

TA2

CETL 8001 - CoC Syllabus

TA2 - Fall 2013

Coordinator:

Mark Guzdial

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Course Details:

Monday, 2:05 pm - 2:55 pm. Room: 101 College of Computing Building

Course Description:

This course aids the College of Computing graduate student in becoming a more capable and mature computer science teacher. We will focus on understanding how to help students reach expertise (e.g., in design), on understanding the ways in which students misunderstand computer science, and on how to be a successful academic teacher.

Course Modules:

A student's effort in this course will be divided among four modules:

- *Module 1: How students develop expertise*
 - Students will be able to describe the characteristics of expertise and what helps in developing expertise.
- *Module 2: How students get computer science wrong*
 - Students will identify common misconceptions about computer science and how teachers can encourage a more robust understanding.
- *Module 3: Being a CS Teacher*
 - Students will be able to use several methods to assess learning.
 - Students will be able to plan instruction using an effective process.
 - Students will write a personal teaching philosophy statement and be able to describe transferable skills required for teaching and learning.
- *Module 4: Teaching and Evaluating Teaching*
 - Students will formulate rubrics for evaluating high-quality teaching.
 - Students will teach and receive evaluation based on those rubrics.

Course Requirements:

To Pass

- Participate in class activities.
- Complete assignments.
- Attend class:

- You are permitted two unexcused absences.
- If you are going to be absent, please let the instructor know in advance.

Essay Assignments:

I'm looking for 2-4 pages, well-written, typed, not tiny font.

1. Week 2: Due Aug 28: Essay #1: **What's your worst teaching experience?** You've been a TA once before, and maybe you've had other teaching experiences elsewhere. Tell me a story about when something went wrong. How did you know it went wrong? Could you have avoided the problem? Would you do something different next time?
2. Week 4: Due Sept 25: Essay #2: **More on Starting Points.** Read another one of the papers in the Commonsense Computing series or work by John Pane ([here](#) or [here](#)), and tell me what you learned from it. How do students think about computing *different* before we teach them about CS?
3. Week 10: Due Oct 30: Essay #3: **A micro instructional design** For a learning objective from a course you are taking or teaching, design an instructional plan that will lead students in this class (in n minutes, for $n = 180/m$ where $m = \#$ of students in class).
4. Week 11: Due Nov 6: Essay #4: **A micro-teaching lesson plan:** Using one or methods discussed in weeks 6-7, how would you teach something in 10 minutes? Come up with a plan for doing that.
5. Week 12-14: **Micro-teaching.**
6. Week 15: Due Dec 6 (Friday of last week): Essay #5: **Reflection. What did you learn?** Evaluate yourself, as a teacher. You have your mental map before the class, and your mental map after the class. What was the difference between them? What does that tell you about what you learned this semester? Please include both mental maps with your essay.

In Class Cell Phone and Laptop Policy:

Simple: Put them away. Please be respectful of your classmates and our learning community.

Email:

All emails to the Instructor (and/or Teaching Assistants, if any) should have [CETL 8000 - CoC] in the subject line.

Honor Code

All students are expected to be familiar with the Honor Code (www.honor.gatech.edu) and are bound by its requirements. You must observe the Honor Code with respect to assignments, and all other aspects of this course.

Course Schedule

- **Part 1: How students develop expertise**
- Week 1: Aug 21: Overview of course
 - Introductions using an ice-breaker.
 - Explaining the Syllabus
 - Introducing mental maps, and doing a mental map exercise

- Week 2: Aug 28: Differences between experts and novices
 - Reading before class: Read Chapter 2 of "[How People Learn](#)"
 - The way you look at the world is different from how students look at the world
 - Organization of memory, looking at problems, finding solutions
 - Essay #1: Due by 11 pm.
- Week 3: Sept. 11: Developing transferable knowledge
 - Reading before class: Read Chapter 3 of "[How People Learn](#)"
 - Getting students to transfer knowledge is really hard
 - How to teach for transfer
- **Part 2: How students think about CS**
- Week 4: Sept 18: How do students think about programming, before programming.
 - Reading before class: "[Commonsense Computing, episode 3](#)"
 - What do students know about programming before we start teaching them?
- Week 5: Sept 25: Student misconceptions about CS
 - Reading before class: TBD, but maybe [Fleury](#).
 - Student misconceptions about basic programming
 - Assignments, loops, conditionals
 - Design process, need for design, what's good design
 - Essay #2: Due by 11 pm.
- **Part 3: Being a CS Teacher**
- Week 6: Oct 2: Teaching students about designs and projects
- Week 7: Oct 9: Developing a Teaching Philosophy and Portfolio
- Week 8: Oct 16: Instructional Design
 - From learning objectives, through student characterization
 - To choosing media, and designing interventions
- Week 9: Oct 23: Instruction Design Methods
 - From Gagne' to Constructionism
- Week 10: Oct 30: How do we evaluate teaching?
 - Come up with a rubric for evaluating teaching, and apply it over the next three weeks.
 - Essay #3: Due by 11 pm.
- Week 11: Nov 6: Cognitive Load
 - A key issue in designing computer science education
 - How to reduce cognitive load: Parson's problems, program completion
 - Essay #4: Due by 11 pm.
- **Part 4: Teaching and Evaluating Teaching**
- Week 12: Nov 13: Microteaching
- Week 13: Nov 20: Microteaching
- Week 14: Nov 27: Microteaching
- *Week 15: Dec 4: Final Reflection
 - Re-do the mental map, and note the differences.

- Essay #5 due Dec 6: What were the differences?