



## Industry Sponsored Capstone Projects

Courses IT 4983, IT 7997, SWE 4724, SWE7903, CS 4850

The capstone projects in the College of Computing and Software Engineering (CCSE) serve as the culmination of students' academic journey, providing them with an opportunity to apply their accumulated knowledge and skills to real-world problems. Through interdisciplinary teamwork, students tackle complex challenges in information technology, computer science, and software engineering domains. Projects that involve collaboration with industry sponsors provide students with practical experience and potential job opportunities. Companies often use this course as an opportunity to screen candidates for potential placement (i.e. a 15-week job interview).

### About The Classes:

Students **collaborate in teams**, mirroring industry settings, to address and solve real business problems. Emphasis is placed on essential **project management skills**, including project scope definition, planning, documentation, and progress reporting. Students apply **technical skills** acquired throughout their academic coursework, including programming, system design, and software development, to develop innovative solutions. Strong focus is placed on developing effective **communication skills** through regular presentations, documentation, and team coordination. Students develop **customer-facing skills** by interacting with industry sponsors, understanding client needs, and incorporating feedback into their projects. Emphasis on **gathering, analyzing, and documenting requirements** to ensure the final product meets the sponsor's needs and expectations. Regular opportunities for students to practice and refine their **presentation skills**, culminating in a final presentation to industry sponsors and faculty.

### Sponsorship Process

Industry sponsorship is a vital aspect of these capstone projects, providing students with real-world business problems to solve and fostering meaningful engagement with industry partners.

## Commitment Required from Sponsors:

Sponsors provide a typical business problem in their area of expertise (see **Project Areas** below e.g., web design, migration activity, evaluation of new software/technology, educational game, cybersecurity, AI-based chatbots, and more). Capstones are better suited for development of proofs of concept that can be later evolved into bigger projects, with or without participation from KSU. The work must be achievable in a semester with a single course workload level of effort (approximately 400 working hours). Our CCSE Engagements team can help scope and specify the problem to make it fit.

There is a Student Experience contract that each sponsor signs that covers things like confidentiality and ownership of Intellectual Property. Changes can be made per sponsor's requests, conditional to KSU Legal team approval. Students are required to sign an agreement from their side as well.

Specifications must be received by July 15<sup>th</sup> for fall semester and by December 15<sup>th</sup> for spring semester so that they can be prepared for the students.

Additional engagement requirements:

- Weekly meetings with students for guidance and feedback (30-60 minutes)
- Attendance at milestone presentations (3 per semester, including the final demo: 1 hour or less)
- Providing feedback to instructors for grading consideration at the end of the class (less than 30 minutes per project)

## Project Areas

Examples of typical capstone projects:

- Web design: develop a new website or uplift the existing one (AI-based chatbots, look and feel, statistics and monitoring) or migrate an existing website to a different platform, such as MS SharePoint
- Full stack web or mobile application, preferably using AI: wellbeing, collaboration, eCommerce
- Process automation and monitoring
- Educational/learning game
- Cybersecurity related projects
- Evaluation of a new technology : Kafka middleware, MS SharePoint, Proxmox
- Migration activity: data migration from NoSQL to relational database, data masking



## Pricing Model:

- The standard sponsorship fee is **\$5,000**
- The fee **may** be waived under certain conditions, for example:
  - Charity organizations
  - Exceptional projects that are beneficial for students when the company lacks a budget
  - Internally sponsored by CCSE or other KSU entities for beneficial partnerships
- If the sponsor requests proprietary ownership of the intellectual property (IP), preventing students from presenting their work, the cost is **\$15,000**

## Fund Allocation:

Sponsorship funds support:

- Student stipends
- Faculty support
- Showcase events and student support (e.g., cloud hosting, licensed software, conference attendance to showcase capstone solutions)

## Infrastructure Support:

Students receive infrastructure support, including virtual hardware and licensed software, or are given access to company-hosted infrastructure if this is the sponsors preference, to facilitate project development.

## Capstone initiation process:

The request is typically submitted through [Capstone Proposal Form](#). Once submitted, CCSE Engagement team receives it and works with the sponsors and CCSE faculty to create a comprehensive spec. Students are not assigned capstone projects. Instead, professors allow them to make a choice, therefore, CCSE Engagement team takes several steps to showcase the attractiveness of industry- sponsored projects to students. We will create a presentation to advertise the project to the students. We encourage sponsors to record a brief video highlighting their project and showcasing its attractiveness to students, which will be combined and shown to students during one of the first capstone classes.

Sponsors would indicate how many student teams they would be willing to work with: our recommendation is 2-3 teams. Team formation is typically completed during the first 1-2 weeks of the semester, following which sponsors have their first introductory meeting with students.