CALL FOR PAPERS
Special Issue of Journal of Engineering Education

“THE COMPLEXITIES OF TRANSFORMING ENGINEERING HIGHER EDUCATION”

Guest Editors
Ann F. McKenna, Jeffrey Froyd, and Thomas Litzinger

Governmental, corporate and non-profit organizations have been calling for transformational, systemic improvements in science, technology, engineering and mathematics (STEM) education in the U.S. for many years (e.g., AAU Undergraduate STEM Initiative, 2011; Boyer, 1990; Boyer Commission on Educating Undergraduates in the Research University, 1998; Cicerone, et al., 2010; Jamieson & Lohmann, 2009; National Research Council, 1999b, 2003a, 2003b, 2007, 2010; National Science Board, 1996; National Science Foundation, 1996). As a result, multiple government agencies as well as corporate foundations have invested significant resources in efforts to improve the number and quality of graduates from undergraduate programs in the STEM disciplines.

Continuing calls for transformation suggest several assumptions: 1) previous investments have not resulted in the desired level of improvement, 2) educators in the STEM community share the same level of agreement that improvement is necessary, 3) educators in the STEM community share a common vision for what needs to be improved, and 4) mechanisms for educational transformation are well-known and are straightforward to implement. Several recent reports have addressed these assumptions and raised questions about how transformation might effectively occur within an education system (e.g., Dancy & Henderson, 2008; DeHaan, 2005; Fairweather, 2010; Zemsky, 2009).

In this special issue we invite papers that focus on strategies, models, or processes that have potential to promote transformative, systemic improvement in engineering education. In particular, we are interested in manuscripts that may contribute to and facilitate broader discussions and debates about mechanisms for transforming engineering education, models for translating research to practice, diffusion of educational innovations, and understanding engineering education at a systems level.

Scholars from all disciplines are invited to submit manuscripts. We invite review, conceptual, and empirical papers for this special issue. We encourage diverse methodological approaches, learning settings, and intellectual perspectives. Priority will be given to proposals that advance knowledge necessary to initiate, leverage and sustain improvement in desired directions in higher education structures, cultures, and practices.

POSSIBLE SUBMISSION TOPICS INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

• Studies that investigate propagation or diffusion of educational innovations within one or more of the STEM disciplines.

• Evidence-based change models and strategies. One example would be the investigation of relationships between educational innovations and design of change processes that promote propagation of these innovations. Current studies suggest that approaches to transformative change depend, in part, on the nature of the innovation that is to be propagated. Further exploration of this assumption might be productive.

• Studies related to systems approaches to higher education improvement including: (1) understanding higher education systems (both nationwide, and as institutions of particular types) as well as identifying elements of higher education systems that may offer
opportunities to promote transformative, systemic improvement; (2) understanding processes of improvement in such systems; (3) determining viable units of improvement and (4) meaningful measurements of improvement.

- Models of professional development for future and current faculty that are consistent with research-grounded teaching practices.
- Methodological issues in the study of transformation of engineering education.

**SUBMISSION GUIDELINES**

Interested authors should submit 2000 word proposals for full papers by **March 30, 2012** to the Guest Editors, Ann McKenna, ann.mckenna@asu.edu, Jeff Froyd, froyd@tamu.edu and Tom Litzinger, TALME@engr.psu.edu. Proposals for manuscripts of empirical studies must describe a theoretical basis of the work, the research question(s), and research methods including data analysis. Proposals for review manuscripts should include the motivation for the review topic, the research methodology, and a sampling of references that will be used in the article. Proposals for conceptual manuscripts should offer critiques of current theoretical frameworks and offer one or more potential theoretical frameworks that address weaknesses of current theoretical frameworks. Please include a sentence identifying the type of manuscript that is envisioned. Contact information and institutional affiliation of the lead author should be included with the proposal.

The guest editors will review proposals and notify authors of the status of their submission by June 4, 2012. For proposals that are accepted, the authors will be asked to prepare manuscripts that will go through the standard JEE review process. Papers are expected to be between 8000-10,000 words in length. Completed draft manuscripts will be due on **January 7, 2013**. Given the short review cycle, we expect the submitted manuscripts to be complete works. Works in progress or incomplete articles will be returned to the author without review. The special issue is expected to be published in 2014.

**REFERENCES**


