CSCE 230J
Computer Organization

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http://www.cse.unl.edu/~goddard/Courses/CSCE230J

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CSCE 230J
Computer Organization

- Computer Organization
  - 2:30-4:30 TuTh
  - Kauffman 110
- Instructor: Dr. Steve Goddard
  - Office hours: 12:30-2:30pm TuTh
  - Office: Kauffman 133
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- TA: Byron Blunk
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Textbook

- *Computer Systems: A Programmer's Perspective*, by Bryant and O'Hallaron, Prentice Hall, 2003
- *The C Programming Language, 2nd Ed* , Kernighan & Ritchie, Prentice Hall

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Course Overview

- The computer science goals of this course are to introduce the fundamental organization and structure of computer systems. Topics include:
  1. Computer systems (overview)
  2. Data representation
  3. Machine language
  4. Processor architecture
  5. Memory hierarchy
  6. Linking
  7. Exception control flow
  8. Virtual memory
  9. System level I/O
  10. Network programming
  11. Concurrent programming

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Programmer Perspective

- Traditional Computer Organization courses are presented with a bottom-up approach.
- We will be taking a top-down approach, which reflects a “programmer’s perspective” of the way computer’s work.
- We will study all of the “normal CSCE 230 stuff” AND things that CSCE 230 doesn’t cover, but should!

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Prerequisites: 155 and 156

- **Mastery** of data structures including list, stacks, and queues.
- **Familiarity** with recursion.
- **Exposure** to complexity analysis.

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Grading

- Assignments 30%,
- Peer and instructor evaluation 5%,
- Project 15%,
- Bi-weekly (20-30 minute) Quizzes 25%, and
- Final examination 25%.
- Note: There will be no midterm!

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Grading

- **A minimum grade of C is required for the course to count toward a CS/CE major or minor.**
- **A grade of C- does NOT count toward a CS/CE major or minor.**
- **No incompletes (I) will be given.**
- **Letter grades will be assigned at the end of the semester, using the percentage of possible points, as follows:**

A+: 101+	A: 93-100	A-: 90-92	
B+: 87-89	B: 83-86	B-: 80-82	
C+: 77-79	C: 73-76	C-: 70-72	
D+: 67-69	D: 63-66	D-: 60-62	F: 0-59

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Assignments

- Homework will be assigned approximately on a bi-weekly basis.
- Assignments will be a mix of individual and team assignments, which will include programming exercises and analytical (pen and paper) problems.
- Teams will be randomly selected for team assignments.
- All assignments will be due at 9pm on the day on which they are due.
- Assignments will be submitted via the Web-handin program.

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Programming

- Computing platform: Linux
- Computing language: C and Y86 Assembly
- All programming must follow the JDE Coding Standard (see the course Web page).
- Program correctness is assumed…

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Quizzes

- Quizzes, given approximately every two weeks, will take the place of a midterm exam.
- 20-30 minutes in length.
- Format:
  - » Brief explanation of concepts based on the reading assignment for pending lecture
  - » Questions on material already discussed in class.

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Late Homework

- Late homework is “OK” but...
  - » Only if it’s not too late
  - » You don’t miss class to get it done
  - » You’re not late too often

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Late Homework Details

- All homework submitted after its deadline is considered late.
- Assignments that are submitted within 24 hours after the original deadline are considered to be "one day late," within 48 hours, "two days late," *etc.*
- A late homework assignment will be accepted without penalty if the following conditions are met:
  - » the total "lateness" of all homework assignments received to date (including the current assignment) does not exceed 4 days.
  - » the student does not miss class on the day the assignment is due or on the day after the assignment is due. Exceptions to this requirement must be approved by the instructor in advance.
- The penalty for late assignments is 25% per day they are late.
- **Weekends count in evaluating the lateness of an assignment.**

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How to get an "A" in CSCE 230J

- Attend class regularly
  - » Ask questions!
- Read the book
- Do the homework
- Study!

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How to get a “D” in CSCE 230J

- Do not read the assignments in advance
- Assume getting copies of handouts is sufficient
- Don’t take notes in class
- Miss class
- Waste time playing on the Web

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Course Conduct

- You may work in groups in *understanding* assignments,
- developing *approaches* and *strategies*
- *learning* to use the UNIX/Linux tools
- You may not
  - » develop joint solutions with other teams
  - » share code between teams
  - » copy anything
- All assignment solutions must be authored in full by your team!
- Individual assignments constitute a team of size one!

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Summary

- We will study computer organization from the programmer's perspective:
  - » This is a radical departure from the traditional method!
  - » We will be learning how and why computers work the way they do, but with a top-down approach.
- Assignments will involve analysis and critical thinking.
- This course will be a lot of work.
- Hopefully, it will also be fun!

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