

# IEEM 3200 Product Design and Development

**Instructor:** Professor Chih-Hsing Chu (瞿志行), First Engineering Building, Room 823, 5742698

**Class Time:** TBA

**Course Website:** TBA

**TA:** 王怡然 Room 708-1, 42937

**Textbook:** Product Design and Development, K.T. Ulrich and S.D. Eppinger, McGraw Hill, 4<sup>th</sup> Edition.

## References:

1. Class-notes and related reading materials.
2. Product Design, K. Otto and K. Wood, 2000, Prentice Hall.

## Course Description:

This course introduces the basic concept, process, methodologies, management practices, and information technologies in new product development (NPD). Students are expected to learn fundamental knowledge in product design, to realize its interdisciplinary nature, and to position themselves in product value chain for future career.

In order to achieve this goal, students in group must realize one product concept. This project is to provide a real environment where students can experience and learn new product development in school environment. Each group is responsible for marketing analysis, product planning, product specifications, product architecture, concept generation, engineering design, prototyping, in addition to project management, scheduling control, cost management, project coordination, as well as liaison.

The project execution and the final grading emphasize the process, not the final result! The execution details and processes in the project and the output produced at each stage must be recorded and well documented. All the discussion note, decision factors, and related documents among team members should be preserved and will be graded.

## Project Scope

Each project team consists of 5 team members: Project Manager (PM), Marketing Specialist, Industrial Designer (from NTUST industrial design department), Design Engineer, and Manufacturing Engineer. Note that the boundary and tasks of each role is not well-defined (this is the nature in real industry). Many activities must be conducted by team, not individually. Each group needs to conceive a product concept, generate two sketches, and realize one design during the course of the project subject to functional, schedule, and budgetary constraints. In other words, students need to manage the project by properly controlling quality, time, scheduling, and cost.

### Functional

1. As simple as possible (products are more complicated than you think!)
2. In most cases, the product will be an assembly. It usually contains at least two mechanical parts, one electrical component, and one standardized part that can be purchased. In addition, one mechanical part must be custom-made.
3. The working prototype must demonstrate the original design function and comply with the product specifications.

4. The product can be a software or service system.

Schedule: details TBD

Budget: XXX NT\$ including the costs of raw material for the customized part and all the purchased parts, but without labor and overhead.

A working prototype must be accomplished for each product idea. We will have a tradeshow in the end of the semester. Each group will make a poster and demonstrate the prototype for public in this event.

This course is not a typical engineering course conducted only via lectures and homework. We emphasize less on theories, but more on hands on and learning of real-world experiences. Interdisciplinary design is the idea we want to convey throughout this class. Students are expected to spend a significant amount of time on the course activities. The grading will be determined by the process of the project running and team dynamics, rather than the final result!

**Grading:** Homework 20%      Class/Team Participation 5%  
Midterm 35%                  Final Project 40%