It is possible to fly without motors, but not without knowledge and skill

- Wilbur Wright
Hands-on Course

• “Learn by Doing” philosophy, focuses Engineering and CS students in a capstone course with emphasis on applied, real world, industry projects

• Course and project spans two full semesters (Fall/Spring)

• 219 EE, ME and CS students in 2016-17 Senior Design

• Project teams are typically four to six students plus a sponsor company liaison/customer and faculty advisor

• The projects are often stepping-stones to full-time, professional jobs
Teams Function like in Industry

- Grading largely weighted on team member peer evaluations, team presentations, and final reports
- Project Manager is determined and usually rotates throughout the year
- Students learn/practice project management skills by creating and using their own schedules, budgets, risk analysis, and deliverables
- Special workshops for shoring-up presenting skills, writing, MATLAB, LabView, SolidWorks, PSpice, NASTRAN, micro-computers, etc.
Projects Address Real Needs

- Projects are determined in spring/summer months with sponsors
  - Statement of Work outlines expectations and deliverables
  - Customer approves final SOW (written by students)

- 47 EE, ME, and CS Projects in 2016-17
- $25K grant (or contract) is typical from industry sponsors
Industry Sponsors Participate

• Typical deliverables:
  1. Weekly progress briefing by students
  2. Preliminary and final reports
  3. Preliminary and final presentations
  4. Development hardware/prototypes
  5. Designs, simulation, and testing results

• Technical Liaison from sponsor company
• Faculty Advisor is assigned by college
• Projects are student organized and led

• Many of the students have never built something they designed before this class
• Most have never worked on an engineering team!
Summary

- Projects develop teamwork, leadership skills, technical skills, sharing responsibilities, accountability
- Applications motivate students to become life-long learners and to leverage modern engineering tools

**Bottomline:**
1. Prepare students for real-world engineering
2. Sponsors get good return on their R&D investment