2018 COMPUTER SCIENCE FRESHMAN BOOTCAMP

Facilitated by
CS CS Profs Patty Kraft and Jo Ann Lane
Several CS Upperclassmen
BOOTCAMP SCHEDULE

- 1:00-1:15  Introduction and Overview (including Ice Breaker #1)
- 1:15-2:20  Computer Science “big picture”
- 2:25-2:50  Suggestions to better manage your CS program outcomes
- 2:50-3:15  Ice Breaker #2 – get to know each other
ICE BREAKER #1: 10 MINUTES

• Break into groups of 3-4 and introduce yourselves
  • Name
  • Where you are from
  • Why you decided to major in computer science
  • Dream job after college
  • Favorite way to unwind
WHAT MIGHT A COMPUTER SCIENCE MAJOR DO ON A PROJECT?

• Software engineering
  • Architecture
  • Security
  • Data
• Software development/programming
  • Applications
  • System software
  • Database development
  • User interfaces

• Development environment
  • System administration
  • Network administration
• Support engineering
  • Hardware engineering/embedded software
  • Security engineering
  • Quality assurance/testing
  • Configuration management
  • User training
  • Technical writing
• Leadership roles/management
EXAMPLE CAREER CHOICES (MAY BE MORE THAN ONE)

• Information technology
  • Healthcare
  • Business systems (accounting, payroll, etc.)

• Education

• Big data/data mining

• Web development

• Government
  • Federal
  • State
  • Local

• Security
  • Embedded systems
    • Automotive
    • Aircraft
    • Communications (e.g. cellphones)
    • Healthcare devices

• Systems
  • Operating systems
  • Development tools (e.g., Windows, Linux, Apple)

• Services
  • System administrator
  • Network administrator

Might consider a minor even though one is not required!
A QUICK VIEW INTO A DAY IN THE LIFE OF AN INDUSTRY SOFTWARE TEAM

• Managers
• Senior engineers
• Mid-level engineers
• Entry-level engineers/interns
SDSU CS PROGRAM EDUCATIONAL OBJECTIVES

• Within a few years of graduation, SDSU Computer Science Bachelor of Science Degree graduates are expected to effectively integrate and apply in one or more fields
  • Key principles and practices of computing
  • Writing and verbal communication skills to effectively interact with clients, management, and team members

• With these skills, students graduating with a B. S. in Computer Science will have the requisite background to support future goals with respect to employability and graduate school:
  • Employability: Graduates will be immediately employable in high-technology companies that utilize their computing education
  • Graduate School Preparedness: Strong graduates will be prepared to enter graduate programs in Computer Science.
Upon successful completion of the SDSU CS BS Degree, students will be able to demonstrate the ability to:

• Apply knowledge of computing and mathematics appropriate to the discipline
• Analyze a problem, and identify and define the computing requirements appropriate to its solution
• Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
• Function effectively on teams to accomplish a common goal
• Honor professional, ethical, legal, security and social issues and responsibilities
• Communicate effectively with a range of audiences
• Analyze the local and global impact of computing on individuals, organizations, and society
• Engage in continuing professional development
• Use current techniques, skills, and tools necessary for computing practice.
• Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
• Apply design and development principles in the construction of software systems of varying complexity.
HOW TO BE SUCCESSFUL IN YOUR CS STUDIES

• Build strong programming and software architecting skills
  • Attend classes and labs
  • Focus on examples and take notes
  • Interact with Teaching Assistants (TAs) and instructor
  • Use the internet for additional details/tutorials

• Learn to collaborate and work with other people/classmates on larger projects
  • Take advantage of study groups if allowed
  • Spend time working with teammates when team projects are required
  • Key to successful teams: Plan the work and work the plan

• Follow
  • SDSU Student Rights and Responsibilities: http://go.sdsu.edu/student_affairs/srr/Default.aspx
  • ACM/IEEE CS Ethics Credo (copy at end of slides)
Most current version can be found at http://www.cs.sdsu.edu/degree-requirements/
HOW TO SELECT ELECTIVES OR A MINOR

