



### 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 - Capstone I, the instructor will deliver lectures 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 3-4 members to develop a small-scale project proposed by the department. The project will be based on the hands-on lab exercises so that students can learn the basic background, and develop their teamwork and self-study skills.

In CPS 491 - Capstone II, students will be split into teams of 3-4 members and will be tasked with providing various services for client sponsored projects. The intuition is that there are three development phases for the project that will see the students progress through the development lifecycle from planning, design, development, and production. 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 3-4 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

<b>Summer - November</b>	Open solicitation of prospective capstone projects.
<b>December - January</b>	Capstone II project selection process. Students engage with clients to develop project requirements, perform initial analysis, and formulate preliminary designs.
<b>February-April</b>	Students actively work on the development of the project.
<b>April</b>	Students deliver a final project presentation and submit client deliverables.

### 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 has an initial client interest form that can be found [here](https://udayton.edu/artssciences/academics/computerscience/capstone/capstone-form.php):

↳ <https://udayton.edu/artssciences/academics/computerscience/capstone/capstone-form.php>

In lieu of this form, interested parties can 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 (Undergraduate Program Director, Instructor, and CPS advising director) will meet to discuss the scope and suitability of the proposed projects on a rolling basis and will remain in contact with all proposers.

### Selection of proposed projects

In November, all department approved project proposals will be made available to the Capstone students. Who will then complete an interest form identifying which projects they are most interested in joining.

The CPS Undergraduate director, in consultation with the Capstone Instructor(s) and CPS academic advisor(s) will assign projects and perform initial introductions.

We encourage all prospective clients to "pitch" their proposals to ensure the best engagement with our Capstone students. The most effective way to do this is by creating a short video (1-3 minutes) that conveys key information about the project. Department representatives will reach out in October to remind prospective clients of this option and provide assistance with any technical issues.

### Evaluation of student progress in Capstone II

As students progress through the semester, they will maintain constant communication with the instructor. They are expected to work on the project for 9-12 hours per week and provide weekly in-person updates to the instructor.

To ensure thorough documentation and adherence to industry-standard software design principles, there will be three major check-ins. During these check-ins, students must submit all work completed up to that point and demonstrate their technical writing skills by submitting a project report.

Additionally, students are expected to arrange regular meetings with a client representative, typically on a weekly or bi-weekly basis.

### Department Contacts

Below is the contact information for the following individuals:

1. The Instructor for the capstone courses for the 2025-2026 academic year,
2. The Undergraduate Program Director,
3. The Director for Student Advising and Department Initiatives

If you have any questions, please reach out to [CPS@udayton.edu](mailto:CPS@udayton.edu)

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