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The Design of Modern Engineering Curriculum: Outcome-based Learning

by

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Chancellor, University of Sharjah, Sharjah, UAE

Professor Emeritus of Systems and Computer Engineering, Carleton University, Ottawa, Canada

And following by

A Panel Discussion represented by Leaders from Academia and Industry

DATE: Tuesday, September 3, 2013.

TIME: 6:30 pm – 8:00 pm.

Refreshments and Networking: 6:30 pm – 7:00 pm.

Seminar: 7:00 pm – 7:40 pm.

Panel Discussion: 7:40 pm – 8:00 pm.

PLACE: Algonquin College, [1385 Woodroffe Ave.](#), [P- Building](#), Room P303.

PARKING: No fee at the parking lots 8 and 9 at the time of seminar. Please respect restricted areas.

ADMISSION: *Free.* Registration required. To ensure a seat, please register by e-mail contacting:

[Wahab Almuhtadi](#), [Raed Abdullah](#), or [Rami Abeilmona](#).

Abstract

Traditionally, the design and determination of course content of undergraduate engineering curriculum in any give specialization have been based on specified minimum coverage of material in five categories: basic sciences, mathematics, engineering science, engineering design, and arts, humanities and social sciences. This specified minimum coverage is measured by lecture and tutorial hours and hours of laboratory sessions. Elective courses are included in the curriculum to complement the weight of the compulsory material taught in any of the five categories. Meeting the specified minimum coverage in each of the five categories is a pre-requisite for accreditation of the program by the concerned professional authority.

More recently, alternative approaches to curriculum development and program offering emerged with focus on the outcome of the learning process as the starting point. In these modern approaches, the desired outcome of the learning process dictates the program structure in terms of course content, sequence, and the mode of delivery. Likewise, evaluation of the effectiveness of the learning process is focused on the student at the end of the program in terms of what the student actually and effectively learned and the extent to which the learning outcomes defined for the program have been realized.

The design and offering of engineering programs based on the “learning outcome methodology” allows for the incorporation of three important aspects that are deemed necessary in modern engineering practices, namely innovation, sustainability (social, environmental and economic) and social awareness and responsiveness. In this talk, the concept and methodology of the outcome based design approach will be presented along with illustrative examples. It is hoped that the presentation will stimulate discussions on ways to make engineering education more relevant to the rapid social and economic developments taking place at the global level.

Speaker's Bio

Dr. Samy Mahmoud is currently Chancellor, University of Sharjah, UAE, and also a Professor of Systems and Computer Engineering, Carleton University, Ottawa, Canada.

Prior to his appointment as Chancellor of the University of Sharjah on July 1, 2008, Dr. Mahmoud served as President and Chief Executive Officer of Carleton University, Ottawa, Canada, during the period 2006-2008. And prior to that he held several senior academic and administrative positions at Carleton University, including: Vice President (Academic) and Provost (Acting), during April – November 2006, Dean of the Faculty of Engineering and Design during the period 1998-2006, and Chairman of the Department of Systems and Computer Engineering, Carleton University for the period 1986-1998.

Dr. Mahmoud obtained the Bachelor of Science degree in Electrical Engineering from Ain Shams University in 1968. He graduated from Carleton University with the Master and Doctoral Degrees in Electrical Engineering in 1971 and 1975 respectively.

Dr. Mahmoud is well known internationally for his contributions to teaching and research in the Electrical Engineering and Information Technology fields. He has won several international awards in recognition of his original research and for innovations that led to technology transfer to industry. He has published over 200 archival and conference papers in telecommunications, Electronics and Optoelectronics in recent years and supervised over 35 doctoral and 80 Masters graduate students to completion. He is the co-author of a major textbook on “Communication Systems Analysis and Design”, published in 2004 by Pearson-Prentice Hall. He is also the co-holder of a number of patents in wireless and optical communications technologies.

As an active participant in technology development through collaboration between industry and university, Dr. Mahmoud is the founder or co-founder of a number of provincial and national research and development networks of excellence in teaching and research in Canada. Each network of excellence involved close collaboration between the university, government and industrial sectors. The list of such major networks includes the Center for Information and Technology of Ontario (CITO), CANARIE (the Canadian Advanced Network for Research in Industry and Education), and the National Center for Information and Telecommunications (NCIT) research, and the Canadian Photonics Fabrication Center (CPFC). He has led in the development of substantial research facilities at Carleton University that today house and support major research programs for a large number of graduate students and faculty members. Dr. Mahmoud served as a senior guest editor for two IEEE journal publications in communications (JSAC) and was appointed as a senior consultant to major international regulatory agencies and industrial organizations in the telecommunications field, including the European Commission for Research, the Department of Industry (Canada), the Austrian Telekom Control Board, the International Telecommunications Union, Newbridge, Alcatel, Siemens, IBM, CISCO and Nortel. Dr. Mahmoud is a registered professional engineer in Ontario, Canada, and a Senior Member of IEEE.