Title: E-learning-based Engineering Education Innovations

Abstract

The US National Academy of Engineering has called for a reengineering of the engineering education system in its report “Educating the Engineer of 2020”. It is recommended that the engineering process of designing, evaluating, building and testing should be introduced from the earliest stages of the curriculum, including the first year. Students should be engaged in team projects that connect engineering design with real-world problems. In this talk, I will present a cornerstone engineering design project course designed specifically for first year engineering students. This course aims at providing engineering students exposure to knowledge and skills from different engineering disciplines. Students will be divided into project teams and apply the acquired knowledge and skills to design and build engineering artifacts through experiential learning. In order to offer the course at scale, the fundamental engineering components will be delivered using e-learning. After students completed the e-learning modules, they will be engaged in experiential learning through working together in teams with senior engineering students. I will also discuss how learning analytics on data collected from the learning management system can be used to provide just-in-time feedback to the instructors and students.