


Math Foundations of Computing

CS 200

Learning Goals (for today):

- Familiarize yourself with course basics
- Be able to describe learning
- Understand motivation for technology and group policies
- Describe inductive proofs at a high level

Learning Goals (for this Class):

- Ability to think like a computer scientist (using the tools of mathematics).
 - Ability to communicate like a computer scientist (using the language of mathematics).
 - Proficiency using common mathematical tools of computer science.
- 

Learning Goals (for this Class):

- Ability to think like a computer scientist (using the tools of mathematics).
- Ability to communicate like a computer scientist (using the language of mathematics).
- Proficiency using common mathematical tools of computer science.

Outline...

About Me

- Shelby Kimmel (call me Professor Kimmel, Professor, she/her pronouns)
- **My research:** Quantum Computing
- **Academic Background:** Williams undergrad, MIT grad school, University of Maryland postdoc
- **Non-academic Background:** internships at Raytheon, Fulbright (English Teaching Assistant) South Korea

Learning Goals (for today):

- Familiarize yourself with course basics
- Be able to describe learning
- Understand motivation for technology and group policies
- Describe inductive proofs at a high level

Learning from biological perspective

- Learning is the process of developing new connections between neurons in your brain.



Learning from biological perspective

- Learning is the process of developing new connections between neurons in your brain.
- New connections are created by repeatedly practicing new behavior. By practicing any task, can rewire your brain to become “smart” at that skill.

Learning from biological perspective

- Learning is the process of developing new connections between neurons in your brain.
- New connections are created by repeatedly practicing new behavior. By practicing any task, can rewire your brain to become “smart” at that skill.

Learning Take-aways

- Give yourself time
 - No cramming
 - Start problem set early (Rough Draft!)

Learning Take-aways

- Give yourself time
 - No cramming
 - Start problem set early (Rough Draft!)
- Learning is Uncomfortable (at first)
 - Don't give up

Learning Take-aways

- Practice the skills you need
 - Practice problems are better than reading over notes to study
 - We'll do a lot of in-class problem solving (not graded for correctness!)

Learning Take-aways

- Practice the skills you need
 - Practice problems are better than reading over notes to study
 - We'll do a lot of in-class problem solving (not graded for correctness!)
- My role is not so much teacher as guide

Learning Goals (for today):

- Familiarize yourself with course basics
- Be able to describe learning
- Understand motivation for technology and group policies
- Describe inductive proofs at a high level

Computers or devices in class generally negatively affect learning

- [Studies](#) show students who write notes on paper learn more than those who type
- [Studies](#) show students who use laptops/phones spend up to 1/3 of their time “zoning out” (using Instagram, checking e-mail, etc) and consequently have lower exam scores
- [Studies](#) show if you use a laptop, your classmate’s exam scores will be lower.

Computers or devices in class generally negatively affect learning

- [Studies](#) show students who write notes on paper learn more than those who type
- [Studies](#) show students who use laptops/phones spend up to 1/3 of their time “zoning out” (using Instagram, checking e-mail, etc) and consequently have lower exam scores
- [Studies](#) show if you use a laptop, your classmate’s exam scores will be lower.

For some students, computers are a critical tool for learning

Computers or devices in class generally negatively affect learning

- [Studies](#) show students who write notes on paper learn more than those who type
- [Studies](#) show students who use laptops/phones spend up to 1/3 of their time “zoning out” (using Instagram, checking e-mail, etc) and consequently have lower exam scores
- [Studies](#) show if you use a laptop, your classmate’s exam scores will be lower.

For some students, computers are a critical tool for learning

Policy: Use technology judiciously. Avoid unless there is a good reason for it.

Learning Goals (for today):

- Familiarize yourself with course basics
- Be able to describe learning
- Understand motivation for technology and group policies
- Describe inductive proofs at a high level

Group Problem Solving



Group Problem Solving

- Working in a group improves learning
- I don't care whether you get to the solution
- I care about whether groups are functioning in a way that helps you to learn

Group Problem Solving

- Working in a group improves learning
- I don't care whether you get to the solution
- I care about whether groups are functioning in a way that helps you to learn

What behavior should I look for in a group that is maximizing learning?

Group Problem Solving

- Working in a group improves learning
- I don't care whether you get to the solution
- I care about whether groups are functioning in a way that helps you to learn

What behavior should I look for in a group that is maximizing learning?

- Active listening: rephrase what a group mate said

Group Problem Solving

- Working in a group improves learning
- I don't care whether you get to the solution
- I care about whether groups are functioning in a way that helps you to learn

What behavior should I look for in a group that is maximizing learning?

- Active listening: rephrase what a group mate said
- Ask questions if you don't understand
- Be skeptical of what others say – suggest alternate approaches.
- Encourage participation
- Make sure everyone in the group understands a point before moving forward

Website tour!

[go/CS200](#)