



SISP 1303

Intelligent Sensing Technologies

Course Description

This course is designed to illustrate the interesting link between Science, Technology, Engineering and Mathematics with daily life sensing technologies and in turn encourage secondary students' interest in STEM education. Students will work in teams/ individually and improve their knowledge of technology through fun and enlightening activities. Throughout the lectures and hands-on experience, students will explore fundamental engineering technologies including temperature detection, light detection, sound generation, signal spectrum and color detection. Based on the foundation of high-school level knowledge in science and mathematics, students can explore into advanced technologies and their applications. Through hands-on practice with software programming, the applications on different sensing system will be experienced.

Topics

- Introduction of Sensing system & Vectors and its Applications in Robotics and Color Detection
- Application of Electrical Theories in Light and Temperature Sensing Signals
- Sound Waveform, Spectrum and its Application
- Introduction to Image Processing and its Application in Color Decomposition
- Application of Trigonometry in Finger Detection

Science principles and Mathematics techniques involved will be introduced within each topic.

Grading Scheme

- Class Participation (20%)
- Laboratory Assignments (20%)
- Final Examination (60%)

[Topics and grading schemes are subject to change as deemed appropriate. Students will receive information and guidelines in class on how they will be assessed for the course.]

Teaching Mode

The course will be conducted face-to-face.

Attendance Requirement

Attendance is expected and required. The minimum attendance required is 70%. Attendance for the assessment activities [e.g. group presentation and final exam] is mandatory.

Instructor(s) Profile

Prof. Tim WOO

Prof. Woo is an Associate Professor of Engineering Education in the Department of Electronic and Computer Engineering. He is actively promoting STEM education to primary and secondary school students. Prof. Woo has received 3 teaching awards, including the University Grants Committee (UGC) Teaching Award 2015, the Michael G Gale Medal for Distinguished Teaching 2015 at HKUST, and the School of Engineering's Teaching Excellence Appreciation Award 2009-2010 at HKUST.

Prof. Man-Fung CHEUNG

Prof. Cheung is an Assistant Professor of Science Education in the Department of Physics. He is passionate about incorporating new methods and technologies in teaching. He is also actively involved in science education in secondary school, including Physics Olympiad training, developing learning modules on "Junior Secondary Science Online Self-Learning Scheme" and teaching courses for gifted secondary school students. He received the HKUST School of Science Teaching Award in 2023 and was elected three times as one of the Ten Best Lecturers in 2013-2015 at HKUST.