



NPD Education

University of Illinois, Chicago, course stresses Interdisciplinary Product Development education

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“Interdisciplinary” is a mantra in university level education today. There are always calls for interdisciplinary this and that, and statements about its virtues. But, despite this lip service in favor of the principle, making effective interdisciplinary education happen within the university environment is not easy. At the University of Illinois, Chicago, we created a truly interdisciplinary education program in PD four years ago. It is called Interdisciplinary Product Development (IPD).

Two-semester curriculum

The IPD course is a two-semester curriculum. Students from industrial design, mechanical engineering, and business work together in cross-functional teams to research and develop new products for a client company that also sponsors the course. The course integrates interdisciplinary teams with the latest market research, engineering, and design technologies, and best practices for innovative Product Development. It focuses on the early stages (Fuzzy Front End) of the development process, from team formation and identifying market opportunities through initial prototyping. The course approaches Product Development as a parallel process with true integration of all three disciplines from the very beginning of the phases and gates process.

The course is team taught by faculty from the three colleges within the university College of Engineering, College of Art and Architecture, and College of Business Administration. Each year the faculty recruits a company as corporate sponsor or “client.” That company provides the financial support necessary to incorporate outside resources and materials not normally available within an academic environment. The company’s funds, given to the university in the form of a tax deductible gift to the course, are used to cover unique course expenses, such as professionally conducted team building exercises, various forms of market research, creativity facilitation, focus groups, rapid prototyping, professional prototype models made by a model shop, and materials and supplies, as well as other significant course expenses. The deliverables to the client from each team are their market and contextual research results, product concepts, models, prototypes, and marketing plans.

Students taking the course are required to sign a confidentiality and nondisclosure agreement, and an Intellectual Property Agreement that gives the client company ownership of the work product of the student teams. The client company also signs a Royalty Agreement with the university to provide

it with a small royalty fee from the sales of any IPD-based product the client successfully commercializes.

For the first year of IPD (2002-03), the client company/sponsor was Whirlpool Corporation. For the second year (2003-04), it was a small Chicago toy company, Rehkemper; while for the third year (2004-05), it was the Copco Division of Wilton Industries; and this year (2005-06) the client/sponsor is Pactiv Corporation.

The faculty asks each company to identify a challenging assignment that is just off the client’s radar screen due to resource constraints, yet is a domain of significant interest. The students, working in teams of six or seven (generally two or three students from each of the three disciplines), provide a fresh perspective to the client’s problem within a structured framework that is guided by researchers (the faculty) whose primary interest is in Product Development and innovation. The course faculty believes the IPD experience replicates and simulates as closely as possible and practical, within an academic environment, the best practices processes and activities of Product Development that students will encounter in their professional careers.

Course Results

The results of this two-semester journey have been impressive. Aside from the faculties’ appraisals of the quality of the teamwork, the process work and the end results each year, the reactions of the client companies to the new products the teams have developed has been positive. Whirlpool took one of the five new products we developed for them into their own product development process for further work and also hired one of the students on the team that developed it. Rehkemper hired one of our graduates to further develop his team’s new product, while Copco is intrigued with two of the new products we developed for them and they are doing further development work on them. Finally, a good number of our students have gotten jobs because Interdisciplinary Product Development has been highlighted on their resumes. Recruiters see the IPD experience as a very desirable attribute for their new hires.

On the educational side, students from each discipline are forced to appreciate the other disciplines—a true, real-life Product Development experience. And, through the process, the students gain an appreciation of the importance of designing for the customer rather than for themselves, and continuing to reach back to the customer at all stages of the development process in order to keep the product design on track for targeted user needs and desires.

After more than three years of teaching this innovative Interdisciplinary Product Development course and observing the functioning and performance of 21 student teams, the IPD faculty has observed that both the effectiveness and thoroughness of their new product solutions are directly proportional to how well the student teams work together, come to common understandings, respect each other’s points of view, and incorporate their skill sets into the team’s overall mission. Thus, we believe that the course is able to substantially replicate the experience of interdisciplinary teams working together to do the early stage work of developing a new product within the context of an organizational environment. We believe that an interdisciplinary project based Product Development course using an assignment from a client/sponsor company is a very effective pedagogy for teaching what the real world experience of doing Product Development is like.

Students comment on Interdisciplinary PD course at University of Illinois, Chicago

“I learned more in this class about my own discipline than any other class I have taken, as well as the process of design. And the importance of marketing became quite apparent.”—*Engineering student*

“Learning to communicate with other disciplines in their terminology and in language that’s understood by all was difficult. But eventually this hurdle was overcome and well worth it.”—*ID student*

“Without this kind of interdisciplinary work, innovative Product Development would not be possible.”—*Business student*