HKUST School of Engineering to Turn “Experiential Learning” Into Compulsory Courses for Engineering Students

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The School of Engineering of the Hong Kong University of Science and Technology (HKUST) today (December 4, 2018) announced its plan to turn “experiential learning” courses into compulsory courses for 800 Year 1 undergraduate students in two to three years’ time. All engineering students will have to build an engineering artifact to acquire multidisciplinary knowledge that suits what society needs.

Prof. Tim CHENG, Dean of Engineering, said, “There is an increasing market need for engineering talents with knowledge across different engineering disciplines instead of one particular discipline. We therefore hope that by working on an innovative artifact using their own hands, our students will become engineers with multidisciplinary knowledge and problem-solving ability. Our vision is that our students will be able to cope with technology changes and continue to innovate no matter what roles they play in society throughout their long career after graduation.”

HKUST School of Engineering officially introduced “experiential learning” six years ago. Each year, around 180 Year 1 students enrol in the First Year Cornerstone Engineering Design Project Course, and around 130 students, with the guidance of their professors, participate in local and overseas engineering design competitions. These students have to design and build an engineering artifact, such as an airship, a smart car and an underwater robot. The School is planning to require all Year 1 engineering students to enrol in an “experiential learning” course in two to three years, so that they will acquire multidisciplinary knowledge and hands-on experience.

To tie in with the application of “experiential learning” to the School’s curriculum, the School has created an “Undergraduate Student-initiated Experiential Learning Lab” (USEL Lab) that is open to students’ use around the clock. The lab is a reconfigurable learning environment that performs the functions of a design studio, a prototyping studio and a demonstration studio, etc. and is furnished with equipment such as a laser cutting machine, a high-efficiency 3D scanner and a motion capture system. It is operated and managed by senior engineering students who serve as “student technical advisors”. A “Dream Team Open Lab” has also been launched recently to allow more student groups to build their projects for competitions.

“The shift to a more student-oriented approach and having students learn by creating and doing in engineering education is a global trend. As a young university, HKUST is willing to introduce daring education innovations. The School of Engineering has put a lot of resources and talents into developing ‘experiential learning’, and is dedicated to maintaining our leadership role in engineering education innovation,” Prof. Cheng added.

Prof. Ben CHAN, Associate Director of Center for Engineering Education Innovation, who is in charge of the “First Year Cornerstone Engineering Design Project Course”, said, “In designing and building an airship, for example, our students have to apply knowledge in mechanical engineering, electronic engineering and computer science at the same time. Having students work on an engineering project like this not only inspires their interest but also boosts their motivation to learn.”

Prof. Tim WOO, Director of Center for Global & Community Engagement, who arranges for students to take part in competitions around the world, said, “Our HKUST Robotics Team members have won a total of 86 awards in different engineering design competitions over the past eight years. But what’s more important is that our students have learned how to work as a team, resolve problems and draft business proposals. All of this will be conducive to their future career.”

The School of Engineering, with around 5,500 students, is the largest school in HKUST. It has introduced a number of new initiatives in recent years, including the establishment of the Division of Integrative Systems and Design, as well as the launch of six new undergraduate major programs, namely Aerospace Engineering, Sustainable Energy Engineering, Integrative Systems and Design, Data Science and Technology (in collaboration with School of Science), Decision Analytics, and Bioengineering.