

CISC-810: Research Foundations

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PhD Program in Computing and Information Sciences

PhD Assessments

- *Research Potential Assessment*: after one year of full-time study.
- *Thesis Proposal Defense*: within 24 months of passing the research potential assessment.
- *Dissertation Defense*: after all the coursework, assessments, and original research have been successfully completed, including at least one publication (published or accepted) at a high quality/high impact venue.
- *Publication requirement*.

Course Objectives

- Be able to analyze the current research achievements and methodologies in computing and information sciences (and their specific research focus areas), and to identify the opportunities and directions of their own research through conducting bibliography review, patent search, and critical analysis.
- Be able to analyze their accomplishments and to formulate the research results in the forms commonly used for submissions to peer-reviewed journals and conferences in their *fields*.
- Be able to present the research outcomes appropriately targeted at specific audiences.
- Be able to identify and will be prepared to address possible ethical issues related to their research and publications.

Research

- Finding, describing, framing to clearly and credibly answer a question (or set of questions)
- **PhD in Computing & Information Sciences**
 - *Not just Computer Science!*
 - Computers, People, Purpose

Research Careers

- Quality of work (acceptance in peer reviewed medium)
 - Conferences, journals, books, ...
 - Software, patents, ...
- Volume of work
- Monetary value of work / responsibilities
 - Grants, contracts, salaries, positions, ...
 - Intellectual property

Yes, there might be somewhat competing factors.

Research: a creative process

- Not procedural
- Not linear, although may be reported in a linear fashion
- Starts and stops, jumps, intuitions, changes
- **Important:** there is no perfect research process

Fail early, fail often.

That's how you can/will grow!

Homework

- Reading assignment:
 - *Trochim & Donnelly*
 - Foundations
 - Language of Research
 - Philosophy of Research

Homework

- Cooking assignment:
 - Cook your favorite dish!
 - Materials, recipe, *actual cooking process*
 - How does it taste? Good, bad, potential areas of improvement *according to your taste*.
 - Write it up.
 - Due Tuesday, August 25.