ASEE International Forum
Omni Hotel at CNN Center
Saturday June 22, 2013

Paper ID #8388

WFEO Co-Plenary - Preparing the Global Engineer. Engineering Education: Global Development and Professionalism

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Eng. Marwan ABDELHAMID is a Civil Engineer graduated from Belgrade University and was on duty as such. He is the General Secretary of the General Union of Palestinian Engineers (GUPE) in Palestine and President Elect of WFEO. He has been devoted to the WFEO for more than 36 years as a member of the Executive Council as well as Vice President. He attended all the WFEO General Assemblies and was awarded three times for outstanding services to the WFEO. He served as President of the Federation of Arab Engineers from 1987 to 1989. He was involved in several Committees and task forces also as chairman of Standing Committee of Promotion and Creation of Engineering Societies in Developing Countries within WFEO. He held many positions such as: • Director of Department in the National Company in Algeria • Advisor to the Algerian Minister of Housing • Member of the Council of Arab Ministers representing Palestine • Permanent representative of Palestine in United Nations Organization for Human Settlements • Technical Advisor to late President Arafat • Deputy Minister of Housing in the Palestinian Authority • Ambassador of Palestine to Greece • Technical Advisor to President Abbas • President of Palestine Mortgage & Housing Corporation co. and Consultant in Housing Policy and Strategy.

He is as a multicultural citizen, fluent in English, French, Serbian and Arabic. His interest and passion for Sciences and Engineering have influenced his two children respectively serving as Dr Urologist and Architect.

Preparing the Global Engineer:
Engineering Education: Global Development and Professionalism

Distinguished Faculty Members, Engineers, Decision-Makers,
Ladies and Gentlemen,

I am indeed honored to be given the opportunity to participate at the 2013 ASEE International Forum and to address such a distinguished group of high-ranking faculty, professional engineers, industry leaders, planners and key decision-makers, who have gathered here from the various parts of our globe to discuss one of the most promising issues "Preparing the Global Engineer," since it has been acknowledged that the 21st century is the century of science and technology. Thus, investing in engineering education and technology development offers a real promise for the future of mankind.

Your Excellencies, Ladies and Gentlemen

First, please allow me to give you a very brief introduction about the World Federation of Engineering Organizations (WFEO). The WFEO is an international, non-governmental organization representing the engineering profession worldwide. The WFEO was founded in 1968 by a group of regional engineering organizations, under the auspices of the United Nations Educational, Scientific and Cultural Organizations (UNESCO) in Paris. WFEO is organized as a respectable and valuable source of advice and guidance on the policies, interests and concerns that relate to engineering and technology to human and natural environment. Today, the WFEO brings together national engineering organizations from over 90 nations and represents 15 million engineers from around the world.

Since its founding in 1968, the WFEO has spared no effort in addressing the issue of engineering education and professionalism, in order to enhance the employability and mobility of engineers and to increase the international competitiveness and quality of worldwide education of engineering

Your Excellencies, Ladies and Gentlemen

Learning and teaching are human activities involving several bodies with different backgrounds, diverse expectations and responsibilities. This is absolutely relevant to the context of higher engineering education, with stakeholders who are students, researchers, faculty members, corporate and community representatives.

Recently, substantial economic, technological and social changes on a global scale, have led to transformation in the engineering profession. The demands on graduates of engineering now and in the coming decades are different from the demands faced by earlier generations. The challenges which arise from increasing internationality, cross-disciplinary influences on traditional engineering and a changing perception of the role of engineers have initiated a worldwide discussion on the adequacy of the current practices in the educational and professional development of engineers.

The practice of engineering must meet the highest standards of competence and ethical conduct. As some engineering disciplines are becoming increasingly specialized, professional practice is generally becoming more diverse under the influence of sociology, ecology, economics and politics. As we all know, that engineers take seriously their obligation to improve constantly, however maintaining the highest standards in a changing environment can be difficult.

Your Excellencies, Ladies and Gentlemen

The Bologna Process involves an inter-governmental initiative of more than 45 countries in Europe. The aim of this process is to set up throughout Europe a system of easily comparable degrees and to ensure suitability of accredited programs. In addition, Bologna's Process other objectives are: the promotion of the necessary European dimensions in higher education with regards to curricular development, inter-institutional cooperation, mobility schemes and integrated programs of study, and training and research. The USA Accreditation Board for Engineering Education (ABET) now requires programs to gradate engineers with the ability to function in multidisciplinary teams and for broad education to understand the impact of engineering solutions in a global and social context.

In fact, engineering education across the world is already broadly similar in many respects. Where two distinct types of engineering curricula are offered, one more theoretically oriented and the other more application oriented. In spite of this engineering students must be trained in line with the evolution of a more abstract and changing working environment. Decades of service in one single profession are no longer the norm. Therefore, students should be given the opportunity to develop other skills outside their field of study. To become innovators, young graduates should posses a range of soft skills as well as interdisciplinary knowledge. This could be encouraged by developing more flexible curricula allowing the students to explore real potentials.

Your Excellencies, Ladies and Gentlemen

It has been, generally, acknowledger that students are lacking the skills required in industry. In the subsequent process, industry stakeholders and representatives from the profession were closely involved in the discussion of ways to take Engineering Education into the future .Moreover, it is recognized that entrepreneurial skill and attitudes are absolutely needed by everyone. The social, financial and technological changes taking place in the world over the last decade constitute for all the higher education stakeholders crucial factors for the development of new policies to encourage entrepreneurship and innovation.

Thus, education and preparation for entrepreneurship should be encouraged in engineering education programs. This can be achieved by student centered teaching and learning, where students are the main players of their learning. In such an environment faculty members in higher engineering education need to become the promoters of entrepreneurial skills and the facilitators of development of such learning experiences.

Engineering faculty members can influence thousands of other engineers in a lifetime of teaching, and thereby affecting their future careers more are than all their prospective employers. Engineering faculty members can leave their mark on the profession and society as a whole. This dynamic role involves the responsibility to teach well, to create enthusiasm and respect for the calling of engineering, and in the mean time to develop a sense of professionalism in students at all levels.

Your Excellencies, Ladies and Gentlemen

Faculty members should possess an appropriate balance between technical proficiency and teaching effectiveness. Practical technical experience in non-academic settings is also a valuable asset for potential educators. Effective use of communication skills is a critical qualification for successful teaching. Mobility of faculty members should be actively supported for the acquisition of new skills and pedagogical competencies which are necessary for fulfilling new educational goals.

In addition, faculty members should also consider spending at least some sabbatical time gaining current, practical experience in private consulting, industry, or other engineering settings. An alternative method of gaining practical non-academic experience is to maintain a part-time connection with other groups or companies outside the university environment since teaching engineering is considered a form of professional practice.

Experienced faculty members should also take it upon themselves to mentor not only their students but also new faculty members. Engineering university staff should always maintain a vital and visible connection to their professional association. Needles to say that, an intimate familiarity with the Code of Ethics can help faculty members to maintain the highest ethical standards and allow them to act as role models for students. It is important to integrate the Code of Ethics into course work, where appropriate. This will help in to inculcate ethical thinking of the students.

Finally, high standards of research are vital component of to the professional lives of engineering faculty members and graduate students in a university setting. Engineering research advances the state of engineering practice, provides valuable learning and experience to graduate students and generates needed revenue for teaching institutions. Besides, the traditional-supported research foundations and councils, the recent trend toward partnership with industry and government has provided additional sources of research funding.

In closing, I will be looking forward to receiving the outcome of your deliberations. In the meantime, may I wish the organizers and the participants success during this timely international forum.

Thank you