

NEURAL ENGINEERING

W ELECTRICAL & COMPUTER
ENGINEERING
UNIVERSITY of WASHINGTON

OVERVIEW

Train in the new field of Neural Engineering. Design hardware and algorithms to interface with the brain, and improve health and function. Develop circuits and techniques for recording and stimulating the nervous system; signal processing; machine learning; and powering and communicating with implanted neural devices. Create brain-machine interfaces, smart prostheses, and improve deep-brain stimulators and cochlear implants.

AREAS OF IMPACT

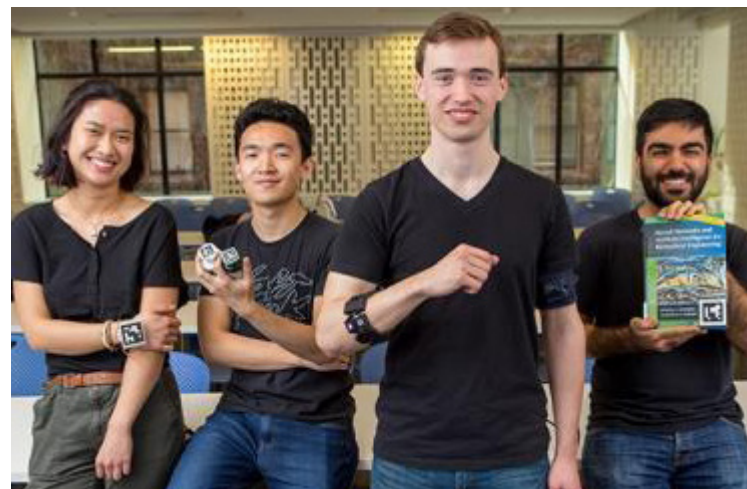
- Computing Data and Digital Technologies
- Health and Medicine

WHAT RESEARCH OPPORTUNITIES ARE AVAILABLE TO UNDERGRADUATES IN THIS CONCENTRATION?

Brain-computer interfaces, neural recording and stimulation circuits, human trials of deep-brain stimulation and spinal cord stimulation. See the many ECE labs involved in the Center for Neurotechnology (centerforneurotech.org).

STUDENTS MIGHT BE INTERESTED IN THIS CONCENTRATION IF THEY ENJOY:

Programming, signal processing, analog and/or digital circuit design, modelling, bioengineering, biology, neuroscience



WHAT KIND OF INTERNSHIPS DO STUDENTS PURSUE?

Medtronic, Boston Scientific, ARM, Neuralink, etc.
See full list here: <http://centerforneurotech.org/industry/industry-members>.

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

BIOL 130 (Neuroscience for non-majors), MATH 308, AMATH 301, 342, 352, PHIL 442, 460 (Neuroethics)

WHAT KIND OF PROJECTS DO STUDENTS COMPLETE IN THEIR CAPSTONE?

Augmented reality-assistive system for blind people, virtual rehabilitation system using neural signals for therapy, neurally-controlled hand prostheses for people with limb loss, brain-recording system to help with learning/memory and for kids on the autism spectrum, and many more.

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

No, there are many BS level positions. But a Masters or PhD will open even more opportunities and substantially increase marketability.

WHAT KINDS OF JOBS DO STUDENTS GET AFTER GRADUATING?

Medtronic, Boston Scientific, Neuralink, Abbot, startups, etc.

