SSG (www.ssg-wsg.gov.sg) Course

"Measurement and Sensing Systems"

Course Introduction:

Human history is primarily driven by two activities. One is to discover the nature and the properties of our world. The other is to improve the quality of living in our world. Both activities require data which could be accurately obtained with the use of measurement and sensing systems. This course's benefits to the learners include: a) the understanding of physical principles behind the design of sensors in industry and society, b) the understanding of design examples of sensors in industry and society, and c) the ability of applying learnt knowledge to venture into the design of sensors in industry. Therefore, the learning objective is for learners to become designers of sensors which could be deployed in industry and society.

Course Objective:

The objective of this course is to equip the learners with the basic principles behind the designs and blueprints of various sensors in industry and society.

Course Outline:

This short course will cover the following contents:

1. Introduction to Sensing and Measurement Systems.
2. Physical Principles and Design Examples of Sensing and Measurement Systems for Physical Quantities (voltage, current, resistance, capacitance, inductance) in Electrical and Electronic Domain.
3. Physical Principle and Design Example of Sensing and Measurement Systems for Physical Quantities (Position, Velocity, Acceleration, Force, Torque) in Mechanical Domain.

Trainer's Profile:

Xie Ming received the B.Eng degree in control and automation engineering. Subsequently, as a recipient of the overseas scholarship from Chinese government, he has completed the study for Master degree in the University of Valenciennes (France) as well as the research for PhD degree in the University of Rennes (France). He is Associate Professor of Nanyang Technological University, and was a Fellow with Singapore-MIT Alliance (SMA). He was the General Chair of 2007 International Conference on Climbing and Walking Robots (CLAWAR), the General Chair of 2009 International Conference on Intelligent Robotics and Applications (ICIRA), the Co-founder of the International Journal of Humanoid Robotics (SCI/SCIE indexed), Co-founder of Singapore-China

Association for Advancement of Science and Technology, Co-founder of Robotics Society of Singapore. He has taught the courses such as Robotics, Artificial Intelligence, Applied Machine Vision, Measurement and Sensing Systems, Microprocessor Systems, and University Physics. In terms of scientific research, he has published two books, two edited books, several book chapters, over 10 patents of invention, over 30 research papers in scientific journals and over 100 research papers in international conferences. He was the recipient of one best conference paper award from World Automation Congress, the recipient of one best conference paper award from CLAWAR, the recipient of one outstanding paper award from International Journal of Industrial Robot, the recipient of one Gold Prize (S$8K) from CrayQuest, the recipient of one Grand Champion Prize (S$15K) from CrayQuest, the recipient of one A-Star's Best Research Idea Prize (S$5K), the recipient of one Silver Medal from Dragon Design Foundation.