

DEPARTMENT OF ENGINEERING AND COMPUTING EDUCATION
COLLEGE OF ENGINEERING AND APPLIED SCIENCE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

FOR APPLICATION YEAR: 2026

PROJECT TITLE: Project: Mapping Stress, Distress, and Trauma in Engineering Students (Mind + Body + Context)

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Project Description

How do engineering students experience stress and what does it do to both mind and body over time? This multidisciplinary project pairs engineering education with psychiatry, biomedical engineering, and AI to study students' psychological and physiological responses as they progress through their programs. We focus especially on experiences that can escalate everyday stress into distress or trauma (e.g., high-stakes evaluation, chilly climates, stereotype threat), with the goal of informing healthier learning environments and boosting persistence.

What you'll do (with training and mentorship):

1. Collect real-world data using wearable sensors to estimate autonomic activity (e.g., heart-rate variability) and optional salivary samples for diurnal cortisol. You'll pair these with brief smartphone "check-ins" and validated surveys of mood, sense of belonging, and related factors.
2. Contribute to semi-structured interviews and/or focus groups to capture student narratives around stressors (testing, team dynamics, identity cues).
3. Help analyze multimodal datasets: clean signals, visualize trends, and use beginner-friendly AI/ML tools to detect patterns linking context (course events), psychology (surveys), and physiology (HRV/cortisol).
4. Co-design practical, student-centered recommendations for courses and programs (e.g., low-cost instructional tweaks, supportive feedback practices) and help prepare a poster/paper.

What you'll learn:

1. Hands-on biosensing, ecological momentary assessment, Qualtrics/REDCap basics, and human-subjects research.
2. Intro data science skills (Python/R, signal processing, data visualization, and light ML) plus qualitative coding of interviews.

3. Science communication: translating findings for students, faculty, and campus partners.

Who should apply:

Curious UC undergraduates from any major (engineering, CS/DS/AI, psychology, biomedical engineering, education, pre-health, etc.). Prior coding or wet-lab experience is a plus, not a must, we'll teach you. Ideal teammates are dependable, detail-oriented, and excited to improve student wellbeing and equity in engineering.