

# Ph.D. Program Overview

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Carnegie Mellon University  
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# Who I Am

- Researcher, teacher, advisor
- Squash player
- Help is around the corner
  - Your advisor (once you have one)
  - Sharon Burks (Associate Department Head)
  - Me (Director of Graduate Programs, CSD)
  - Jeannette Wing (Department Head)
  - Rob Reeder (Ombudsperson)

# CSD Ph.D. Program Goals

- Provide environment for you to become
  - Outstanding researchers
  - Excellent teachers
  - Future leaders
- The rest is up to **you**
  - Initiative
  - Dedication
  - Service

# Seven Circles of CSD

- Immigration course
- Coursework
- Skills requirements
- Teaching
- Thesis proposal
- Dissertation
- Emigration course

# Immigration Course

- Overview of department and school
- Faculty introductions
  - Research projects
  - Personal styles
- Social events
  - Area parties
  - Login ball

Thu Oct 5, 7:30, Pittsburgh Golf Club  
Be there!

# Finding an Advisor

- Talk to individual faculty
  - Starting right away (especially non-CSD fac.)
  - Sometimes more than once
- Create ranked list (by noon Fri Sep 22)
  - Should have more than one name
  - Comment on choices
- Handshake committee meeting
  - Reconcile faculty and student lists, funding
  - Commitment is not for life!

# Working with an Advisor

- Advisor is mentor, friend, not boss
- Research from day one
  - Project (with fellow students, faculty)
  - Reading and exploration
- Advising styles differ greatly
  - Understand mutual expectations

# Changing Advisors

- Many students change advisors
  - Evolving research interests
  - Mismatch of personal styles
  - Advisor leaving
  - **Not** funding issues
- A routine, constructive process
  - **Not** a personal or professional failure
  - Talk to me, old advisor, new advisor
  - Co-advising sometimes appropriate



# Coursework

- Five star courses, one each from 5 areas
  - Breadth of knowledge
  - Exposure to research styles in different areas
  - Not a filter (no qualifiers or comprehensives)
- Three free graduate electives
  - At least two from within school (SCS)
  - Fahlman unit (TA grad course)
  - Project unit (supervised project)
  - V unit (outreach/vision)

# Areas and Star Courses

- Algorithms/Complexity
  - Algorithms
  - Complexity theory
- Programming Languages
  - Type systems
  - Semantics
- Artificial Intelligence
  - Advanced AI Concepts
  - Machine Learning
  - Planning, Execution, and Learning
- Software Systems
  - Advanced operating and distributed systems
  - Database management systems
  - Networking
- Computer Systems
  - Computer architecture
  - Optimizing compilers

# Skills Requirements

- Speaking
  - Research talk to general CS audience
  - Speaker's Club: uniform, high standards
  - Iterative process
- Writing
  - Two faculty members, one students
  - Iterative process

# Teaching

- Teaching requirement
  - Serve as teaching assistant twice
  - Assigned by undergraduate program administrators (!)
  - Recitation, office hours, assignments, exams, grading, occasional lecture
- TA certification for non-native speakers
- Teaching fellow program
  - With Eberly Center (IC talk today, 4:30)

# Thesis Proposal

- Usually after courses, skills, teaching
- Assemble committee with your advisor
  - Typical: Advisor + 2 CSD/SCS Faculty  
+ 1 Outside CMU
- Written document contains
  - Early thesis outline
  - Partial results
  - Background and related work

# Thesis Proposal Presentation

- 50 minute talk
- Outlines preliminary results and plans
- Convince committee that
  - You have a viable topic
  - You know prior and related work
  - You can carry out the remaining research
- Obtain committee feedback and advice
- Not pass or fail

# Dissertation

- Good writing takes time
  - No staple-gun theses
- Stay in touch with the committee
  - Correct course if necessary
  - Remaining focused can be hard
- Defense
  - Give your committee time to read the thesis
  - Sometimes tricky to schedule
  - Real test comes before

# Emigration Course

- Lectures on
  - Life in the real world (academia, research lab)
  - Job talk and interviewing
- Might attend some before your last year!
- Other preparation
  - Professional conferences
  - Summer internships



# Reminder: Program Goals

- Provide environment for you to become
  - Outstanding researchers
  - Excellent teachers
  - Future leaders
- The rest is up to **you**
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  - Dedication
  - Service

# Black Friday

- Positive (never mind the name!)
- Discussion of students' progress
  - Every student, every semester
  - Advisor speaks on your behalf
- Help for students and advisors
- Warning if progress is unsatisfactory
  - n-1 letter if deemed appropriate
  - Contains specific goals and requirements

# Leave and ABD

- Up to one year leave granted routinely
  - Must be “in good standing”
  - Often, students do not return
  - Applies before thesis proposal
- All But Dissertation (ABD) status
  - Can complete thesis *in absentia*
  - Not recommended; often fails

# Help and Further Information

- Help is around the corner
  - Your advisor (once you have one)
  - Sharon Burks (Associate Department Head)
  - Me (Director of Graduate Programs, CSD)
  - Jeannette Wing (Department Head)
  - Rob Reeder (Ombudsperson)
  - Women@SCS organization
- Ph.D. document, other information via
  - <http://www.cs.cmu.edu/~burks>