



Department/Curriculum Overview

The Department of Computer Science at the University of Dayton (UD) offers a discipline that focuses on the complete software development process including design, programming, and testing. The department offers two programs leading to a Bachelor of Science Degree: Computer Science (CPS) and Computer Information Systems (CIS).

The Bachelor of Science in Computer Science is ABET accredited. Both programs require introductory courses in various topics in computer science that provide a foundation for students as they embark on successful careers in a variety of computing disciplines, including software engineering, system design, database management, data science, autonomous systems, ambient intelligence, gaming, cybersecurity, computer networking, systems programming, and systems administration. Students in both programs (CPS and CIS) must complete 120 credit hours of coursework including two mandatory capstone courses (3 credit hours each) as below.

CPS 490. Capstone I (3 hours)

Examination of principles, practices, and methodology for the development of large software systems using data flow and object-oriented methodologies. User interface design, software testing, and software project management. Selecting and planning a team project; this involves team formation, project selection, project planning, and proposal writing and presentation.

Prerequisite: CPS 350

CPS 491. Capstone II (3 hours)

An exercise in the design, implementation, documentation, and deployment of a group project culminating in a presentation to the computer science faculty and industry representatives.

Prerequisite: CPS 490

In CPS 490, the instructor will deliver lectures during the first 12 weeks of the semester covering topics in software architectures, contemporary programming technologies and tools, software testing, and software project management. The students will conduct hands-on labs related to these topics so that students can gain experiences in but not limited to user interface and database design, debugging and code management with “git”, and teamwork skills with agile software development (Scrum). Students are tasked with forming a team of 2-4 members to develop a small-scale project proposed by the instructor. The project will be based on the hands-on labs so that students can learn the basic background, and develop their teamwork and self-study skills.

Beginning approximately the 10th week of the semester, students will begin working on their Capstone II projects. The students will spend the remaining time in Capstone I (~6 weeks) working as a group under the supervision of the instructor to design their applications focusing on use cases, architecture, and related technologies in preparation for Capstone II.

In Capstone II, the teams will design and implement their system through agile development cycles. Students will periodically meet with the various stakeholders (instructor and client representatives) throughout the semester.



Call for collaboration

The department is currently soliciting prospective projects for the Capstone series for upcoming academic years.

Prospective projects should have a scope to accommodate 2-4 students and be representative of real-world problems necessitating the use of relevant technologies.

The department would like to point out that there is no requirement as to the specific technologies that these projects employ. The desire is to generate a large pool of projects that pose unique challenges for our students.

Timeline

- September–October: Open solicitation of prospective capstone projects.
- October–December: Students work on requirement engineering, analysis, and design.
- January–May: Students actively work on the development of the project.

Expected outcomes

In addition to gaining the skills and knowledge of practical problem solving and software development, students are expected to be involved in the software development process at the company, supervised by a technical sponsor.

Commitment from clients

The department does not expect for the students to require any external funding. The only exception would be if the proposed project requires the use of specialized software for which the department does not have a readily available student license.

We do ask that our clients plan to have a person designated as the point-of-contact who will serve in an advising role and help mentor the students working on the project.

Proposal Document

The department requests interested parties provide a 1-2 page “project proposal” document that broadly describes the project. Outside of the general project description, it may prove beneficial to address topics such as:

- Targeted audience
 - An internal company application? Something that will be broadly accessible? etc. •
- Current state of the project/version
 - Is this a new/novel proposal? Building upon existing infrastructure?
- Anticipated development environment (technologies such as software/services)



The department (Chair, faculty supervisor, and CPS advising director) will meet to discuss the scope and suitability of the proposed projects in early-mid October and will remain in contact with all proposers.

Student selection of proposed projects

Once all of the project proposals have gone through departmental review, they will be made available to the Capstone students.

The department encourages all of our prospective clients to “pitch” their proposal and engage with the Capstone students. The department can accommodate several modalities to fit various needs. This can be done both in-person and virtually, and at a time that best accommodates everyone.

The CPS 490 – Capstone I course meets twice a week. If an evening or Friday afternoon time is needed, please consult with one of the department contacts to make the necessary arrangements.

Evaluation of student progress

As the students carry-out the design and implementation in sprints with reports/presentations weekly or bi-weekly. The expectation is that students will work 9-12 hours per week on the project and will report to the instructor in person twice a week following the Scrum process.

Students are also expected to organize a meeting with a client representative weekly or bi-weekly.

Department Contacts

Beginning Fall of 2022, Dr. Nick Stiffler will be the faculty mentor supervising the department’s Capstone courses. He is taking over for Dr. Phu Phung who had supervised the courses from Fall of 2018 to Spring 2022.

Below is the contact information for the following individuals:

1. The faculty supervisor for the capstone courses,
2. The Director for Student Advising and Department Initiatives
3. The Department Chairperson

If you have any questions, please reach out to CPS@udayton.edu

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