Presentation Outline

1. Computing in the Core
2. Computing Job Opportunities
3. Computing for Success in Higher Education
4. The Impact of Computing
5. Florida Tech Outreach Efforts
The Computing in the Core Coalition

- Goal: Raise the national profile of K-12 computer science education

- Stakeholders:
  - Microsoft
  - ACM
  - CRA
  - Google
  - CSTA
  - NSTA
  - SAS
  - NCWIT
  - NCTM

- Computer science is marginalized in K-12 classrooms nationwide by federal, state and local education policies, and general confusion about what computer science education is in elementary, middle and secondary schools
Computer science K-12 education focuses on basic skills, which teach students how to consume technology, versus acquiring deeper knowledge and skills which teach them to create new technologies.

Computers are ubiquitous in everyday life, business, industry and scientific inquiry and research.
Florida is one of only four states that has adopted 100% of the level I–III ACM/CSTA education standards, however none of the standards are in the Florida core, they all are elective!

Level I: K–8 (Foundations of Computer Science)
Level II: 9 or 10 (Computer Science in the Modern World)
Level III: 10 or 11 (Computer Science Analysis and Design)
Level IV: 11 or 12 (Topics in Computer Science; AP)

FDOE Supervisor: Duane Hume, (850) 245-9003
Teaching computer science in high school meets students’ needs in three ways:

1. Students gain a deeper knowledge of the fundamentals of computing, which—as computing becomes ubiquitous—is critical foundational knowledge that will serve them well throughout their lives.

2. Students are exposed to a field that drives innovation and in which job prospects remain strong despite the current economic challenges.

3. Students gain critical knowledge and skills that will bolster their success in higher education academic pursuits.
Computation — What Can and Cannot Be Computed
Communication — Reliably moving information between locations
Coordination — Effectively using many autonomous computers
Recollection — Representing, storing and retrieving information

Cuneiform Tablets  Morse Code  Enigma Machine
Automation — Discovering algorithms to control processes
Evaluation — Predicting performance of complex systems
Design — Structuring systems for reliability and dependability
Computing Job Opportunities

US-BLS Annual New U.S. STEM Jobs Through 2020 By %

- Computing: 73%
- Systems Analyst: 12%
- Software Developer: 30%
- Computing Support: 11%
- Database Administrator: 3%
- Network/System Administrator: 9%
- Info Security, Web Developer, Network Architect: 6%
- Other Computing: 1%
- Physical Sciences: 3%
- Life Sciences: 6%
- Engineering: 16%
- Mathematical Sciences: 2%

Computing Job Opportunities


Total Annual U.S. STEM Jobs Thru 2020 vs College Grads

- **Job Openings**
- **Bachelors Degrees Awarded**

Data Sources:
There are many academic and career fields that are directly related to computing.

- Artificial intelligence
- Computer science
- Computer engineering
- Computational science
- Database engineering
- Computer graphics
- Human-computer interaction
- Information Systems
- Network engineering
- Operating systems
- Robotics
- Software architecture
- Software engineering
- System security
Academic and career fields where knowledge of computing is beneficial are numerous.

- Aerospace engineering
- Bioinformatics
- Cognitive science
- Digital library science
- E-commerce
- Financial services
- Genetic engineering
- Information science
- Public policy and privacy
- Instructional design
- Knowledge engineering
- Management information systems
- Multimedia design
- Telecommunications
The Impact of Computing

Learning the algorithms that “makes stuff work” keeps computer science academically and intellectually interesting.

The Internet — Changed The Way We Live

When your Internet cable leaves your living room, where does it go? What is your mental map of the Internet? The Internet is everywhere and no where at all. Computing, communication, data storage, automation, and performance analysis have converged to design and coordinate this biggest machine ever created.
Mobile Devices — Keeping Us Always Connected

Smart phones, tablets, GPS receivers, car dashboard displays, and apps that run on these devices through wi-fi or bluetooth keep us continuously connected.
Sustainable Energy — The Smart Grid

Computer science is working to enable distributed, adaptive, and market-based infrastructure for the generation, distribution, and consumption of electrical energy
Computer science is filtering and summarizing documents, eliminating language barriers, supporting interagency collaboration, monitoring suspicious behavior, and enhancing our ability to detect and defeat specific threats.
Health Care — Improving Life

Computer science enables medical imaging, mining of huge volumes of patient data, for instance, genetic analysis, facilitates monitoring and assisting patients’ health activities (telemedicine), and supports robotic surgery.
Florida Tech Outreach Efforts

- Dual Enrollment — $100/credit hour, 12 credit hour maximum
- Laser Day — November 14, 2012, 2:15 pm–8:15 pm
- Summer Camp — Camp Alpha & Beta
- Science Fair Projects — Faculty Mentors
- Campus Visits — Attend Classes, Shadow Students
- Community Lectures — Talks on Emerging Technology
- School Visits — Possible Topics Include
  - Big data mining
  - Cloud computing
  - Computing Ideas/Impact
  - Cyber security
  - Networks
  - Robotics
  - Software Engineering
  - Vision

