ISE 218

Fundamentals of Information Technology

General Class Issues

• Dr. R. Kelly (contact info on class Web site)

• Text
  • www readings
    (list on ISE218 home page and lecture notes)

Note that we are using the 4th edition

Less expensive options available through Amazon (e.g., 3rd edition)
Class Web Site

- www.cs.stonybrook.edu/~ise218
- Check it regularly for
  - Syllabus
  - Office hours / location / e-mail addresses
  - Assignments and lecture code
  - Class notes (pdf) - Print notes before each class
  - References
  - Lots more

Course Description …

- “This course introduces the fundamentals of Information Technology (IT) to students interested in the relationship between computer hardware, software, networks, and information systems”

Not a hardware design course and not a machine language programming class

Essentially, a computer hardware class for ISE students
… Course Description

• “The course examines components found in high use computing devices such as desktop computers, smart phones, and navigation systems. The focus of the examination is understanding the underlying technology of each component, along with price/performance curves and competing technologies.”
• “Upon completion of the course, students should be proficient in reading device specifications, particularly functional and performance implications. Students should also be able to use that knowledge to compare competing devices.”

Course Objectives

• Understand how numerical and non-numerical data are represented in digital computers
• Understand the functions performed by components of a computer-based device
• Indicate strengths and weaknesses inherent in different components and different architectures
• Understand the specification sheet of a typical computer-based device
Reasons for Course Objectives

- Prepare you for later ISE courses dealing with systems administration
- Prepare you for an ISE specialization in Systems and Network Administration
- Allow you to be conversant in computer hardware terminology

Important for business analyst and systems administration positions

Knowledge of Hardware

- Important in:
  - Selecting a product
  - Predicting life of device
  - Understanding system performance
  - Communicating with vendors / internal CS staff
ISE Program

- Requirement
  - Pre-fall 2014 - co-requirement for ISE majors (with ISE215)
  - Fall 2014 - requirement
  - Important background for ISE311, ISE321, and CSE310 (Computer Networks)
  - ISE specialization in Systems and Network Administration
Grading

- A, B, C ... grades
- Grade basis
  - Exams (including quizzes)
  - Class presentations
  - HW
  - Oral communications
  - Project
- Exam questions will be “easy” if you thoroughly understand the textbook and class notes
- In-progress grades will be available on the class Web site, make sure that you check it regularly
- Grade distribution resembles College overall grade distribution

Grading Formula

- All final grades are determined by a formula – applied equally to all students
- Sample:

You will get your ISE218 ID in an e-mail

Last year’s roster will remain on the Web site for the next week
Grading

- Final grades are calculated based on a formula (no subjective grading)
- Formula weights all the components of the class
  - Exams - mid-term (30%), final (15%), and quizzes (10%)
  - Assigned homework (5%)
  - Class presentations / oral communications (5%)
  - Project (35%)
- Final grade is based on your total score (the higher the score, the higher the grade)

You may receive extra points on exam scores from "Track" exercises

Homework

- You will be assigned homework problems during the semester (many from the textbook)
- Goal of the assignments is to practice working on problems (to better prepare you for the exams)
- Submit your completed assignments to the undergraduate TA
Session 1 - Introduction

Academic Integrity

• Representing another person's work as your own is always wrong
  • Assignments
  • Exams
• Gaining an unfair advantage in grading harms other students
• Suspected instances of academic dishonesty will be reported to the Academic Judiciary
• For details, refer to the Academic Judiciary Web site (link on class home page)

Academic Integrity

• University rules for academic integrity located at http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/policies_expectations/responsibilities_integrity.php
• All your work should be your own with the exception of:
  • Collaboration with approved teammates on project and designated assignments
  • Cited references to information sources in your project
  • Photos at the start of each exam/quiz
Class Presentation Groups

- You may work in a group of up to 4 students (for the entire semester)
- Make sure that all 4 students in your group are assigned to the same TA by:
  - Sending me an e-mail with the names and IDs of all the students in the group before you submit your first assignment
  - Verifying (on the unofficial class roster) that you are all assigned to the same TA

Final Project

- A detailed analysis of a computing device of your choice.
- You will demonstrate an understanding of all components, comparison with other components, and a projection of future cost and features
**Session 1 - Introduction**

<table>
<thead>
<tr>
<th>Project Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Project presented by team</td>
</tr>
<tr>
<td>• PowerPoint slides</td>
</tr>
<tr>
<td>• 30 minutes</td>
</tr>
<tr>
<td>• Presentation plus operation of your device</td>
</tr>
<tr>
<td>• Structured as an oral exam</td>
</tr>
<tr>
<td>• In-class or limited attendance presentation (5 point adjustment for easier venue)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Final Project</th>
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</thead>
<tbody>
<tr>
<td>• If you pick a final project topic that was used in a previous semester, you will</td>
</tr>
<tr>
<td>• Be given the slides used by the previous team</td>
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<tr>
<td>• Expected to present a far deeper analysis of the product</td>
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</tbody>
</table>
Project Team Revisions

- Any time during the semester, a project team can request a split of some team members
- If this occurs
  - Each member of the team will have access to the work of the team as of the date of the split
  - Resulting members can continue with a smaller group (with DoD or scope revisions) or join another group
- Helps to encourage all team members to work equally hard on project items
- Project grade adjustment for teams other than 4 students

How to Get Help

- Don’t get stuck - ask for help
- Send me general e-mail if you are having trouble
- See me during office hours (or by appointment or just stop by)
- Open door policy

Please be sure to include “ISE218” (no space) in the subject line of any e-mail message to me
How to Learn the Material

• Read and understand the textbook
• Read and understand supplemental Web readings
• Do independent Web searches
• Carefully examine and review the specs for your own devices (laptop, cell phone, etc.)
• Attend class / review the on-line class notes

Lectures

• Lecture slides will be available at the class Web site before each lecture
• Print a copy of the slide handout before class and use it to make notes
• Be sure to review the slides before each exam
Session 1 - Introduction

Topics

• IC fabrication
• Measures of storage, time, and space
• Number systems
• Representing numerical data
• Computer components
• Simplified processor study
• Memory

• I/O Devices
• Alternate architectures
• Data communications
• Wireless communications
• Virtualization
• Specialized components
• Cloud computing
• Integrated systems
• Case studies
• Cyber security

Limited Emphasis on

• Hardware design
• Implementation details
• Low-level programming
Session 1 - Introduction

Textbook

- Very well written
- Targeted to ISE majors
- Focuses on general architecture issues
- Does not address
  - Newer component
  - Future components
  - Price / performance

Supplemented with Web-based reading assignments (primarily Wikipedia)

Assignment # 1

- Part 1
  - Send a TA an e-mail (Hi!, name id#, “I can’t (or can) read the class notes”, etc.)
  - Put “ISE218 – HW#1” in the subject line of the e-mail message

Be sure to include “ISE218” (no space) in the subject line of any e-mail you send

E-mail addresses of the TAs are included in the class Web site