



Dissertation and beyond: Ph.D. in CS/SE at UTD

Dr. Jorge Cobb

Department of Computer Science

The University of Texas at Dallas

- Perform significant research which represents original and “substantial contribution to Science”
- Demonstrate technical “maturity”
- Acquire expertise on a particular topic and general knowledge of the impact of the topic on related fields

Note: Courses are not a goal per se; knowledge learned there to be seen as tools for doing successful research

- Year 1: Coursework, qualifying exams, exploration of research areas. **Find a research adviser.**
- Year 2: Read papers, identify problems to solve, start working on research
- Year 3: Form dissertation committee, complete thesis proposal, start publishing papers
- Year 4: Continue publishing papers, write and defend dissertation, look for a job

- 5 Core classes from a chosen MS track plus
- CS 6382: Theory of Computation plus
- at least 5 courses at the 6000 level and
- 2 approved 7000 level CS/SE courses
- Other classes and research/dissertation hours approved by your adviser
- Total of 75 hours beyond B.S. degree
 - Excluding Pre-requisite graduate hours
- Up to 36 hours can be transferred from M.S. degree from other institutions; if approved.

- All prerequisites marked in your admission email corresponding to the chosen M.S. track (of core courses) must be completed within the first year of study.
- Apply for waiver of prerequisites that you believe have been completed in your prior coursework.
- Transfers/waivers are processed only once each semester (around the second month of each semester). Watch for email announcements.
- All requests for transfers/waivers must be made in the first two semesters.



COMPUTER SCIENCE DEPARTMENT GRADUATE ADVISORS

Prof. Pushpa Kumar ECSS 4.407 972.883.6904 pkumar@utdallas.edu
MS (not Thesis) last names A – J

Prof. Laurie Thompson ECSS 3.701 972.883.6326 lthomp@utdallas.edu
MS (not Thesis) last names K – P

Prof. Tim Farage ECSS 3.609 972.883.4836 tfarage@utdallas.edu
MS (not Thesis) last names Q – Z

Prof. Shyam Karrah ECSS 3.907 972.883.4197 skarrah@utdallas.edu
All PhD All MS - Thesis, and IA and SE Tracks All MS-Fast Track

No advising can be done by PHONE...**DO NOT call**...Thank You.

- Qualifying exams (QE) for any 3 core areas:

Object Oriented Software Engineering (6329)

Performance of Computer Networks (6352)

Database Design (6360)

Software Architecture and Design (6362)

Computer Algorithms (6363)

Artificial Intelligence (6364)

Software Testing, Valid'n & Verific'n (6367)

Advanced Programming Languages (6371)

Machine Learning (6375)

Advanced Operating Systems (6378)

Advanced Computer Networks (6390)

- Must attempt each of the 3 QEs within first 2 long semesters.
 - A fail in a QE must be redone (only one chance!) in the next semester
 - Rules are in the Department's web page (read them!)
- Plan your QE schedule **carefully**.
- Prepare well and pass the exams in the first attempt.
- Each core course is guaranteed to be offered once every academic year, and once every calendar year in the evening, but NOT guaranteed once every semester.
- Learn to structure your answers well: intuitive explanation followed by a full analysis

- Choose an area based on your interests, strength, and career prospects
- You are likely to work in this area for the next 10 years, if not 30-40 years
- Don't decide solely based on who is able to offer an assistantship
- Choose a compatible adviser, who is a good match to your working style

- **Networking and Telecommunications**
 - Wireless networks, protocols, optical networks, distributed systems
- **Software Engineering**
 - Embedded systems, Verification & testing, Requirements engineering
- **Intelligent Systems**
 - Artificial intelligence, Computer Vision, Natural language processing, Expert systems
- **Computer Systems**
 - Databases, Computer/Human Interfaces, Multimedia systems, Computer Graphics, Computer security
- **Data Science**
 - Combines parallel and distributed systems, efficient data management and analytics, and an applications of statistics and machine learning.
- **Algorithms and Applications**
 - Algorithms, Optimization problems, Computational geometry, Computational biology

Surf the faculty home pages

- Literature survey: study the results in your area. You cannot create new knowledge without knowing what is already known
- Find new, interesting problems in which you can do research. Guidance of your adviser is very important in choosing the “right” problem
- Learn to read research articles quickly
- Continue to read new papers in journals and conferences in your area regularly
- Keep looking for new problems to solve

- You are publishing in:
 - reputed journals (ACM / IEEE / SIAM)
 - reputed conferences
- Your work is cited by other leading researchers
- Your work spawns follow-up papers
- Balance quality and quantity
- Your Faculty Supervisor says so!

- Publish good quality work, often
- Always have several problems on which you are working
- Spend a lot of time (in concentrated doses) working on your research
- Discuss your ideas with your colleagues
- Keep on the lookout for new papers/ideas/problems

Publish or Perish!

- Get good grades
- Make steady progress
- Pass 3 qualifying exams (QEs)
- Publish papers in reputed conferences and journals
- Try to graduate in 4 years
- Find a Faculty Supervisor who is not over extended!

- It may be better to find a postdoc position first in a reputed place.
- Need publications in prominent places, in areas where there are openings.
- Meet other people in conferences and workshops and make friends (network!)
- Give invited talks in other universities, labs

- Dean of graduate studies:
<http://www.utdallas.edu/ogs/>
- Graduate catalog
<http://www.utdallas.edu/student/catalog/index.html>
- CS Department Web site
<https://cs.utdallas.edu/>
<https://cs.utdallas.edu/education/graduate/>
- Ph.D. information in CS Catalog Web site:
<http://catalog.utdallas.edu/now/graduate/programs/ecs/>
- Frequently Asked Questions
<http://cs.utdallas.edu/education/graduate/graduate-faq/>
Dr. Jorge Cobb (cobb@utdallas.edu) ECSS 4.208

- Course work
- Qualifying exams
- Choosing area of research and adviser
- Getting started on research
- Dissertation committee
- Dissertation proposal
- Dissertation submission
- Finding a (academic) job

- Time management
- Speed-reading of technical articles
- Deep understanding of state-of-the-art and current methods
- Formulation of new problems
- Quick evaluation of new problems and solution methods (to decide if they are worth pursuing)

Any Questions?