Abstract

PURDUE’S ENGINEER OF 2020: THE JOURNEY Abstract To remain competitive in a financially uncertain and increasingly changing global economy, engineering companies and businesses need a workforce that is not only technically competent, but that is broadly knowledgeable, adaptable, and nimble. Our studies have shown that the skill sets industry is seeking to survive is becoming ever broader. While the ABET a-k criteria have added to the breadth of most engineering curricula, there are many key skills that are not emphasized in these criteria such as leadership, innovation, entrepreneurship, managing change, etc. Our Engineer of 2020 initiative has served as a catalyst to encourage our faculty to consider what are the critical skills and abilities our graduates are going to need in this new century. The initiative began in 2004 after the release of the NAE publication The Engineer of 2020: Visions of Engineering in the New Century. Our previous ABET review had already established that companies are seeking an increasingly broader set of skills in graduates, what we have termed “renaissance engineers.” These are engineering graduates that are technically competent, but also broadly knowledgeable about many other areas of both a technical and non-technical nature. But how do you adapt an engineering program to meet the changing needs of graduates of the 21st century? Our first step was to engage our faculty and other constituents (alums, employers, students, etc.) in an extended discussion about what are the target attributes we need to be developing in students. After two years of discussions and at times heated debate, the Purdue’s Engineer of 2020 Target Attributes were approved by our faculty. The next stage of our initiative has been to develop methods to advocate curricular change directed at fostering development of the target attributes. Our strategies for fostering change include: Engineer of 2020 Workshop, Engineer of 2020 Seed Grant Program, Travel Funds to Strategic Workshops and Conferences, and Sharing of Best Practices. This paper describes the “journey” that has been undertaken thus far and our strategies for developing assessment tools to monitor our progress as we implement the Purdue’s Engineer of 2020 initiative in the College of Engineering at Purdue University.

Introduction
In the report, The Rail Journey to 2020: Facts, figures and trends that will define the future of European passenger rail, we focus on specific factors that will shape the rail market in Europe over the next seven years. These factors help to create a new profile of opportunities and challenges for rail providers.

Thomas Drexler, Director, Amadeus Rail.

Purdue University has a long and widely recognized tradition of educating high quality engineers, and intends to sustain that tradition. Recent national and international trends, validated by surveys of graduating students, indicate what is required of an excellent engineer now has evolved from past expectations. The attributes that characterized industry and alumni demands of engineering education in the 1970s-1980s have changed substantially in the past two decades. A recent book by Sheppard, Macatangay, Colby and Sullivan1 delineates many areas where changes are needed in preparing tomorrow’s engineers. Therefore, Purdue’s College of Engineering has embarked on a journey to redefine engineering education for the 21st century. This process essentially involves two phases: Phase I sought to enumerate the essential attributes of a successful graduating engineer; this phase is now complete. In Phase II, innovative changes to courses and the curriculum will be encouraged so that these attributes can be enhanced. This phase is now underway. Through this process, Purdue’s College of Engineering will extend its tradition of excellence while remaining adaptive to changing demands and expectations.

Citation


ASEE holds the copyright on this document. It may be read by the public free of charge. Authors may archive their work on personal websites or in institutional repositories with the following citation: © 2009 American Society for Engineering Education. Other scholars may excerpt or quote from these materials with the same citation. When excerpting or quoting from Conference Proceedings, authors should, in addition to noting the ASEE copyright, list all the original authors and their institutions and name the host city of the conference. - Last updated April 1, 2015

In the report, The Rail Journey to 2020: Facts, figures and trends that will define the future of European passenger rail, we focus on specific factors that will shape the rail market in Europe over the next seven years. These factors help to create a new profile of opportunities and challenges for rail providers.Â

Thomas Drexler Director, Amadeus Rail. 4 | Amadeus The Rail Journey to 2020: European Passenger Rail. 1 Executive summary. The Rail Journey to 2020: Facts, figures and trends that will define the future of European passenger rail.