

**Call for industry collaboration for capstone projects  
for Undergraduate students  
in the Department of Computer Science,  
University of Dayton**

## Background

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 similar introductory core sequence of courses in computer science and provide a foundation for students to 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 must complete 120 credit hours 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(s): 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(s): CPS 490.

Since Fall 2018, Dr. Phu Phung (<http://academic.udayton.edu/phuphung/>) has been responsible for the CPS 490 - Capstone I. CPS 491 - Capstone II will be continued in the next Spring semester with the same students (expected). In CPS 490, Dr. Phung will deliver lectures in the first 12 weeks to cover the topics of software architectures, contemporary programming technologies and tools, software testing, and software project management. There will be hands-on labs on these topics so that students can gain experiences on e.g., user interface and database design, debugging and code management with “git”, and teamwork skills with agile software development (Scrum). Students will work on a team of 3 members to develop a small-scale project proposed by the instructor. The project will be based on hands-on labs so that students can learn the basic background, and they develop their teamwork and self-study skills. From week 10th, students will work on their group in the last 6 weeks under the supervision of the instructor to design their applications include the use cases, architecture to prepare for their Capstone II projects. From the Spring semester, the teams will design and implement their system through agile development cycles. Dr. Phung expects that students can involve in real-world projects sponsored by companies.

## Call for collaboration

Dr. Phung would like to request from a company a medium-size project for about 2-3 students to start working on requirement engineering, analysis, and design from mid-October to early December. The teams will continue the project from mid-January to early-May in the following year.

The expected projects are real-world problems involving some latest technologies and background concepts such as a database, cloud-based services and so on. In addition to gaining the skills and knowledge of practical problem solving and software development, students are expected to be involved in a software development process at the company, supervised by a technical sponsor.

The students will not need any funding, but advising from the company is expected. For example, the students can visit the company to do requirements engineering, and then do the design and implementation in sprints with reports/presentations weekly or bi-weekly. The students are delighted to work about 10-12 hours per week on the project and will be reported to the instructor in person twice a week following the Scrum process.

## Contact

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