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Design of a Multidisciplinary Project-Oriented Capstone Course for Mechanical Engineering Education

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Abstract : The project-oriented capstone course has become a required element for most engineering educational units. It is not only because the capstone course is an important criterion for international accreditation of engineering degree programs under Washington Accord, but also the capstone course provides an opportunity for students to apply what they have learned in their school years to actual engineering problems. Nevertheless, most project-oriented capstone courses are conducted with one single project for all students or teams. In other words, students work to reach the same or similar goals by coming up with different layouts and approaches. It appears not suitable for a multidisciplinary engineering department. Therefore, a one-year multidisciplinary project-oriented capstone course was designed for the junior year of the undergraduate program. About one-half of faculty members in the department needs to be involved in generating as many projects as possible to meet different students' interests and specialties. Project achievement has to be displayed and demonstrated in the annual exposition and competition at the end of this course. Significant success in attracting attention and hardworking of students on projects was witnessed for the past two pilot years. Analysis of course evaluation demonstrates positive impact on all perspectives despite of slightly negative influence due to poor communication and collaboration between students and their project supervisors.

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