all students will receive advising from the Engineering Academic Services Office in collaboration with departmental advising representatives.