

**AC 2010-814: DON'T REINVENT THE WHEEL: METEC MEETS MANY NEEDS
FOR NEW ENGINEERING TECHNOLOGY EDUCATORS**

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Don't Reinvent the Wheel:
METEC Meets Many Needs for New
Engineering Technology Educators

Being a new educator in a college classroom can be an overwhelming experience. Advice, materials, and resources may be abundant, but being able to put your hands on peer reviewed, relevant, high quality information and classroom activities is often a daunting proposition. One way to alleviate frustration and to avoid reinventing wheels is to use the Manufacturing and Engineering Technologies Education Clearinghouse (METEC). METEC serves as a one stop shop for technology educators in general, and new educators in particular.

METEC's searchable electronic database provides resources pertinent to a broad range of engineering technologies. Among the vetted materials in the database are course and program outlines, descriptions of best practices, simulations, texts, activities, videos, PowerPoint presentations, etc. The clearinghouse materials are obtained from numerous sources such as NSF centers and projects, other academic institutions, individual academic faculty, professional organizations, and individual industry professionals. METEC is an easy and accessible way for new instructors to find and obtain materials for both classroom use and pedagogical improvement.

Funded primarily by the National Science Foundation (NSF) and operating since 2006, METEC is a service of the National Center for Manufacturing Education (NCME). In 1995, the NCME was established by NSF under their Advanced Technological Education (ATE) program as a

National Center of Excellence in manufacturing education. With NSF and other funding, the NCME produced a two-year manufacturing engineering technology degree program, much of which continues to be used in both two year and four year colleges, as well as in high schools and technical schools. As part of the curriculum development effort, the NCME produced powerful tools for faculty to create their own activity-based classroom materials. Thus, METEC's pedagogical roots and its mission of serving educators goes back more than a decade, during which time it has had an impact on manufacturing and engineering technology faculty nationwide. (NOTE: while this presentation focuses on METEC, it is worth noting that the NCME offers a variety of products and services to enhance teaching and learning, such as: webinars on selected topics highlighting emerging technologies; professional development workshops in activity-based learning and authentic assessment; a self-guided curriculum development template; a collection of individual activities from the NCME's manufacturing curriculum modules; and grant and program development, management and evaluation.)

After completing the curriculum development in 2003, NSF funded the NCME to establish and grow a national electronic database of exemplary resources for primarily for manufacturing educators. At the same time, NSF was also funding another organization to serve the equivalent clearinghouse function for other engineering technologies such as electrical, mechanical, civil, and leading edge emerging technologies. In 2008 NSF asked NCME to merge the two clearinghouses, both of which had been actively serving faculty since 2006, and to oversee the continued expansion of the unified database now known as METEC. The mission of METEC is *to increase the national impact of the reform and improvement of manufacturing and engineering technologies education through the dissemination of model programs, educational*

strategies, and instructional curricula and materials via an electronic clearinghouse and organized activities for the manufacturing and engineering technologies communities.

While METEC draws its resources from a variety of inputs, many materials are submitted for inclusion through partnerships with a wide and diverse range of professional societies. Current professional organizations participating formally with METEC include the ASEE Manufacturing Division; the Society for Manufacturing Engineers (SME) Manufacturing and Education Research Community; the SME Education Foundation (SME-EF); the Lean Education Academic Network (LEAN); the Institute of Electrical and Electronics Engineers (IEEE); and the American Society of Mechanical Engineers (ASME). Official partnership with the American Society of Civil Engineers (ASCE) is in progress.

By becoming partners with METEC, these entities have a repository for posting papers, presentations, and proceedings that are then available to a more widespread audience, most notably educators. The organizations also help METEC to be at the cutting edge of their respective fields. Many of the benefits afforded to members of professional associations can also be realized by individual educators. While searching METEC is free and available without registering, all registered METEC users have the ability to:

- Submit resources to be added to the database, either their own material or suggested of resources that have proven helpful, from classroom activities to websites to industrial information, etc. For faculty, contributing to METEC is a good addition to promotion and tenure documentation.

- Become a “champion” of a specific technology field. Champions help keep METEC current on developments in their area of interest and guide METEC in acquiring information, technical papers, equipment, textbooks, videos, animations, etc. Champions also may be engaged to provide peer review of submitted materials, which also is a good addition to promotion and tenure documentation.

METEC currently boasts more than 1100 registered members from two-year, four-year and secondary institutions, as well as industry professionals. There are approximately 1600 educational resources and links in the database, as well as over 400 links to various professional organizations and other relevant websites. In the 2008-09 academic year, METEC had close to 32,000 unique visitors—almost double the number from the previous year—and it continues to grow and reach out to more technology fields, such as biotechnology, nanotechnology, and other emerging fields. METEC is also recognizing “green” resources in all area.

METEC also solicits and responds to user feedback. Comments from a recent survey include:

- *the materials and people have been very helpful*
- *you help me be a better teacher*
- *I have found working with the METEC website and having been a resource reviewer to be very rewarding experience. I hope to continue using the METEC resources in the future to keep myself updated on the latest trends in manufacturing processes. Thank you for the great experience.*

- *We have talked of METEC as a repository for continuing education materials as well as a platform for sharing academic presentation materials.*

METEC exists to provide manufacturing and engineering technologies educators with current, relevant, exemplary resources. New users, especially new instructors, can not only utilize the clearinghouse, but also can contribute a fresh perspective on existing resources or share their own newly created materials.

The remainder of the presentation will be a step-by-step live demonstration of the clearinghouse at www.meteconline.org with ample opportunity for audience questions and participation.