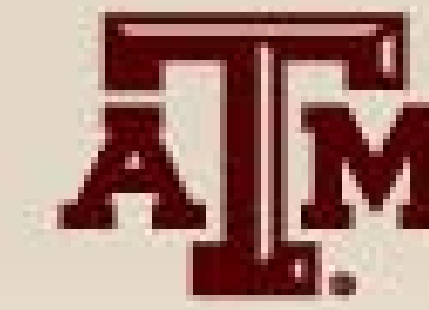




# Montague – CTE Scholar Yu Ding (2005-2006) College of Engineering



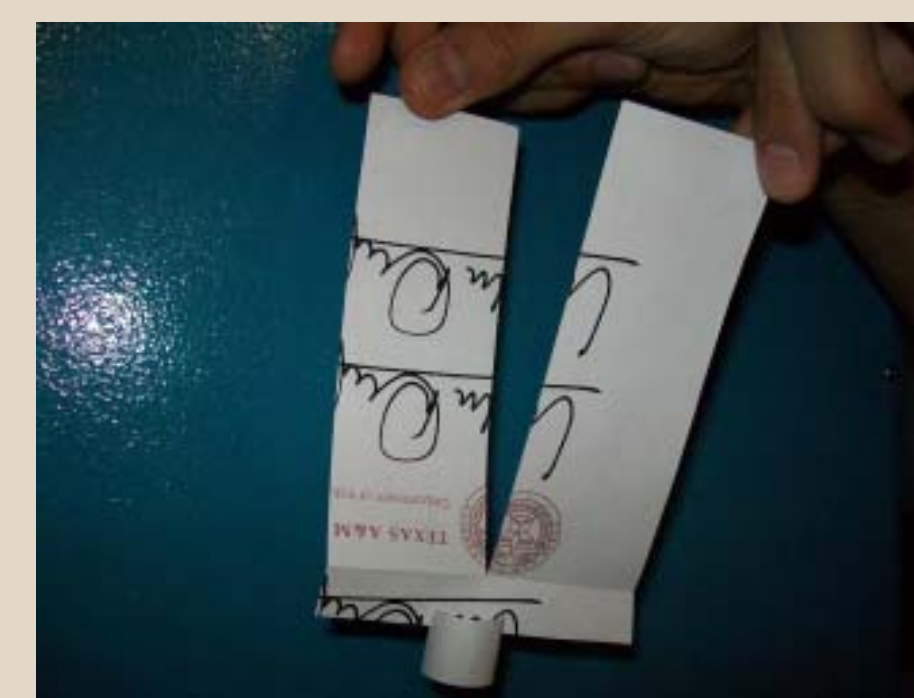
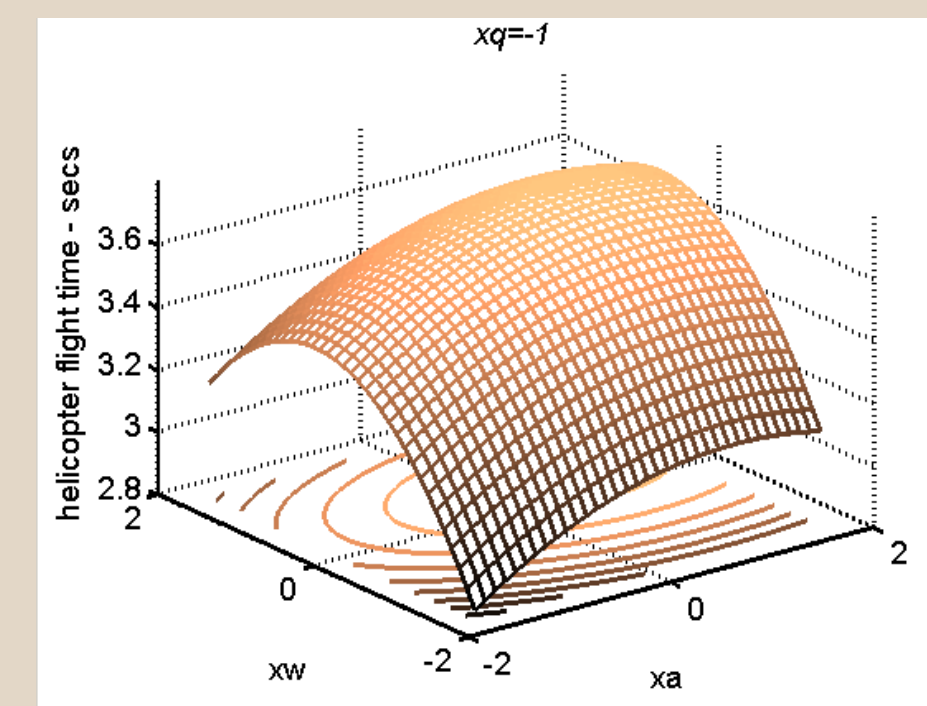
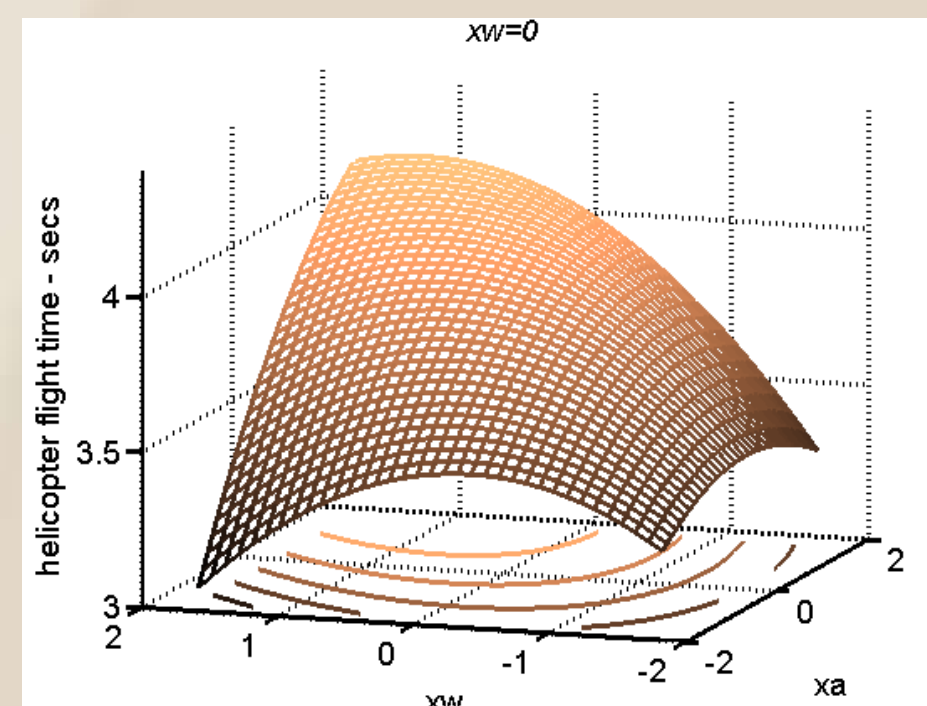
## Hands-on Experience for Students to Appreciate Design of Experiment (DOE) Methods

