EFFECTIVE TEACHING AND CLASS MANAGEMENT

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and
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Introductions

Sue Fitzgerald
- PhD University of Missouri-Kansas City 1996 (Computer Science and Telecommunications)
- Industry experience, other faculty appointments
- Metropolitan State University, MN 1996-present
  - Faculty; Department Chair; Director, Center for Faculty Development; Interim Dean, College of Sciences
- Research in computer science education

Dianne O’Leary
- PhD Stanford 1976 (Computer Science)
- University of Michigan 1975-78
- University of Maryland 1978-2014
- Distinguished University Professor Emerita
- Research in scientific computing, text and image processing
About this session

• **Organization:**
  – Interactive
  – Topics chosen by you

• **Effective teaching:**
  – Now: We choose topics of interest
  – Break into small groups for discussion
  – Each group reports back

• **Class management:**
  – We choose topics of interest
  – Break into small groups for discussion
  – Each group reports back

• **Wrap up:**
  – Q & A
Effective Teaching: Possible Issues for Discussion

- Matching teaching style to class size and material
- How to establish trust and encourage participation
- Teaching students with special needs
- Directing research experiences for undergraduates
- Mentoring graduate students
- Effective use of technology in the classroom

- Using Think-Pair-Share and other peer learning techniques
- Flipping the classroom
- Using case studies
- Preparing interesting lectures
- What to do about low teaching evaluations
- Teaching online
- Dealing with large classes
- Preparing for class vs research
- Active learning to raise evals
Class Management: Possible Issues for Discussion

- What to put on the syllabus
- Managing teaching assistants
- Designing assignments
- Grading assignments and programs
- Managing trouble: What to do when you don’t know the answer or when one student dominates class time, or when a student is disruptive or …
- Team project management

- Grading
  Dealing with complaints
- How to grade collaborative work
- How to encourage attendance
- How to encourage collaboration outside classroom
- Dealing with complaints about instructor
- About team members
- How to deal with solutions being available online
- Understanding and responding to student needs
Summary of Discussion

• Directing REUs:
  – Weave instruction with research rather than pushing research to later.
  – Pair the undergrad with a grad student.
  – Don’t do it if you can’t be enthusiastic.

• Teaching a class with students with a variety of backgrounds:
  – Give a non-credit pre-assessment quiz on day 1 to inform you and them of their preparation.
  – Reveal next topic in advance (perhaps making slides available) so that they have a chance to prepare.

• Active learning:
  – Case study instruction is quite effective but requires extra work.
  – If you can’t find good case studies, you could eventually make your own collection into a book.
Summary of Discussion

- Dealing with aggressive students:
  - Require students to raise hand and be called on before speaking.
  - Speak with authority and confidence.
  - Put a requirement for civility in syllabus (See Sue’s syllabus).
  - Be open to suggestions.
  - Note that you appreciate the input but you are the decision maker.
  - “In fairness to other students, I can’t give you more points than I gave them.”
  - Ask student to produce a source if challenging a fact.

- Encouraging attendance:
  - Pop quizzes, dropping the lowest grade.

- Testing policies: Consider a no-makeup policy.

- Being available to students:
  - Explore tools such as Piazza and Slack so that answers of general interest are available to all students.
Summary of Discussion

• Grading
  – Having rubrics promotes fairness and prevents conflicts.
    • Announce the point distribution in advance.
    • Save a record of mistakes and point values in case of dispute.
  – Automated tools can speed the process. Examples:
    • Gradescope, which can sort papers to cluster similar answers.
    • Marmoset, which can help with running programs on test sets.

• Dealing with solution material available on-line:
  – Clear plagiarism policy, requiring students to name sources.
  – Policy against using an entire program.
  – Frequent reminders of the policies.
  – Personalize assignments: e.g., design your own object.
  – Written reflection on assignment.
  – Test question that is only easy to answer for those who understand the solution in depth.
Summary of Discussion

- Syllabus
  - The contract between you and your students.
  - Protects you from unreasonable requests.
  - Protects students by letting them know expectations and dates.

Example civility clause:
http://faculty.metrostate.edu/FITZGESU/FitzgeraldICS240Syllabus.pdf

Example of detailed schedule information:
https://www.cs.umd.edu/users/oleary/c662/sched.html
Some Resources on Teaching Computer Science

https://www.cs.umd.edu/users/oleary/teachcs.html

Questions?