- Depends on what you plan to do with your CS degree
  - Where you want to work
    - Examples: Microsoft, Facebook, Amazon, aerospace/defense contractor, healthcare organization, government organization
  - What types of software you want to work with
    - Examples: Web-based software, large user application, system software, software embedded in devices, or “everything”
  - What role you prefer on a software project
    - Examples: software architect, programmer, tester, configuration manager, quality assurance/tester
- Why one might want to consider a minor (even though one is not required)
  - If you have a strong desire to work in a given organization or in a given domain, you may want a complementary minor
WHAT MAKES A GOOD PROGRAMMER

• Develop strong programming and computer science skills
• Stay current with new advances in technology that pertain to your areas of expertise (or areas where you would like to develop expertise)
• Be collaborative with team members
  • Volunteer in your strength areas
  • Volunteer to investigate new technologies/tools
  • Share information/help train rest of the team
• Be inviting to new members on a project
  • Show them where to find information about the project
  • Help them understand the development environment tools/libraries
  • Introduce them to other key project members/organization experts
HOW TO GET HELP WHEN YOU ARE FEELING LOST/CONFUSED

• Lost/Confused
  • TAs
  • Faculty
  • CS advisors
  • Other students

• And if you are just feeling lonely or wanting to connect with other CS students outside of class, check out the CS clubs
  • SDSU CS Association for Computing Machinery (ACM) Club (https://acm.sdsu.edu/)
  • Mechatronics (http://www.cs.sdsu.edu/mechatronics-club/)
  • Cyber Defense Team (http://www.cs.sdsu.edu/cyber-defense-team/)
  • Artificial intelligence (https://aiclub.sdsu.edu/)
  • Game programming
CS 107 INTRODUCTION TO PROGRAMMING

CS 108 INTERMEDIATE PROGRAMMING

What can you expect?  What was it like for former students?

Let’s ask them!
GMCS BUILDING

5th floor: Professor offices

4th floor: Lab (Room 425)
CS/Math Office (Room 413)

3rd floor: Classrooms

Welcome to the SDSU Computer Science Major
WORKING IN TEAMS: WHEN IT IS GOOD AND WHEN NOT TO

• When working in teams is good
  • Some CS courses require team projects
  • Working within CS-related campus clubs and CS-related events
    • Mechatronics (http://www.cs.sdsu.edu/mechatronics-club/)
    • Cyber Defense Team (http://www.cs.sdsu.edu/cyber-defense-team/)
    • Artificial intelligence (https://aiclub.sdsu.edu/)
  • Game programming
  • SDSU CS Association for Computing Machinery (ACM) Club (https://acm.sdsu.edu/)
  • Various hack-a-thons that are announced throughout the year

• Other tasks where you might want to work in teams
  • Studying for quizzes and exams
  • Learning to use new tools or libraries

• When NOT to work in a team
  • When projects/homework assignments/exams are explicitly identified as individual work
  • When a project/homework assignment/exam has NOT been identified as team work

When in doubt, ASK!!!
USEFUL ON-LINE RESOURCES

• Computer accounts provide access to
  • Blackboard
  • Development tools
  • Software repository
  • Test tools

• Information
  • Software design strategies
  • How to resolve known problems with software tools/products
  • Open source software
  • “How to” tutorials (e.g., you-tube, step-by-step procedures, etc.)

• REMEMBER TO ACKNOWLEDGE ANY OUTSIDE SOURCE MATERIALS YOU USE IN ASSIGNMENTS... AND ONLY USE WHEN ALLOWED!!!
ICE BREAKER #2

• Break into a different group of 3-4 and introduce yourselves (different than the first ice breaker)
  • Name
  • Where you are from
  • Why you decided to major in computer science
  • Dream job after college
  • Favorite way to unwind
  • 3 things about yourself
    • 2 true, 1 false
    • See if rest in your group can figure out which is false
QUESTIONS???
Software engineers shall commit themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to the following Eight Principles:

1. PUBLIC – Software engineers shall act consistently with the public interest.
2. CLIENT AND EMPLOYER – Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.
3. PRODUCT – Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.
4. JUDGMENT – Software engineers shall maintain integrity and independence in their professional judgment.
5. MANAGEMENT – Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.
6. PROFESSION – Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.
7. COLLEAGUES – Software engineers shall be fair to and supportive of their colleagues.
8. SELF – Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

Welcome to the SDSU Computer Science Major

25 August 2018