The Embedded Systems and Internet of Things (ESIoT) program based at the Universities at Shady Grove is an exciting program offered by the Department of Electrical & Computer Engineering (ECE) at the University of Maryland.

HOW TO APPLY

VISIT
www.admissions.umd.edu

Be sure to check “Shady Grove” when you apply!

PRIORITY DEADLINES
Fall Admission - June 1st

FAST FACTS

The ESIOT program is part of the prestigious A. James Clark School of Engineering.

Students in the ESIOT program will receive instruction from both regular faculty members in the ECE Department as well as adjunct professors who are active in the industry.

Students in the ESIOT program have access to scholarships from UMD College Park as well as private scholarships from the Universities at Shady Grove.

According to Business Insider (2018), the IoT industry is on pace to grow over $3 trillion annually by 2026.

The ESIOT program at Shady Grove is the first of its kind in the US at a top-tier institution.

ABOUT US

With the rapid pace of growth in Internet of Things (IoT) products and applications, there is a pressing need for engineers with special skills in hardware and software design. It is critical that these engineers are well-versed with both analog and digital electronics and information systems. The new Bachelor of Science in Embedded Systems and Internet of Things offered at the Universities at Shady Grove trains future engineers who are aware of the latest trends in circuits and hardware-oriented software, and who are capable of immediate contribution to the private and public sector institutions in which they will work.

ADMISSIONS REQUIREMENTS

All students applying to the ESIOT program must meet the A. James Clark School of Engineering's Limited Enrollment Program requirements, as well as the additional courses/requirements listed below:

**Engineering LEP Requirements:**
- Minimum 3.0 cumulative GPA
- Completion of MATH141 (Calculus II) with a minimum grade of B-
- Completion of PHYS161 (Physics I) with a minimum grade of B-
- Completion of either CHEM135 or CHEM271 or CHEM134 with a minimum grade of C- (students who take CHEM134 must also have completed CHEM131 with a minimum grade of C-)
- Students must adhere to all LEP Admissions policies outlined on the University's LEP website (lep.umd.edu)

**Additional requirements:**
- Completion of the following major courses with a minimum grade of C-:
  - ENES100: Intro to Engineering Design
  - PHYS260/261: Physics II
  - One of the following math courses:
    - MATH246: Differential Equations
    - MATH241: Calculus III
    - MATH240: Linear Algebra
  - An intro programming course in C, C++, Java, or Python
  - Completion of all lower-level General Education requirements
  - At least 60 transferable credits to UMD
CURRICULUM

DEGREE REQUIREMENTS

The ESIOT program will provide students with a solid foundation in key emerging technologies of the Internet of Things.

The program curriculum is designed to have a balance between theory and direct hands-on experience.

The major will require 121 credits for graduation, of which 60 are transferred into the program and 61 credits are completed at Shady Grove.

JUNIOR YEAR FOUNDATION COURSES

In the junior year of the program, students will be introduced to the following fundamental concepts:

- Analog Circuits
- Digital Logic
- Discrete Mathematics for IT
- Intermediate Programming
- Introduction to Internet of Things
- Microelectronics & Sensors
- Introduction to Networks and Protocols
- Computer Organization for Embedded Systems
- Algorithms in Python
- Technical Writing

SENIOR YEAR ADVANCED CONCEPTS

The senior year of the program features a two-semester capstone design course, which will be a culminating design experience with specific attention to real-world requirements. Students will also take advanced courses such topics as:

- Operating Systems for Embedded Systems
- Web Based Application Development
- Network Security
- Machine Learning Tools
- Probability and Statistical Inference
- Advanced Software for Embedded Systems- Connected Systems
- Advanced FPGA System Design Using Verilog
- Database

PROGRAM TRACKS

Seniors will be required to select one of the three program tracks; each track will have its specific set of senior level courses and required electives:

- Hardware Track
- Computational Track
- Security Track