Globalization of Engineering Curricula in the United States and Abroad

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Abstract

With globalization of corporations and multinational industrial complexes, engineering students need the expertise necessary to face the challenges presented to them as the result of globalization. Engineering curricula are affected as the result of globalization. Modern engineering needs to address new concepts in team management, communication skills, and problem solving. Outsourcing practices and NAFTA initiatives have further intensified the globalization of science and industry to unanticipated levels. A study will be conducted to examine innovative methods and practices undertaken by engineering schools across the United States and to create curricular paradigms such as the Global Engineering College (GEC) or virtual engineering college. The findings of this study will include the challenges these institutions face exploring and implementing the innovative concepts that they have undertaken.

Introduction

Higher education institutions across North America and Europe have started a number of initiatives to increase the overall effectiveness of engineering education and to prepare students for today’s global economy. These initiatives vary in scope and range from a single course in an engineering program to a global engineering college or global engineering alliances. The cultural and economic effects of globalization have created fundamental changes that are driving a new structure for engineering education. Examples of these changes are the R&D work in Finland aimed at developing and implementing a new structure for Engineering Education (EE). New curricula directed toward globalization are also being implemented by German universities. Introduction of these globalization initiatives is a clear affirmation that European countries have realized the urgency for global engineering curricula. That might be explained partly due to the unification of Europe and the issue of rapidly growing globalization.

Although internationalization may have started from the social sciences and humanities, engineering and the natural sciences in the United States have realized that engineering students also require strong international skills to succeed in the global engineering workforce. As early as April 1995, PRISM, the journal of the American Society of Engineering Education (ASEE), mentioned over 70 engineering programs with some components related to internationalization and globalization. During the years, with the realization of the importance of such programs, the number of engineering programs has grown larger, and collaborative development teams have rapidly evolved into