CHEME 4630 Practice of Chemical Engineering Product Design

proposed by Tobias Hanrath and Kathy Vaeth

Students prepare a stage-gate feasibility study of a chemical product including market and economic analysis, patent search, environmental, regulatory, and safety issues. Students will review historic cases of product innovation in context of the underlying structure-property relationships and customer value propositions. Students will apply analytical tools to determine the feasibility of the product spanning from concept to early stage development. This information is used to develop an economic analysis of the product development and to provide an ultimate recommendation as to the viability of the project. Students develop presentation and teamwork skills through weekly presentations of their work to date followed by a final presentation to a panel of internal and external appraisers.

When Offered: Spring.

Prerequisites/Corequisites Prerequisite: CHEME 4320.

Outcomes

By simulating a corporate work environment the students are introduced to the demands and expectations that they will face when they enter the workforce, and are thus better prepared to function in either the academic or the corporate environment. (c)

Each system design within the overall product design requires the identification of relevant design parameters and the solution of chemical engineering calculations to arrive at a design recommendation. The students are also taught an in house capital cost estimating algorithm, which they must use in determining the capital cost of their recommended designs. (e)

The students work in either three or four member teams and learn by experience and by instruction how to manage team dynamics to complete the work in a timely fashion. (d)

The students prepare power point presentations describing the results of their work for the week and present them to professors and TA's who critically evaluate both content and presentation. Written clarification memos for points arising from the presentation are also required. (g)

Stress is placed on the concept of designing to minimize environmental footprint and good corporate stewardship in design. (f)