

BIOMEDICAL INSTRUMENTATION

OVERVIEW

Biomedical Instrumentation allows students to focus on the engineering development of devices and systems for clinical healthcare. It brings together many sub-disciplines within ECE, such as analog and digital circuit design, signal processing, embedded systems and control, and system integration. It culminates in a capstone team project that demonstrates a working hardware prototype of a new product or concept. Healthcare continues to be a major market and employer of electrical and computer engineers, and the field is becoming evermore vital to improving people's lives and the overall health of our society.

AREAS OF IMPACT

- Health and Medicine

WHAT KIND OF PROJECTS DO STUDENTS COMPLETE IN THEIR CAPSTONE?

From last year's slate of projects:

- H2Neo: Reducing neonatal mortality from dehydration
- Sensit-IV: Bedside prediction of response to intravenous fluids
- SimpleSight: Improving visualization of the nasopharynx during adenoidectomy
- MindMend: Accessible headache-focused biofeedback for chronic migraines
- Sleep Assist: Treating obstructive sleep apnea
- C-O-You: Minimizing excessive wiring in capnometry
- InsuCon: Confirmation of insulin pen injection



STUDENTS MIGHT BE INTERESTED IN THIS CONCENTRATION IF THEY ENJOY:

- Developing and prototyping hardware systems
- Working on interdisciplinary (ECE + ME + Bio) and mixed-level (undergrad + grad) teams
- Creating innovative solutions that address pressing challenges in healthcare
- Creating healthcare devices and systems that improve people's lives
- Learning about device clinical translation and technology commercialization
- Making the world a better place

WHAT RESEARCH OPPORTUNITIES ARE AVAILABLE TO UNDERGRADUATES IN THIS CONCENTRATION?

Many opportunities exist for assisting research programs both in engineering and within the medical school.

WHAT CLASSES OUTSIDE OF ECE WILL HELP STUDENTS LEARN RELATED AND USEFUL SKILLS?

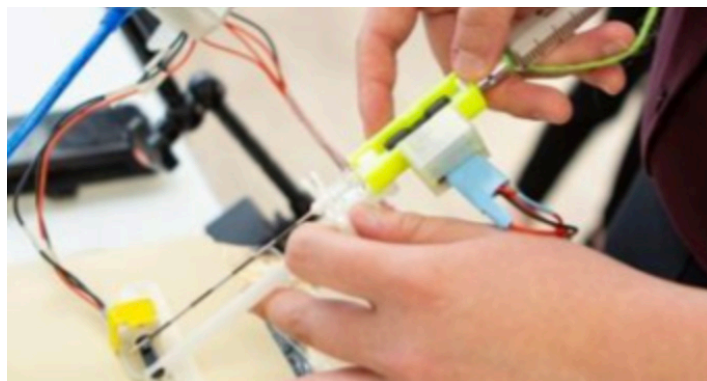
The most important classes are the Engineering Innovation in Health (EIH) sequence:

- Autumn: EE-414/ME-414
- Winter: EE-400/ME-415
- Spring (Capstone): EE-438/ME-495

ECE courses in circuit design, signal processing, and embedded systems provide a good foundation.

WHAT KIND OF INTERNSHIPS DO STUDENTS PURSUE?

Most commonly, working within one of the local biomedical companies as support for product development, engineering, or testing.



DO STUDENTS NEED A GRADUATE DEGREE SPECIALIZING IN THIS AREA TO BE MARKETABLE IN INDUSTRY?

No. Although a graduate degree is always an option, students can easily get a good job with only a bachelor's degree.

WHAT KINDS OF JOBS DO STUDENTS GET AFTER GRADUATING?

Local medical device companies who hire graduates with these skills:

Philips, Siemens, Stryker (Physio-Control), Novo Nordisk, Spacelabs Healthcare, Nanostring Technologies, Ekos, Biorad Laboratories, etc.

Nearly all large companies in the tech space have internal health care divisions. Examples: Microsoft, Amazon, Google, Facebook, Apple, etc.



W

QUESTIONS? Contact us at: undergrad@ece.uw.edu or attend a prospective drop in session: bit.ly/eceadvising