



MARCH 28, 2022

5PM – 6PM

GP 1002

HK MAKER LAB: ENGENDERING ENGINEERING IDENTITY IN UNDERREPRESENTED MINORITY HIGH SCHOOL STUDENTS

Aaron M. Kyle, PhD
Senior Lecturer in Biomedical Engineering
Director, Hk Maker Lab
Columbia University



Disparities persist in STEM fields for underrepresented minority and economically disadvantaged students despite the emergence of many formal and informal educational interventions. STEM identity – one’s view of themselves as a scientist or engineer – plays a crucial role in students’ motivations to pursue STEM education and careers. Identity is particularly important for minorities and girls in middle through high school (Grades 6 – 12). Providing these students with project-based experiences that challenge them to employ STEM thinking and practices are essential in STEM identity development. The burden for creating these opportunities falls largely on teachers, who often feel ill-equipped to impart these concepts, especially in teaching engineering and engineering design, areas of emphasis in the widely-adopted Next Generation Science Standards. This is unfortunate because engineering design is an exciting entry point for STEM that involves inquiry, project-based learning, and the application of technical skills and knowledge to real-world problems.

The Hk Maker Lab addresses STEM education and identity deficits via a set of interconnected, engineering design-centric programs. We offer an annual summer design camp, wherein minority high school students come to Columbia to learn and apply the engineering design process. In coordination with the summer camp, we collaborate with local high school teachers to introduce them to engineering design and create design content for their courses, substantially expanding the impact of these efforts. Finally, we promote STEM career interest by facilitating research internships for our summer program alumni. In this talk, I will discuss how the programmatic and research outcomes of the Hk Maker Lab have enhanced STEM identity for underrepresented students. I will also share future directions for the programs that will continue to enhance diversity in biomedical sciences.

