

Product Design and Innovation: A New Curriculum Combining the Social Sciences, Design, and Engineering

Abstract

Successful competition in the global economy is increasingly dependent on a stream of new products and services that will open up new business possibilities. At the same time it is increasingly evident that new products and services must be regarded not only as commodities in a marketplace, but also as social actors which can constrain or enable the quality of our life. In recognition of these two perspectives, *Product Design and Innovation* (PDI) is a new undergraduate dual degree program at Rensselaer that seeks to educate students for careers in new product invention and development. PDI is a dual major program satisfying the requirements for the Bachelor of Science programs in both Mechanical Engineering and Science, Technology and Society (STS). PDI prepares students to become innovative designers who can integrate contemporary technologies with changing social contexts for a new generation of advanced product designs..

PDI aims to balance the traditional approaches of Architectural/Industrial Design and Engineering Design—often governed by the aesthetic and the technical—with the approach of Science and Technology Studies (STS)—the social. Students develop a set of general engineering skills through meeting the degree requirements for mechanical engineering, and a set of analytical skills for understanding society and culture through meeting the degree requirements for STS. But the backbone of PDI is the sequence of *eight* design studios, one every semester, that aim to integrate all three dimensions of the program—the technical, the aesthetic, and the social—with an emphasis on creativity and the imaginative application of new technologies and materials. The design studios help students to explore and develop their creativity while building a portfolio of design experiences continuously throughout all four years.

This paper will describe the PDI program, its goals, how it was formulated, and review experiences we have had in offering the five years of this innovative program. We will discuss how the design studio sequence fits together as well as present results from an outside assessment of the students in the program compared to a control group.

Authors Title and Names: Dr. Gary A. Gabriele (contact person), Dean of Undergraduate Education and Professor of Mechanical Engineering, Larry Kagan, Arts, Dr. Frances Bronet, Architecture, Dr. David Hess, Science and Technology Studies, Dr. Ron Eglash, Science and Technology Studies, Jeff Hannigan, Science and Technology Studies

Office Telephone: 518-276-2244

Fax Telephone: 518-276- 4061

Email: gabrig2@rpi.edu

Affiliation:

Rensselaer Polytechnic Institute
110 8th Street
Troy, NY 12180
USA