# Engineering Mathematics
# The “Wright State Model”

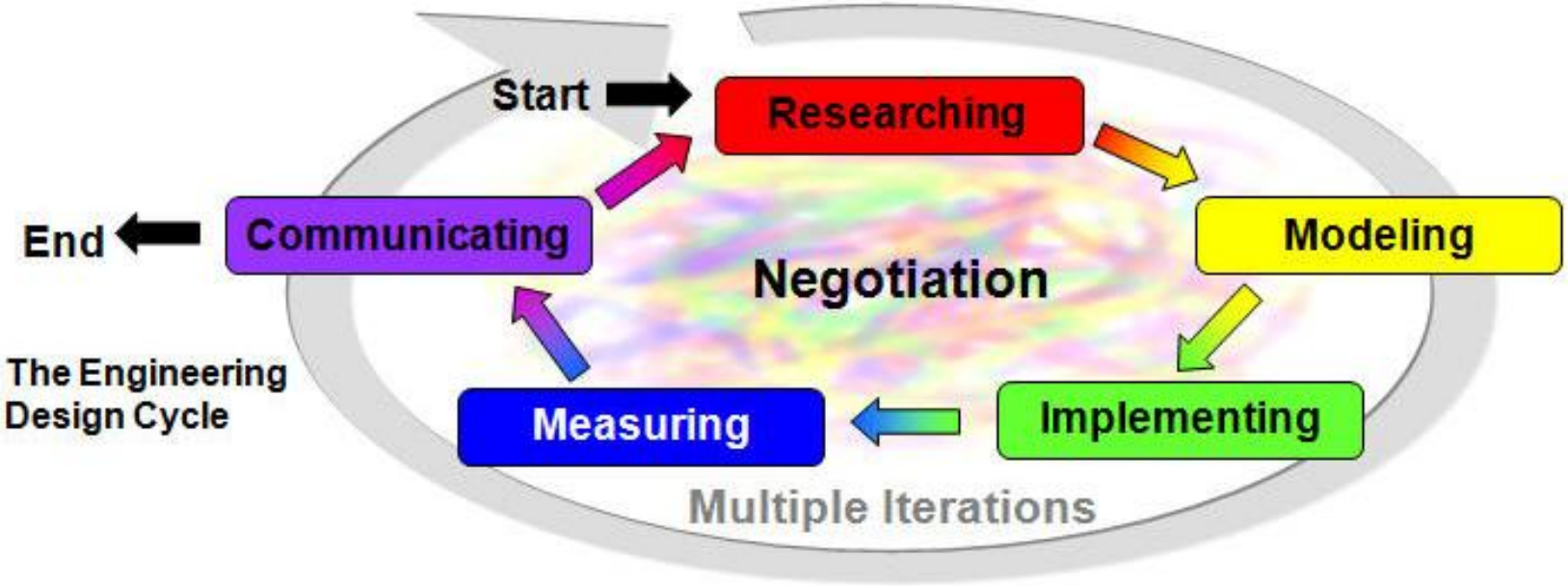
Oklahoma State University

Karen High, Alan Cheville, Nick Oswald

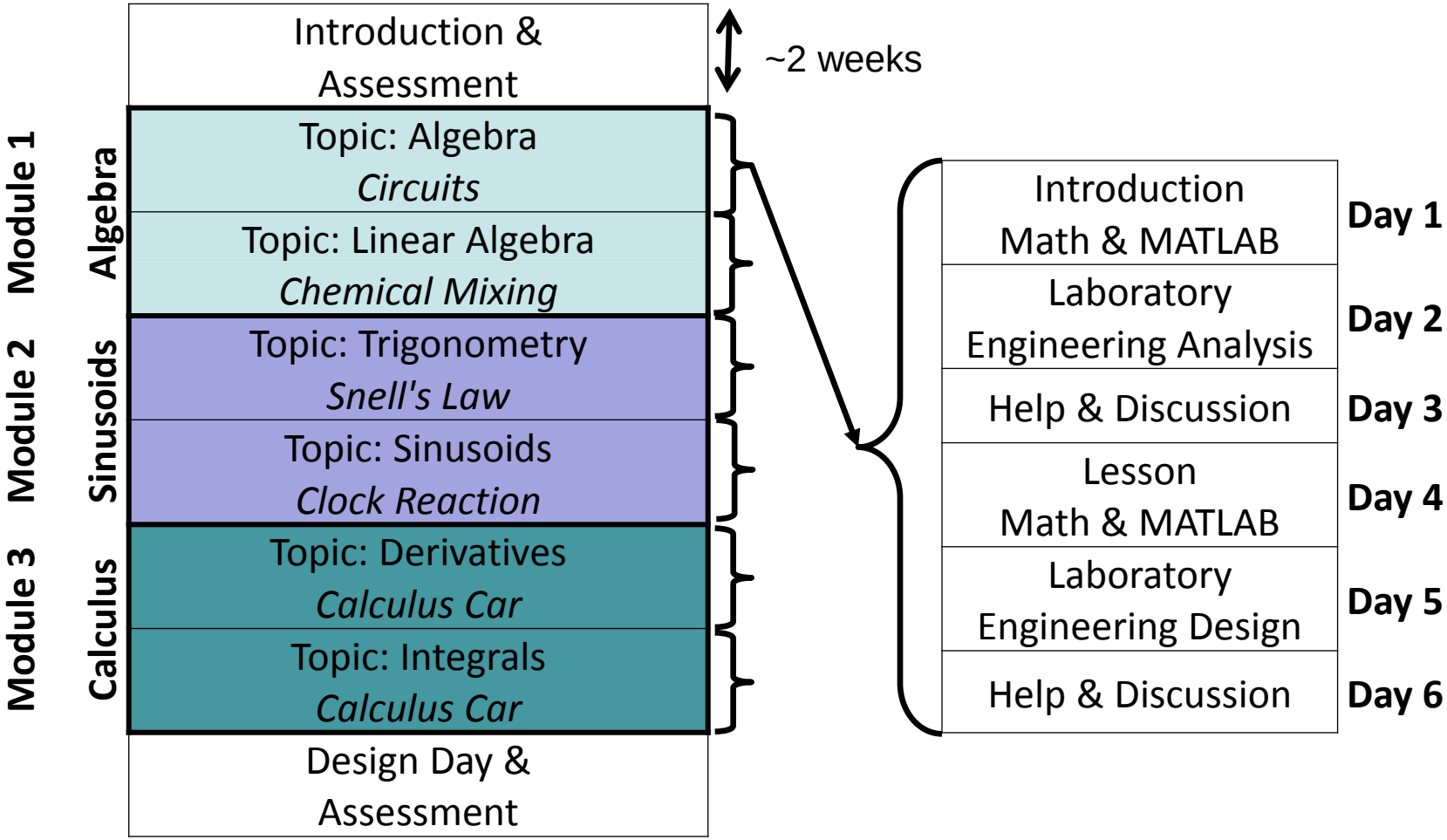
# OSU Implementation

- Design Cycle
- Lab Kits
- Book
- Writing Reflections/Reports

# Design Cycle



# Course Outline



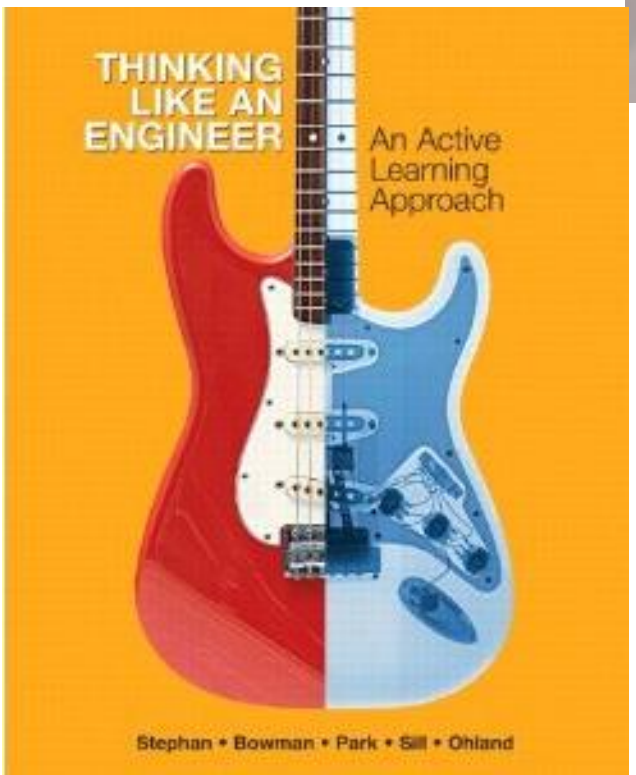
# Kit Based Labs

- Optical transmission cuvette holder board
  - Algebra
  - Linear algebra
  - Sinusoids
- Prisms
  - Trigonometry
- Programmable Calculus Car
  - Derivatives
  - Integrals

# Book

- E-Source Pearson book
- Custom Built
- Lab documents included
- Introduction to design
  - Ch 1-4
- Research
  - Ch 5
- Modeling
  - Ch 6-13
- Implementation
  - Ch15
- Measuring
  - Ch 14, 16, 17
- Communicating
  - Ch 18-21





# Writing Reflections/Reports

1. How do your current interests, knowledge, and skills fit with becoming an engineer?
2. What are the similarities and differences between your past design experiences and what you are learning about engineering design in this class?
3. How and why has your understanding of engineers' use of math changed this semester?

Writing Fellows (2009)

1. The students turned in a draft of report.
2. The reports were distributed to the Writing Fellows (5 engineering students who read the reports and commented.
3. The Writing Fellow and student met for a 30 minute tutorial.
4. The students revised the report and turned in final version

Also, a design day poster

# Preliminary Assessment

- Based on the PFEAS, significant changes in attitude of ENGR 1113 students (as compared to control)
  - Less likely to feel that the rewards are not worth the effort
  - Felt they needed to spend more time studying
  - Felt more confident in their ability to succeed in engineering
  - Felt more confident about their current study habits and routines
- Based on the mathematics attitude survey, significant changes in attitude of ENGR1113 students (as compared to control)
  - Increased feelings of dread and dislike for math
  - Felt less likely to solve any assigned problems quickly
  - Less likely to report they learned well from lectures