

**CSC 406**  
**Winter 2016**  
**Irv Badr**  
**Office: 615 CDM**

**Office hours: Thursdays: 4.30-5.30 pm (615 CDM),**  
**9-9.30 pm (in-class)**  
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### ***Overview***

This is a course on computer systems topics, focusing on machine-level programming and architecture and their relevance for application programming. We will discuss:

- information representations,
- assembly language and debuggers,
- processor architecture,
- memory hierarchy, virtual memory and caching,
- program optimization.

### ***Objectives***

By the end of this class you will be a much better programmer.

- Able to find and eliminate bugs efficiently
- Able to tune program performance

By the end of this class you will understand how computer hardware works.

### ***Grading***

There will be weekly quizzes (for in-class students), three labs, a midterm, and a final. The course grade will be computed as follows:

- Weekly quizzes: 35% (best 7 of 9, weighted equally)
  - On-line version for DL students
- Labs: 15% (data lab 5%, bomb lab 8%, buffer lab 2%)
- Exams: 50% (midterm 20%, final 30%)

PLuS students may opt to skip weekly quizzes.

Numerical grades correspond to letter grades roughly as follows:

93-100 = A  
90-92 = A-  
88-89 = B+  
83-87 = B  
80-82 = B-  
etc...

In-class students must attend class each week in order to receive points for the weekly quiz. There will be no makeup quizzes, but I will drop the lowest two quiz scores; therefore, you may miss up to two classes without affecting your grade.

Quizzes will last five-ten minutes, and will be given immediately before the break. Quizzes will be based on the self-test problems in the text and will cover material from preceding classes, or from the first half of class. (You are expected to read the material before class.) The first weekly quiz will cover prerequisite material.

Quizzes will be posted for DL students to do at home, but will not be considered in determining grades.

The midterm and final will be cumulative. You must earn a passing grade on the midterm and final to pass the course.

No late labs will be accepted. There will be no make-up exams, make-up quizzes, nor extra credit assignments. If there is an extreme emergency and you must miss an exam, you must notify me in advance and provide documented evidence of the emergency.

Students in DL sections may take the course remotely. They may take the exam at times different from the in class section, usually within a few days. Exact details will be provided on D2L closer to the exam date.

### ***Weekly Schedule***

Week – 1: Binary Representation Logic

Week – 2: Integer Representations

Week – 3: Integer Arithmetic; Floating Point

Week – 4: Assembly 1 (Pointers; Arithmetic)

Week – 5: Midterm Exam; Assembly II (GDB)

Week – 6: Assembly III (Control; Procedures)

Week – 7: Assembly IV (Structured Data)

Week – 8: TBD

Week – 9: TBD

Week – 10: TBD

Week – 11: Final Exam

**Here are the required books:**

C PROGRAMMING LANGUAGE (ANSI C), Author: KERNIGHAN, Publisher:  
PEARSON, Edition: 2ND  
ISBN  
9780131103627

COMPUTER SYSTEMS:PROGRAMMER'S PERSP., Author: BRYANT,  
Publisher: PEARSON, Edition: 3rd  
ISBN: 978-0134092669