Advances in Engineering Education

From the Editor

This issue marks two important accomplishments for *AEE*—a "special issue" and a dozen papers. Specifically, this is our first issue to include a "special issue"—this one featuring papers from the first National Capstone Design Conference. John Lamancusa, a member of our Advisory Board originally suggested featuring the outstanding papers from this Conference in a special part of the Journal. As you will learn from Jack Zable's guest editorial, the Conference was held in June 2007 in Boulder, Colorado. A set of papers from the conference including Susannah Howe's keynote paper were recommended for this issue. All were revised, peer-reviewed (and in some cases re-reviewed). The result is a set of six papers accompanied by Jack's overview that represent the breadth and scholarship of that important activity. As Jack notes, these conferences are becoming a biennial event with this year's Capstone Design conference also scheduled for the University of Colorado in Boulder from June 7th—9th, 2010. (See http://www.capstoneconf.org for more information).

We have two other Special Issues in the works. The next will consist of papers describing the exciting results of NFS's Department Level Reform efforts. Those papers are currently under review for potential publication later this year. Mandar Dewoolkar is serving as guest editor for that issue. It will be followed by a special issue focused on e-Learning in engineering education. Maura Borrego is serving as guest editor for that issue, with some of the papers coming from a workshop held in Australia this past December. We continue to seek out appropriate special issues. We encourage you to contact us if you have an idea for a special issue and are willing to serve as a guest editor. Note that all papers in a special issue must undergo the same, rigorous peer review process as the regularly submitted papers to *AEE*.

In addition to the "special issue," we also present five other important contributions to the engineering education literature.

Richard A. Layton, Misty L. Loughry, Matthew W. Ohland, and George D. Ricco, describe the design of *Team-Maker* in "Design and Validation of a Web-Based System for Assigning Members to Teams Using Instructor-Specified Criteria." They propose that *Team-Maker* when used in conjunction with their *Comprehensive Assessment of Team-Member Effectiveness* (CATME), provides faculty with a powerful support system for team-based instruction and research. Both systems are available for free to interested faculty.

Nada Dabbagh and Mark Beattie introduce the concept of Computer-Based Micro-Worlds (CBMS) to support the teaching and assessment of computer networking problem solving skills. In "Supporting the Teaching and Assessment of Computer Networking Skills: An Exploratory Study"

they propose that CBMWs may provide an economically viable method for training students, and a practical and widely accessible learning method that could help alleviate skill shortages.

Majdi R. Abou Najm, Rabi H. Mohtar, Keith A. Cherkauer, and Brian F. French address proper understanding of scaling and large-sacle hydrologic processes in "Effect Of Integrating Hydrologic Scaling Concepts On Students Learning And Decision Making Experiences." They describe how incorporating the concept of scaling and its application (using computer models) into undergraduate engineering courses can enhance student learning and decision making skills.

Mukusa Ssemakula, Gene Liao, and Darin Ellis address "Closing the Competency Gap in Manufacturing Processes As It Applies To New Engineering Graduates." They propose a laboratory-based course that provides realistic hands-on manufacturing experiences. Team-based projects help students gain experience with several manufacturing processes. They have used multiple evaluation tools to assess the effectiveness of their approach and provide videos to demonstrate it.

Seung Youn (Yonnie) Chyung, Amy Moll, Brian Marx, Megan Frary, and Janet Callahan focus on "Improving Engineering Students' Cognitive and Affective Preparedness with a Pre-Instructional E-Learning Strategy." Their paper describes the analysis, design, and development of a multimedia e-learning module and the evaluation of its effectiveness. A list of lessons learned from this successful project is included.