CS 3950 Intro to CS Research

VICEROY focus for DECREE Students

Fall 2022

Logistics

The class will follow NUFlex Auto with me remotely dialing into the classroom.

Office hours: TBD

Teaching Assistants: TBD

Course Description

Provides students with an introduction to research in the fields of computer science, information science, data science, and cybersecurity. Explores how the scientific method is applied to these fields, covers the breadth of sub-areas of specialty that exist, and gives students practice on how to locate and read scientific literature in different sub-areas. Also provides students with an overview of graduate education in these fields.

> ***Decree Virtual Institute Students will focus their research area into those determined by the Viceroy special interest areas.***

Goals and Format

By the end of this course, I expect you to:

- Gain an appreciation for the diverse areas encompassing modern computer science, data science, and cybersecurity
- Understand different approaches to research in computer science, including proofs, observational studies, and implementation-driven research
- Be able to read and ask questions of a computer science research paper
- Present and answer questions about a technical paper
- Understand how graduate education in computer science works

As this course is closest to a seminar course, the structure will consist of three components:

Lectures on the Basics of Research The first few weeks will consist of lectures and discussions on the basics of computer science, research, and graduate studies. There will weekly assignments consisting of homework and background reading.

Reading and Discussing Papers The middle few weeks of the course will consist of reading and discussing papers from different areas of computer science. The focus will be on different styles of research, and how the results are presented.

Paper presentations The final few weeks of the class will consist of student presentations of research papers in groups. Each group will be expected to give 15-minute presentations on papers of their choice (subject to constraints discussed in class), followed by leading a 10–15 minute discussion of the paper.

Prerequisites

The official prerequisite for this course is CS 2500, or permission of the instructor. You will only need a basic knowledge of programming to take this course. This course will be largely discussion-based, and you will be expected to actively participate in class.

Grading

Participation	40%
HomeWorks	30%
Presentation	30%

The HomeWorks and presentations can be executed in small teams of 2.

Schedule

Topic
Introduction / Logistics
Science in Computer Science / Overview of CS Research Areas
How to read (and write) a (good) research paper
Research Area talk
Research Area talk
Research Area talk
Research Area talk
Research Area talk
Research Area talk
PhD student panel
Ethics in Research
Presentations
Presentations