

Fall 2020 • ECEN 2060

# Electronic and Semiconductor Device Laboratory

Prof. Sean Shaheen

Class meeting times: LEC: T 9-9:50 am (ECEE 287) LAB: T,Th 1-2:50 pm (ECEE 281)

Class Number: 28331/2

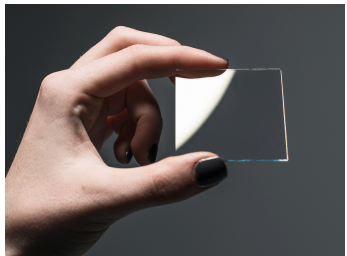
## Course overview:

You will be working with electronic and semiconductor devices throughout your degree program and onward through your career. This lab will provide a complete foundation with hands-on experience in characterizing and understanding a wide variety of devices, including: resistors and transparent conductors, capacitors, inductors, diodes and light emitting diodes, photovoltaics (silicon and organic), bipolar junction and field effect transistors, and organic electrochemical transistors.

## Course objectives and activities:

- Learn the basic operation of electronic and semiconductor devices relevant to the ECEE undergraduate curriculum
- Understand the connection between conducting/semiconducting materials properties and their device behaviors
- Gain familiarity with test equipment and techniques required to probe electronic and semiconductor devices
- Learn techniques of materials processing and device fabrication for organic electronic devices

transparent conductor



light emitting diode (LED)



bipolar junction transistor (BJT)



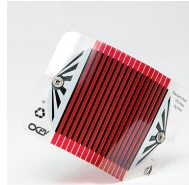
photodiode (PD)



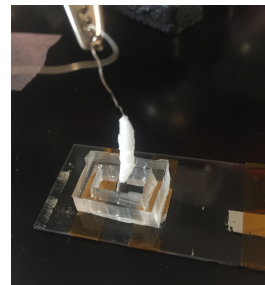
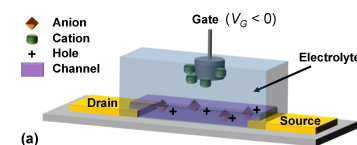
silicon solar cell



organic solar cell



organic electrochemical transistor (OECT)



metal oxide semiconductor field effect transistor (MOSFET)

