Stephenson School of Biomedical Engineering
Seminar Series Presents

WILD IDEAS IN DESIGN PEDAGOGY & MASK TECHNOLOGIES

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ABSTRACT

Design pedagogy in Biomedical and BioEngineering is often tasked with a challenging set of criteria: scalable teaching of a broad range of applied technical and professional skills in a short window of time. In an effort to help balance depth and breadth of knowledge in professional and technical skills, we have implemented a modular, vertically integrated, team-based biomedical design sequence. Our new curriculum has offered us the opportunity to expand our technical offerings while also providing students depth of knowledge in skills. In addition, we have adopted an electronic quality management system to help students practice quality and regulatory affairs. Still a work in progress, our new design curriculum has been in operation for two years and has already indicated improvements in student performance.

While design pedagogy will be my focus, I will also highlight our pandemic response and lessons learned from each.

In March of 2020, UNC Healthcare (as well as other healthcare centers state, country, and worldwide) was fraught with personal protective equipment shortages. In collaboration with the Environmental Protection Agency, state government, Nonwovens Institute, the Center for Environmental Medicine and Lung Biology, Biomedical Engineering, FastTraCS, and UNC Healthcare leadership, we were tasked with providing emergency solutions to mask-related personal protective equipment for the state and local hospitals. Over ten projects were completed, resulting in hundreds of prototypes, three patent filings, one FDA-authorized surgical mask, and one startup company (Aerem Innovations, Inc.).

BIO

Devin K. Hubbard, Ph.D. is a teaching associate professor in the UNC and NC State Joint Department of Biomedical Engineering where he teaches medical device design. He is also the lead design engineer for FastTraCS, a med-tech innovation group housed within the UNC Translational Research and Clinical Sciences Institute. He is the founder and president of Aerem Innovations, a North Carolina startup launched in July 2020 that makes the AerFrame: a mask fitter designed to improve the fit and comfort of face masks.