Advancing Innovations in Engineering Technology Education

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Abstract

To improve recruitment and retention of freshmen to the Engineering Technology & Industrial Studies department, a project oriented curriculum was introduced. These projects stimulate student participation and give them immediate hands-on application of the material covered in the classroom. The projects are then taken to a national competition.

Description

In order to improve recruitment and retention in the Engineering Technology & Industrial Studies department at Middle Tennessee State University the department adopted a project oriented curriculum as one of its strategies. As freshmen taking the Engineering Fundamentals, where basic engineering principles and practices are introduced, students are assigned to work on a project that was selected to coordinate the technologies being introduced in the classroom and demonstrates a real-life use of the information being taught. Some examples of these projects include a Solar Vehicle, Formula SAE, MiniBaja, Solar Boat, and a Moonbuggy. The complexity of a single project encourages teamwork that satisfies and supports the varied interests of the students. The selected project offers challenge and collaboration opportunities - both academically through problem solving and application of the basics - and practical and useful with development opportunities. While teaching basic introductory courses that supply the math and thinking skills required, introductory hands-on projects boost the learning curve. Keeping freshmen involved and participating in this learning process has increased retention in the department. The seniors mentor the freshmen on these projects and will get credit as their capstone classes.

These projects also have the benefit of a national competition in which the students compete against other schools. These competitions not only test the vehicles' capabilities, but call for the students to present and defend their design. The student teams have done very well in this regard, finishing first in several categories and placing in many more. This has garnered local and national attention to or department and university. This attention helped increase our exposure and resulted in an increase in recruitment.

This presentation will cover:

* Retention and recruitment through a project based curriculum
* Establishing project criteria
* Project Selection and realization
* National Competition

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Dr. Foroudastan is an Associate Dean for the College of Basic and Applied Sciences and Professor of Engineering Technology at MTSU. He received his B.S. in Civil Engineering, his M.S. in Civil Engineering, and his Ph.D. in Mechanical Engineering from Tennessee Technological University. Additionally, he has six years of industrial experience as a Senior Engineer and 14 years of academic experience. His industrial experience focused on the areas of Manufacturing, Research and Development, Design and Analysis, Metal Forming, Material Characterization,

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Mathematical Modeling and Simulation, and Management of Engineering Projects. His academic experience includes teaching engineering technology, safety, environmental science and technology, civil and mechanical engineering, and computer science. He has been the faculty advisor for such national competitions as the Solarbike Rayce, the Great Moonbuggy Race, the SAE Formula One Collegiate Competition, Mini Baja, and Solar Boat. For his concern for students and his dedication to them, Dr. Foroudastan received the 2002-2003 Outstanding Teaching Award from Middle Tennessee State University.

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