

Educating Future Engineers in the Age of Digital Disruption

By

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Abstract

Engineering Education is of utmost importance for sustainable development of a nation. The new Digital Revolution (commonly known as the 4th Industrial Revolution) causes anxiety in the industry, academia and society as we are uncertain of the future of our jobs and what new disruptive technologies are coming. This puts a lot of pressure on the academia for training of engineers who are to be internationally bench-marked and could be recognised for practice across countries. In this talk, various regional and international agreements for mobility of engineers are discussed. Due to the desire for mobility, there is thus a need for international bench-marking of engineering education and accreditation systems, so that engineers trained are of substantial equivalence in quality and standard. The paper also touches on the challenges faced by future engineers vis-à-vis globalization and mobility of engineers; and what skills young engineering graduates should acquire to face the challenges. In the opinion of the author, what is important now is for the educators to train future graduates who can embrace life-long learning and professional skills with strong basic fundamentals of natural sciences and engineering, and who are ready-to-evolve rather than graduates who are just ready-to-market as many of the graduates will be entering a whole new and unknown sea of employment. The speaker will also illustrate how outcome-based engineering education prepares an engineering graduate to attain the professional competency profile needed in designing engineering solutions for complex problems. Values and ethics should also not be forgotten in educating future graduates. In particular, three IC's are advocated for our future graduates: Integrity & Competence, Integration & Communication, and Internationalization & Cooperation.

Brief CV of Ir. Academician Emeritus Professor Tan Sri Dr. Chuah Hean Teik



Dr. Chuah Hean Teik graduated with a BEng (First Class Honours), MEngSc and PhD in electrical engineering, all from University of Malaya, Malaysia. He was President of Universiti Tunku Abdul Rahman (UTAR) in Malaysia from 2008-2019, where he is now an Emeritus Professor. He is currently a Consultant Professor to Northwestern Polytechnical University, Xian, China; and University Advisor to University Sanya, Hainan, China.

His research interests include microwave remote sensing and applied electromagnetics. He has authored/co-authored more than 280 papers in international journals and conferences. Dr. Chuah has received many awards locally and internationally. Among them include the inaugural Young Engineer

Award by the Institution of Engineers, Malaysia IEM in 1991; 1990 Young Scientist Award at the 23rd General Assembly of the International Union of Radio Science (URSI) at Prague, Czechoslovakia; 1993 Young Scientist Award at the 24th General Assembly of URSI at Kyoto, Japan; 1995 Young Scientist Award (Industrial Sector) by the Malaysian Ministry of Science, Technology and the Environment; 1999 Malaysian Toray Science Foundation Science and Technology Award; 2017 Outstanding Engineering Achievement Award by the ASEAN Federation of Engineering Organisations; the IEM Engineering Hall of Fame in 2019 for his outstanding professional achievements, 2019 FEIAP Engineer of the Year, and 2019 WFEO Medal of Excellence in Engineering Education. In 2021, Dr Chuah received the Chinese Government's Friendship Award, which is the People's Republic of China's highest award for foreign experts who have made outstanding contributions to China's economic and social development, as well as effort in facilitating friendly international exchanges in culture, education, science and technology.

Dr. Chuah is an eminent technical leader. He is current Chairman of FEIAP Standing Committee on Engineering Education, and Chairman of the Africa, Asia and the Pacific (AAP) Accord Engineering Education Council. He is the Immediate Past President of ASEAN Academy of Engineering and Technology (AAET), Past President of the Federation of Engineering Institutions of Asia and the Pacific (FEIAP) 2011-2015, and Past President of IEM (2009-2011). He is a Senior Fellow of the Academy of Sciences, Malaysia (ASM); Distinguished Honorary Fellow of IEM; a Founding Fellow of the AAET and The Academy of Engineering and Technology of the Developing World; Fellow of the Institution of Engineering and Technology, UK; the Institute of Electrical and Electronics Engineers, USA; and the Electromagnetics Academy, USA. He is currently a member of the Disciplinary Committee Panel under the Advocates and Solicitors' Disciplinary Board, Malaysia, the Malaysian Engineering Accreditation Council (EAC), the Malaysian Engineering and Technology Accreditation Council (ETAC) and the Civil Aviation Authority of Malaysia.

In recognition of his valuable services and contributions, he was conferred an Order of Chivalry, Darjah Setia Pangkuan Negeri, which carries the title "Dato", by the Governor of Penang in July 2005, and conferred the Panglima Setia Mahkota Award, which carries the title "Tan Sri", by the Yang DiPertuan Agung, the King of Malaysia, in September 2019.