Introduction to 15-410/605

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Course Numbers

- Undergraduate ⇒ 15-410
- ECE M.S. students ⇒ probably want 15-605
- SCS M.S. students, INI M.S. students ⇒ 15-605
- Ph.D. students ⇒ might want 15-799A
  - Probably not this semester, but could be S'15?
  - Discussed with your advisor? See me?
- Other – consult your advisor
  - Your advisor *must* contact me

Wait List

- Registrar's wait-list order is *irrelevant*
  - He has his ordering, we have ours
  - We admit based on readiness (mixed with need)
  - Usually *our estimate centers on your advisor*
- There may not be room for everybody
  - Some students will need to try again next semester
- If you're not on the wait list yet, you are *invisible*
  - Invisible students *definitely* won't get into the course!
  - If you are invisible, send mail *before noon today*

Wait List

- Background material (15-213) *is not optional*
  - M.S. students: take 213 and get an A (B may be ok)
  - Ph.D. students: have your advisor contact me
- Rare exceptions exist
  - Took a course with the 213 textbook – see me
  - Multiple years of specific industry experience – consult your advisor (today)
- Otherwise, please switch to 213 wait list instead

Logistical Query #1

- Who has a class that conflicts with the 410 lecture?
  - Contact me after class (potential for big trouble)

Logistical Query #2

- Who had trouble with 213?
  - Contact me after class (potential for big trouble)
  - ***If you didn't get a B or an A, see me***
  - ***If the malloc() lab didn't go well, see me***

Self-Assessment

- Self-assessment exercise on course web site?
  - Not mandatory if you did well in 15-213
  - A very good sanity-check, though!

Textbook (traditional)

- Option 1
  - Operating System Concepts, 8th edition
    - Silberschatz, Galvin, & Gagne
- Multiple "cheap" options exist!
  - eBay/Amazon/Alibris/...
  - If you try an e-book edition instead of paper, please tell us if you like it
  - Used copies of 7th edition work pretty well
    - Web site lists reading assignments for 6th through 8th editions

Textbook (experimental)

- Option 2
  - Operating Systems: Principles & Practice
    - Anderson & Dahlin
- Main differences
  - More focus on typical modern kernels and hardware
  - Less focus on historical systems
  - Stronger coverage of file systems and storage
  - Weaker coverage of security
- Available online

Textbook (which one?)

- We think you can use either one
  - Heavily-tested material is typically covered in lecture and projects
- We are interested in your opinion!
  - Which one, physical book vs. e-book, e-book purchase vs. rental...
  - We will ask for your thoughts at the end of the semester

Outline

- People
  - Me, us, you
- Administrative information
  - Academic conduct
- Class goals
- Reading material

Dave Eckhardt

- Associate Teaching Professor, CS
  - Ph.D., Computer Science, CMU, 2002
    - “An Internet-style Approach to Managing Wireless Link Errors”
  - http://www.cs.cmu.edu/~davide
- Building Unix kernels since ~1985
  - PDP-11, Version 7 Unix
  - “Not really a BSD bigot”

TA's

- “Repeat offenders”
  - Mario Dehesa-Azuara, Tom Chittenden
- This year's model!
  - Amanda Watson, Brandon Lum, John Gallagher
  - [TBD]
- As a team
  - Strong background
  - Here to help!

Yinz - Reading

- Read a Ph.D. thesis?
- Academic journal article?
- Attended an academic conference?
- Read a non-class CS book last semester?

Information Sources

Web site http://www.cs.cmu.edu/~410

- You are ***utterly required*** to read the syllabus

Q: Can I used a linked list for...?

Q: I have a final exam conflict...

Q: The license server is down...

Q: AFS says “no such device”...

- A: staff-410@cs.cmu.edu

Information Sources

Q: I am experiencing [delicate situation X] ...

A: e-mail to faculty

Note: no Piazza this semester

- Experiment was run last semester
- Results equivocal

Course Goals

- Operating Systems
  - What they are
  - Design decisions
  - Actual construction
- Team programming
  - Design, documentation
  - Source control
  - People skills

Course Plan

- Lectures
  - ***Many*** topics will be covered by text
  - But skipping many lectures *will* challenge your grade
    - The map is not the terrain, the slides are not the lecture
    - You will miss Q&A
  - We expect you to attend lectures
    - Details: see syllabus

Course Plan

- Projects
  - "Stack crawler" - readiness check ***[1-person project]***
  - Bare-machine video game ***[1-person project]***
  - Thread library
  - OS kernel
  - Kernel extension
- Project environment
  - Wind River Simics™ PC simulator
  - Your projects can also run on real PC hardware

Course Plan

- Homework assignments
  - ~2, to deepen understanding of selected topics
- Reading assignment
  - Pick something fun, write a ***brief*** report
- Mid-term, Final exam
  - Closed-book

Team programming

- Why?
  - Allows attacking larger problems
  - Teaches ***job skills*** you will need
    - Setting milestones
    - Setting up a productive work flow
    - Involving “management” before it's too late
- Team programming != “software engineering”
  - No requirement analysis
  - No release staging, design for growth, ...
  - Not a complete “life cycle”

Health Problems

- ***Somebody*** will probably get mono or pneumonia
  - If not, only because of something more creative
- Work-blocking health problem?
  - Go ***early*** to University Health (etc.)
  - ***Avoid*** "For the past two weeks I dragged myself to class but couldn't focus on programming"
  - Try to get paper documentation of work restrictions
  - Your program administrator will inform instructors
    - CS: cathyf@cs ; ECE: jmpeters@ece / scyank@andrew ; ...

Partner Problems

- ***Somebody*** will have serious partner trouble
  - You need to "involve management" early
    - Sometimes (50%) we can fix the problem
    - If the problem can't be fixed, we can reduce the fallout
      - ...only if we know while the trouble is happening
  - *Don't* "buffer up" partner trouble until the last week of classes
    - At that point, we basically can't help
  - Details: see syllabus

Academic honesty

- See syllabus!
  - Reading the syllabus on this topic is not optional
- Learning is good
  - ...practices which avoid learning are ***double-plus ungood***
- Plagiarism is bad
  - ...credit ***must*** be given where due
- "Outside code" is *not* a simple yes/no issue
  - You *must not read any outside code* without carefully consulting the syllabus

Academic conduct

- Being a partner
  - Responsible
    - I am writing three grad school applications next week
  - Irresponsible
    - [vanish for 1 week, drop class]

Closing

- comp.risks newsgroup
  - Developers should read this
  - Managers should read this
  - Journalists should read this
- OSC textbook
  - Chapters 1, 2; Chapter 13.1, 13.2, 13.3.3
- OS:P+P textbook
  - Chapters 1, 2; Sections 3.0, 3.5; Section 11.3
- ***Start choosing a partner for P2/P3***