CSE 220: Systems Fundamentals I

Course Overview

Instructor: Prof. Kevin McDonnell
Course Overview

• CSE 220 introduces the important, central ideas of computer systems, which includes the lower-level aspects of computer software and the fundamentals of computer hardware design

• Prerequisite: CSE 160 or 214 and officially declared CSE major
  • Others (CSE minors, some graduate students) are permitted to enroll after the first class meeting has taken place and if open seats are still available
  • If you are in this category, fill out the online petition form via the Computer Science Department home page
  • Non-CS majors/minors may not take this course, sorry
What Will I Learn?

• How numbers and other data are represented and processed in a modern computer
• The basics of digital circuit design and how simple electronic components can be combined to create more complex components
• How the software actually instructs the hardware what operations to perform and how the hardware performs them
• How hardware design impacts software performance
• What techniques can be used by hardware designers to improve performance
• The fundamentals of assembly language programming
Why Do I Have to Take CSE 220?

• Consider the increasingly wide variety of computing devices available *now*

• Which ones will exist in the future? What will be the performance characteristics of them? (i.e., speed, memory)

• Having a solid understanding of how a computer system actually works at the hardware level will inform your software design and implementation skills

• A smart phone, desktop PC, supercomputer and cloud computing system all have different price and performance characteristics; software is designed differently for each
  • Mobile devices have limited memory and battery power
  • Cloud computing platforms charge per unit time
Instructor Information

• Dr. Kevin McDonnell
• Office: 105 New Computer Science Building
  First corridor on your right as you enter the building
• Office hours: Mondays 3:00 – 4:30 pm, Wednesdays
  11:00 am – 12:00 pm and Thursdays 10:00 – 11:30 am
• Email: ktm@cs.stonybrook.edu
• Please use this email address only to set up an
  appointment to meet with me. We’ll be using Piazza
  discussion boards to field questions about the course
  material.
Website and Communication

- Website: www.cs.stonybrook.edu/~cse220
  - You are in Lecture Section 2 of this course
  - These lecture notes, course syllabus, schedule of topics and assignments, and other resources will be available there and/or through Piazza
- Both sections of this course will complete the same assignments, so post your questions about the projects on Piazza
- You can also visit me and the TAs during office hours for extra help. TA office hours will be posted on the home page in the near future.
Textbook and Software


• We will be using a computer simulator called MARS that has been specifically tailored to this course.
  • You will use this program to do your homework.
  • Do NOT download the version off the Web!

• Homework will be submitted through the Sparky computer (sparky.ic.stonybrook.edu), not through Blackboard
  • This week: practice with Sparky. For more info go to the SINC site in the Melville Library.
Course Requirements

• So what have you gotten yourself into here?
• Grading scheme:
  • Programming assignments: 25%
  • Quizzes: 15%
  • Midterm exam: 25%
  • Comprehensive (cumulative) final exam: 30%
  • Recitation attendance/participation: 5%
• The TAs who lead recitations are graduate students and/or undergraduate students who have taken this course. They know the ins-and-outs of this material and are an excellent resource!
Homework

• There will be four or five programming assignments on assembly programming
• You will find that writing code in assembly is very different from Java programming
• Do not, under any circumstance, wait until the last moment to start these assignments.
  • There is no “fudge factor” with assembly programming
  • Often your program will work for all inputs or no inputs
  • Start on a programming assignment the day it is assigned
• There will be no extensions to deadlines for any homework assignment for any reason
Academic Integrity

• Every semester there are students taking this course who are brought up on charges of academic dishonesty and wind up with grades of F because of it
  • Why? Because they wait too long to start an assignment, panic, copy a friend’s work, and get in big trouble
• You may discuss general concepts related to assignments with other students, such as explaining how to use systems or tools and helping others with high-level design issues
• You **may not** share assignments, source code or other answers by copying, retyping, looking at or supplying a file
• This includes downloading materials off the Internet
Academic Integrity

• Your work will be checked manually and automatically using software tools that very quickly and effectively identify similar source code. The tool compares every single homework submission against every other one.

• If you cheat, you will be brought up on academic dishonesty charges before the College of Engineering and Applied Sciences.

• If you are found guilty, the penalties are severe and include:
  • loss of scholarship support, and/or
  • ineligibility to graduate with honors, and/or
  • expulsion from the University

• The moral: start assignments early and ask for help!
Quizzes

• There will be periodic quizzes about the course material
  • About one quiz every 10-14 days
• Study questions (with answers) will be posted one week before each quiz
Examinations

• Midterm Exam: Monday, October 16th at 8:45 pm in a location to be determined
• Final Exam: Monday, December 18th at 8:00 am in a location to be determined
• All examinations will be closed-notes and closed-book
• No electronic devices of any kind will be permitted to be used during exams
• Any use of electronic devices, textbooks, notes, etc. will constitute cheating and will be prosecuted as such
• Do not miss exams – there will be no make-ups
Recitations

• Attendance and participation in recitation are required
• The TAs will review the course material, cover additional examples, answer questions about the homework assignments, and provide other assistance
• You may miss one recitation meeting without penalty
Disability

• If you have a physical, psychological, medical or learning disability, please contact the Disability Support Services (DSS) office at room 128 in the Educational Communications Center.

• Their phone number is 632-6748/TDD

• Disability-related accommodations will be make only for those students officially registered with DSS

• If you are planning to take an exam at DSS office, you need to tell me at least a full week ahead of the time for the exam so that proper arrangements can be made

• All documentation of disability is confidential
How to Succeed in CSE 220

• There is a lot of chatter among students about CSE 220 because it’s a challenging course!
• The assigned work will take a lot of your time, so practice good time management
• Do not procrastinate, ever!
  • Start the homework assignments right away and ask me and the TAs for help
  • Post questions on Piazza
  • Ask lots of questions in lecture and recitation
• You will have many opportunities in this course to get assistance.
• **Do not go to each other for help with the homework!**
Welcome and Good Luck!

Any questions?