

Hands on Project Experience in a Core Class Focused on Sustainability

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Abstract: This paper seeks to present the findings of an effort to teach sustainability through involving students in hands on projects. The findings have been spread out over three semesters. The course under consideration is part of the core curriculum and is open to students from any major across the university. It is offered by the department of mechanical engineering at a university in the southeast United States. It emphasizes aspects related to global sustainability.

The course focuses on shedding light on sustainability related issues such as environmental pollution, resource utilization, and economics of sustainability. It resorts to innovative design practices as well as novel product ideas as a tool to enhance sustainability. To this end, the course emphasizes hands on learning through design, development and analysis of products from the point of view of sustainability.

Students from all majors across the university typically take this class. They are encouraged to think about a problem critically and approach it from the design perspective in order to try and solve the underlying environmental problem. A physical product prototype is required as part of the final project. In view of the fact that sustainability is comprised of three main pillars namely: environmental, social and economic, students are also required to examine the profitability of their project on a rudimentary level. Students are free to work either individually or as part of a group. Class presentations are due at the end of each semester and are comprised of a design prototype, economic analysis and the environmental relevance of their design solutions. An evaluation rubric is used to grade the final projects in terms of innovativeness, environmental impact and economic justification. To this end, the paper presents examples of a range of student projects.

Keywords: Sustainability, Project, Core Curriculum, Three Pillars of Sustainability