

Computer Science 399 senior seminar
(2018-2019)

Instructor: Professor Steven Lindell

Schedule: Mondays 7:30-10:00 PM in E309

Overview: According to the college catalog, the senior thesis is an opportunity “to challenge the student’s powers of analysis and synthesis and to foster the creative use of the knowledge and skills that have been acquired in previous studies.” As such, it is the culmination of your course work at Haverford, and for many students can be the highlight of their college experience. Proper attention to details and deadlines will make this a successful and pleasant experience for you and your advisor.

This year, the senior thesis requirement in CS can be satisfied in one semester by taking 399 in *either the fall or spring*. The requirements include a thorough literature review of a research topic, culminating in a written thesis and an informal presentation at a poster session toward the end of the semester. Work on a fall thesis can be continued into the spring with agreement of your advisor, and the second semester will count as a 300-level research elective toward the CS major. Students who choose this option typically engage in original research contributions extending their literature review, the demonstration of which can be a factor in determining departmental honors. In previous years, these full year theses have included a formal presentation at the end of the spring semester.

You will undertake all of this under the guidance of a faculty advisor on a topic jointly chosen by you and your advisor. Begin by looking at the thesis advising topics documents posted by faculty and following the links provided on the course web page. Selection of a proper topic is one of the most important steps of the thesis process; a good topic will be of interest to both student and their advisor.

Details: An undergraduate senior paper must present an in-depth exploration of a topic in computer science, with special focus on understanding and evaluating some element of the computer science literature. The paper should demonstrate the student’s ability to apply, in a new context, the fundamental themes and objectives that connect all CS classes, such as:

- separating a problem definition from its solution.
- describing clearly a proposed solution (typically with examples).
- understanding the correctness and applicability of a proposed solution.
- comparing several proposed solutions in terms of clarity, resource requirements, etc.

It is common for the thesis to center on an algorithm or computing system and present the correctness and/or computational complexity thereof. However, this is not required. Students have successfully pursued other diverse topics, such as human-computer interaction. The one core requirement is that the student demonstrates the ability to think deeply and communicate clearly about a computer science topic beyond the depth covered in classes. The written thesis therefore often resembles a review article, which explores in depth a collection of primary source articles from a single research group, or a survey article, which compares primary sources from different origins. Students will be expected to demonstrate all of this in accordance with the deadlines overleaf.

The single most important factor for success is a regular weekly meeting with your thesis adviser.

Full-year students will be continuing with the same adviser from last semester.

One-semester students have already been assigned an adviser last semester.

Schedule and deadlines
(Spring 2019)

- 1/24* Orientation. Go over requirements and schedule for the remainder of the semester.
- 1/28 Discuss requirements for the literature review (one-semester thesis students only).
- 2/4 No meeting. However, reserach proposals are due at the end of the week (February 8th).
- 2/11 Mini-presentations (one-semester students only)
- 2/18 No meeting.
- 2/25 A *complete rough draft* of your thesis is due. Submit it to me (PDF) and your faculty advisor.
- 3/4 No meeting.
- 3/11 Spring break
- 3/18 Meet to determine rehearsal schedule for oral presentations (full-year students only)
- 3/25 A *full draft* including all the content for all the sections, is due to your advisor.
- 4/1 1st group of rehearsals (full-year students only)
- 4/8 2nd group of rehearsals (full-year students only)
- 4/15 3rd group of rehearsals (full-year students only)
- 4/22 Poster presentation (one-semester students only)
- 4/29 The *final version* of your thesis is due, submitted to your advisor and me.
- 5/6 Oral presentations (full-year students only).

* Thursday evening

Grading: Attendance and participation in senior seminar (including the oral or poster presentation), together with meeting deadlines, will account for about 25% of your grade. The remaining 75% is based on the thesis itself, and our assessment of your understanding of it. Your advisor is the most crucial element in determining this latter component.

The senior paper is primarily assessed by the student's advisor. Usually one or more other members of the department also read the paper and provide feedback for the student and advisor; if the student has a separate subject-matter advisor at another institution, that advisor is consulted during the grading of the paper if possible. All faculty (and many students) are typically in attendance for the oral presentation. The grade for the senior experience is assigned by the advisor, based on the quality of the student's written paper (judged in terms of illustrating mastery of the learning objectives relevant to the chosen topic), on participation in the oral presentation, and on work habits demonstrated during the year's work.