**A Brief Guide for Introduction to Engineering Design (IED) with Professional Development (PD-1)**

**GENERAL PRINCIPLES OF ENGINEERING DESIGN**

1. Design is an iterative stepwise process that is best learned by doing (as a result, this is primarily a project-based course).
2. In the real world, resources are rarely considered infinite, so the best engineering designers learn how to implement the design process using the most efficient and effective methods available (you will learn about these methods in IED).
3. The ultimate goal in the engineering design process is to meet or exceed user wants and needs, while reducing cost and time.
4. Teamwork and communication are essential elements of the engineering design process.

**RESOURCES**

**Textbook:** Product Design and Development, 4th edition, by Karl Ulrich and Steven Eppinger, McGraw-Hill, 2008

**Materials and Supplies:** Students are expected to provide their own materials and supplies for projects. Kits for line tracker and mousetrap car mini-projects will be available for purchase. Loaner 80-20 and motor kits are available with $210 deposit.

**Textbooks and Laptop Computers**: Bring your textbook and laptop computer (with power supply) for all studio-lab sessions.

**Shop Access:** Students will have supervised access to the shop. The shop schedule will be posted on LMS.

**LMS:** All course documents (including grading rubrics for all assignments) are available on LMS.

**COURSE ORGANIZATION AND GRADING**

**See the syllabus for a detailed course schedule including reading assignments, lecture topics, and lab activities.**

**See specific assignments and grading rubrics (on LMS) to understand details of project requirements and grading.**

**Studio-Lab Activities:** Two 2-hour sessions each week intended to support your project work (see IED syllabus for section schedule)

**Mini-Project (25% of grade):** A 4-week “warm-up” mini-design project that is intended to familiarize you with the major elements of the engineering design process. You will work in teams of two or three. The mini-project will cumulate in a course wide competition on week 5 of the semester.

**Major Team Project (50% of grade):** You will be organized into groups of five to seven for a complex system project that will encompass the remaining part of the semester. Studio-lab sessions will include formal meetings and interactive exercises. Instructors will work with you on project activities to help guide the team in the design process. Team members should come to studio-lab sessions prepared to discuss design work, project assignments, and team dynamics. On a day-to-day basis, instructors may assign specific tasks to be completed by the team or by individual team members. An ICF (or individual contribution factor) will be applied to the team project grade to arrive at individual student grades. The ICF for an individual member of a team may be less than, equal to, or greater than one.

**Quizzes (15% of grade):** During the first eleven weeks of the semester, there will be a series of quizzes administered via LMS on topics covered in your textbook and during class. These LMS quizzes will be available for one week only, from Wednesday to Wednesday. You should take **all** of the weekly LMS quizzes. The highest ten out of eleven total quiz scores will be averaged to calculate your final quiz grade. The lowest quiz score will be dropped.

**Attendance (10% of grade):** Attendance at all studio- lab sessions is mandatory. A student may miss part or all of a session only if prior notice and/or acceptable reason is given. Students are responsible for all missed content and work. If a student misses more than two sessions, grades will be affected accordingly. Class presentations, criticisms, and discussions are essential to the development of ideas in the context of the design and team processes. Missing an assignment or design review without an authorized excuse will result in a grading penalty.