CSCI 406: ALGORITHMS/CSCI 608 (Online)
Making Computer Scientists out of Programmers

BACKGROUND

- Algorithms are the essential ideas behind computer programs.
- If computer hardware is the brawn of computing, algorithms are the brains.
- $$$: interviews at elite software companies (Google, Microsoft, Facebook, Amazon)

REDESIGNED COURSE

Course Learning outcomes (2 of 10)

1. Design an efficient algorithm to solve a given problem, analyze its theoretical time and space complexity and prove its correctness.
2. Develop a competitive but necessarily suboptimal ("quick and dirty") solution for an NPC problem

Specific Examples of Activities

- Self-assessment at start of semester.
- Administer midterm survey
- Develop rubrics
- More support for software projects. E.g., (a) peer feedback (b) project planning activities.
- Think-pair or triad small-group on in-class worksheets.

INTENDED OUTCOMES

Purpose of Redesign:

1. Improve student performance (reverse decline in grades).
2. Increase engagement in and attitudes toward class
3. Improve time management on software projects.
4. Improve attitudes.

Principles of Learning:

- Increase student motivation
- Activate prior knowledge.
- Organize knowledge
- Practice and Feedback
- Metacognition.
- Improved classroom environment

ASSESSMENT

- Self-assessment at start of semester
- Four Projects (40%)
  - TSP
  - AlgoBOWL
  - Dynamic Prog
  - Mad MAZES
- Improve AlgoBOWL & Mad MAZES
- Compare and analyze outcomes
  - Grades
  - Attitudes
  - Engagement