

Announcements for This Lecture

In Phillips 101

Finishing Up	Review Sessions
<ul style="list-style-type: none"> • Submit a course evaluation <ul style="list-style-type: none"> ▪ Will get an e-mail for this ▪ Part of the "participation grade" (e.g. clicker grade) • Final, May 10th 9:00-11:30 <ul style="list-style-type: none"> ▪ Review posted tomorrow • Conflict with Final Exam? <ul style="list-style-type: none"> ▪ e.g. > 2 finals in 24 hours ▪ Submit conflicts on CMS 	<ul style="list-style-type: none"> • Sunday 3-5 <ul style="list-style-type: none"> ▪ Abstract classes, method frames, real & apparent type • Monday 1-4 <ul style="list-style-type: none"> ▪ Arrays and loop invariants ▪ Required algorithms • Tuesday 1-4 <ul style="list-style-type: none"> ▪ Exceptions, recursion ▪ Open question session

Consultant for Next Year?

CS 1130	CS 1110
<ul style="list-style-type: none"> • Requirements: <ul style="list-style-type: none"> ▪ Need an A in this class ▪ Will still be in Java 	<ul style="list-style-type: none"> • Requirements: <ul style="list-style-type: none"> ▪ Need an A in this class ▪ Learn Python on your own
<ul style="list-style-type: none"> • Priority given to CS 2110 alums • Contact Laurie Buck (buck@cs.cornell.edu) <ul style="list-style-type: none"> ▪ Resumé of work & language experience ▪ Indicate work-study eligibility 	

Higher Level Computer Science Courses

• Programming Languages	x1xx (e.g. 1110, 2110)
• Scientific Computing	x2xx (e.g. 3220)
• Data Management	x3xx (e.g. 3300, 4320)
• Systems	x4xx (e.g. 3410, 4410)
• Computational Biology	x5xx (e.g. 5540)
• Graphics and Vision	x6xx (e.g. 4620)
• Artificial Intelligence	x7xx (e.g. 3758, 4700)
• Theory	x8xx (e.g. 4810, 4820)
• Research	x9xx (e.g. 4999)

Programming Languages

- **Adv. Language Topics**
 - Functional languages
 - Streaming languages
 - Parallel programming
- **Language Theory**
 - Creating new languages
 - Implementing a compiler
- **Software Engineering**
 - Design patterns
 - Architecture principles

Scientific Computing

- **Calculus + Computing**
 - Problems from other science domains
 - Process with computer
- **Applications**
 - Complex simulations
 - Physics (games!)
- **Challenge: Performance**
 - Programs can run for days!
 - How do we make faster?

Data Management

- **Modern Web Apps**
 - Storing user/session data
 - Coordinating users
- **Databases**
 - Query languages
 - Database optimization
 - Organizing your data
- **Information Retrieval**
 - Searching
 - Data analysis

Systems

- **Building BIG software**
 - Operating systems
 - Distributed applications (e.g. online, networked)
 - Cloud computing
- Also **System Security**
 - Though that is spread about
- Senior/masters level classes
 - Bulk of the 5xxx courses
 - But great project courses!

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graph TD
    CS3410((CS 3410)) --> CS4410((CS 4410))
    CS4410 --> CS5412((CS 5412))
    CS4410 --> CS5414((CS 5414))
    CS4410 --> CS5420((CS 5420))
    CS5412 --> CS5430((CS 5430))
            
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Graphics and Vision

- **Not** modeling/art!
- **Rendering & Animation**
 - Illumination/reflection
 - Cloth/hair simulation
 - Water and fluids
- **Processing Images**
 - Recognizing shapes
 - Assembling 3D models from 2D pictures
 - Smart cameras

CS 4620

CS 5625

CS 4670

CS 5643

Artificial Intelligence

- **Not** sentient computers
- **Machine learning**
 - Discovering patterns
 - Making predictions
- **Natural Language Proc.**
 - Automatic translation
 - Searching text/books
 - Voice-control interfaces
- **Robotics**
 - Autonomous control

CS 4700

CS 3758

CS 4740

CS 4758

CS 4780

CS 4758

Theory

- **Analysis of Algorithms**
 - What is *possible*?
 - What is *feasible*?
- **Analysis of Structures**
 - Social network theory
 - Complex data structures
- **Cryptography**
 - Theory side of security
- Perhaps the most famous group in the department

CS 4810

CS 4830

CS 4860

CS 4820

What About Games?

- CS 3152, Spring only
 - **Prereq:** CS 2110
 - But CS 3110 a big help
- Build game from scratch
 - Want it to be innovative
 - You own the IP
- Interdisciplinary teams
 - 5 to 6 people on a team
 - With artists/designers
- **Final:** public showcase

Games and the Designer Track

- Coding not your thing?
- INFO 3151 (co-meets)
 - Artists/designer track
 - No formal training needed
 - Submit me a portfolio
- Recommend: INFO 2450
 - Start of the HCI sequence
 - How design effects the user experience
 - Fall course; no prereqs