### What is Design of Experiments?

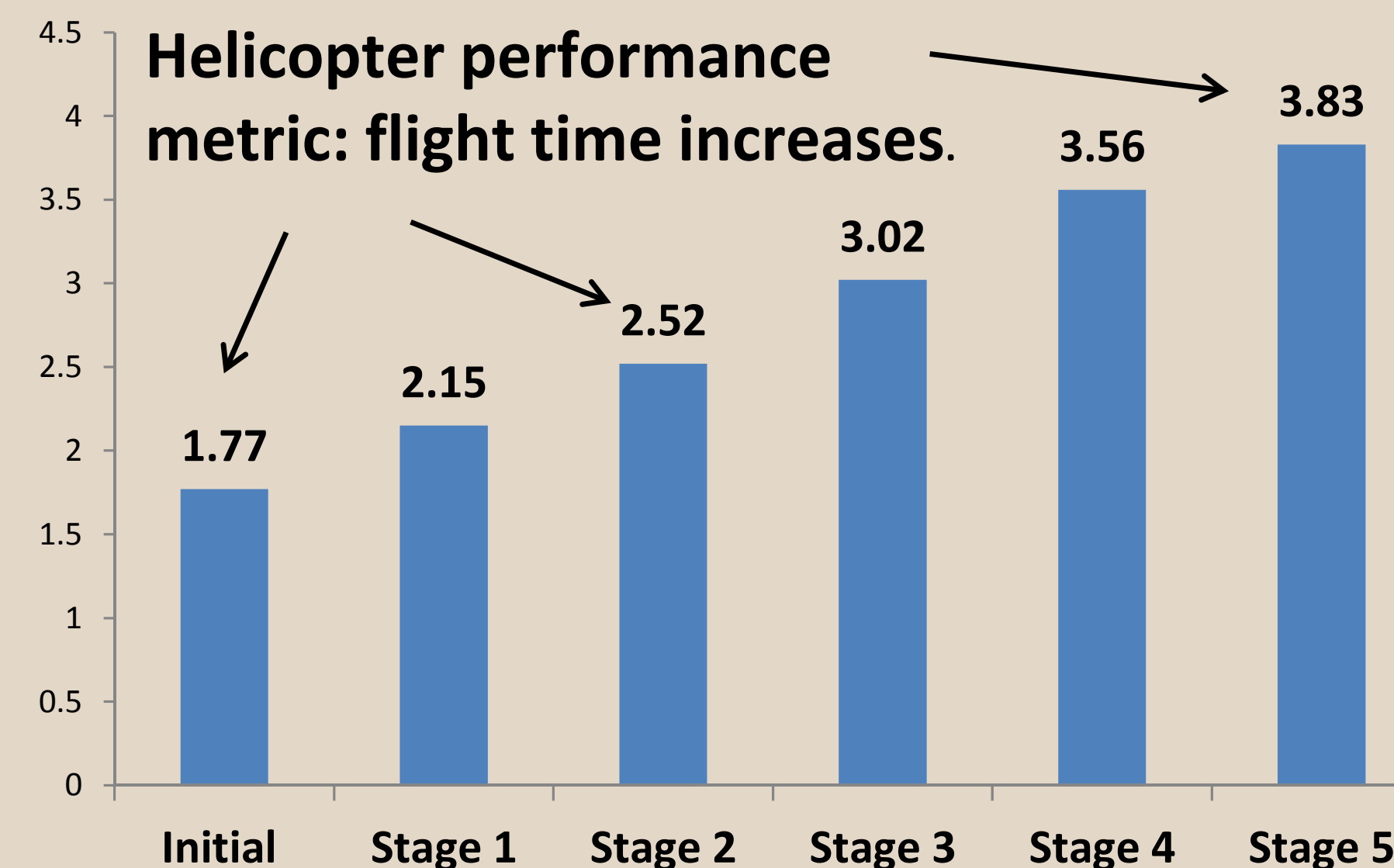
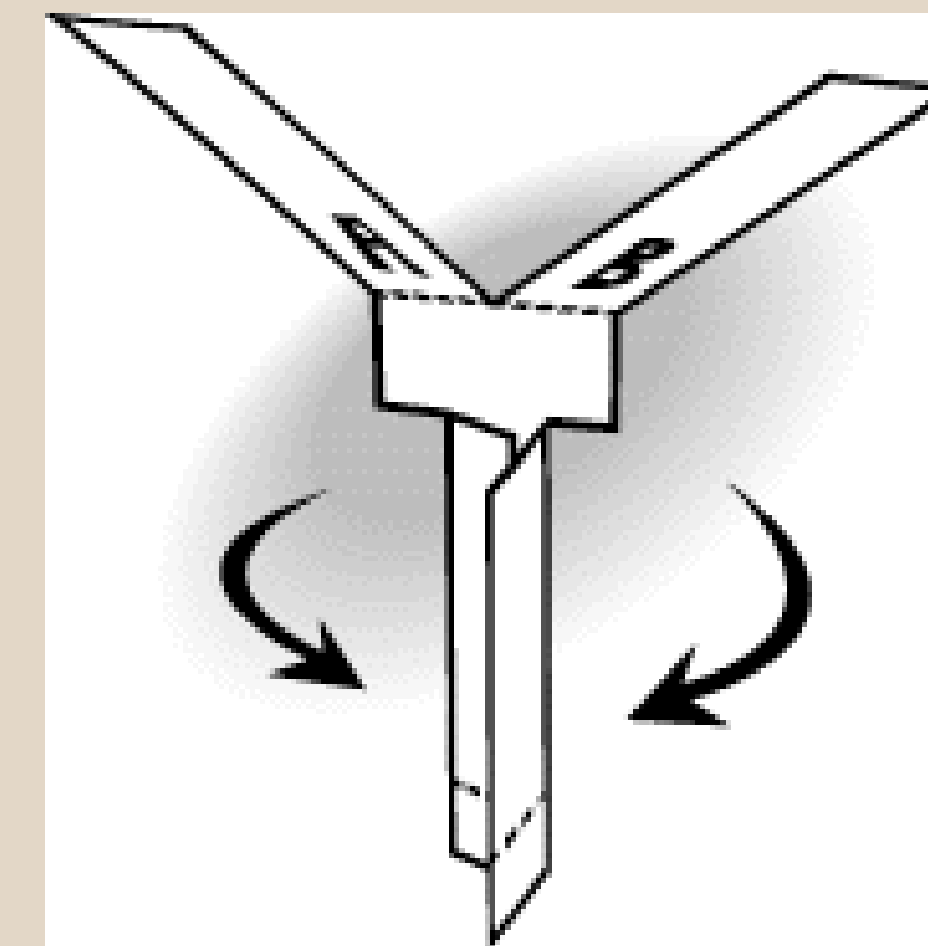
- Design of experiment (DOE) methods are widely used in scientific discoveries for making explorations more efficient and drawing rigorous conclusions.
- An important technical elective for engineering undergraduate students

### Why Hands On?

- Students appreciate the general motivations but to understand the subject matter and acquire practical skills, students need to understand statistical modeling and the analysis behind the skill.
- Statistics is what students generally find mind-boggling.



### Paper Helicopter Experiment



- Originally designed by George Box (Professor Emeritus, University of Wisconsin), a paper helicopter can be made out of a standard size paper by using a scissor.
- Adapted in ISEN 414 course, allowing a total of 74 students (in multiple semesters) to use the DOE knowledge in the class to make better helicopters.
- A sequential design process is incorporated into five lab sessions.
- Students continue to revise their helicopter designs and make the helicopters fly longer.
- A design competition was conducted during which student ingenuity was fully demonstrated.
- One winning helicopter and its statistical analyses are shown on the left.