



# The Capstone Experience

*From Students...to Professionals*

CSE498, Collaborative Design, Fall 2017  
Computer Science and Engineering  
Michigan State University

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## Syllabus

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### 1. Professor

Dr. Wayne Dyksen  
Professor of Computer Science and Engineering  
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### 2. Teaching Assistants

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### 3. Meeting Times

Lecture: Monday, Wednesday, 3:00 – 4:20 p.m., [1279 Anthony Hall](#)  
Lab: TBA, [3352 Engineering Building](#)

### 4. Web Site

[www.capstone.cse.msu.edu](http://www.capstone.cse.msu.edu)

### 5. Catalog Description

Credits: 4 (2 – 4), Lecture/Recitation/Discussion Hours: 2, Lab Hours: 4.

Prerequisite: {(CSE 420 or CSE 422 or CSE 425 or CSE 435 or CSE 440 or CSE 450) or (CSE 460 or CSE 471 or CSE 472 or CSE 473 or CSE 480 or CSE 484)} and ((CSE 335 and CSE 410) and completion of Tier I writing requirement).

Restrictions: Open only to majors in the Department of Computer Science and Engineering.

Description: Development of a comprehensive software and/or hardware solution to a problem in a team setting with emphasis on working with a client. Participation in a design cycle including specification, design, implementation, testing, maintenance, and documentation. Issues of professionalism, ethics, and communication.

### 6. Prerequisites

In order to be enrolled in CSE498, you must have successfully completed in advance all of the following: Tier I writing requirement, CSE335, CSE410, and one other 400-level CSE course other than CSE491.

If you have not met these prerequisites, you will be disenrolled from CSE498 unless you have specific permission to enroll from the instructor.

### 7. Course Objectives

The course objectives for CSE498 include (but are not limited to) the following:

- design, develop, debug, document, and deliver a complete software system to a client;
- work effectively in a team environment;
- develop written and oral communication skills;
- become proficient with software development tools and environments;
- learn about system building and system administration;
- consider issues of professionalism and ethics; and
- integrate knowledge and skills from other computer science courses.

### 8. Team Projects

Each team will design, develop, debug, document, and deliver a complete software system for a client. The client organizations range in type from industry to non-profits to academic and in size from

small to large.

Client contacts are busy professionals. With respect to CSE498, they are volunteers who are doing you and your team a favor. You must work with them in a respectful manner. If you have problems getting responses from your client contacts, let us know and we will handle it.

Each team will select a particular team member who will be the main contact to the client organization. The computing experiences of your client organizations and client contacts will vary widely from software users to experienced software developers.

For most of your academic experiences, you have been handed a complete system architecture with detailed specifications and asked to develop it. For this course, architecting the system and designing the specifications may be your most difficult challenge, particular when talking with users who are not sure about what they want.

Each project must be of the right level of difficulty. On the one hand, it must be difficult enough to warrant four credits in a computer science major from one of the top programs in the country, MSU. On the other, it must be simple enough to be doable in one semester. What constitutes the right level of difficulty will be something that each team will work out with the client and with us. As you design your projects, consider doing so with levels of deliverables where the first level is clearly doable, the second is likely doable, and the third is possibly doable.

You must deliver a completed project to your client. Period. There will be no exceptions. No excuses will be considered or accepted. Thus, it is in your team's best interest to propose something that is workable in conjunction with your client.

Each project will be turned over to the client after completion.

#### 9. Course Materials

There are no required or recommended textbooks, software or course packets to be purchased for this course. You will be provided with any and all software, hardware, and documentation required to complete your team project.

#### 10. Course Environment

One goal of this course is to give you a non-academic experience. Hence, we will run this course as business-like as possible. We will view each team as a small company attempting to deliver a product to a client. We will assign students to teams so as to best distribute the variety of skills and experiences.

#### 11. Team Dynamics

One goal of this course is to give you a significant experience working on a team. You may be working with people whom you did not know and whose experiences and abilities may be very different from yours. The challenge is to take your disparate group of individuals and form a real team. Each team may organize itself as it sees fit; we will offer advice and counsel.

#### 12. Project Management, Major Milestones, and Deliverables

Each team will be expected to manage its own project. Each project will be divided up into milestones with specific deliverables due on specific dates as determined by the team. While the completed project at the end of the semester is one very important milestone, all of the milestones will be considered important. Meeting the deliverable deadlines will factor significantly into your grade.

For a description of major milestones with due dates see [Major Milestones](#).

Project deliverables include the following.

- [Project Plan Presentation](#) & Document
- [Alpha Presentation](#)
- [Beta Presentation](#)
- [Project Video](#)
- Project Software and Documentation
- [Design Day](#)

#### 13. All-Hands Meetings (Class Meetings)

All-hands meetings are held in [1279 Anthony Hall](#).

The format of all-hands meetings includes lectures, team status reports, and team formal presentations. On-time attendance is required. Almost no excuses for absences are accepted. Attendance is a significant factor in your grade comprising at least 5% of your final grade. (See [Grading](#) below.) Up to one full percentage point may be deducted for each unexcused absence.

Team members who are late may be marked absent. In order for us to record everything accurately, team members who are late must acknowledge their lateness with the teaching assistant and sit near the teaching assistant.

Attendance will be taken using a sheet on which you will sign your name. If you arrange to have someone forge your signature or if you forge someone else's signature, you may lose all of your attendance points and you may receive a zero in the course.

If you have more than five unexcused absences, your attendance grade may be negative, which will effectively deduct points from other grade categories. Moreover, if you have more than five unexcused absences, your Team Contribution grade may be affected, which may have a significant effect on your final grade. (See [Grading](#) below.)

One or two all-hands meetings may be missed in the case of job interviews. In order to be excused, you must supply the instructor and your teaching assistant in advance with the meeting date to be missed, the name of the company, the name and contact information (email and phone number) of your recruiter.

Attendance at meetings during which your team makes a presentation is absolutely required. No excuses for absence will be accepted, including job interviews. In general, there will be multiple meetings for each type of team presentation. If necessary, we will work with you to attempt to coordinate as much as possible team presentations and job interviews. If you are absent for any of your team presentation all-hands meetings, you may lose all of your Attendance points and you may lose Team Contribution points.

On meeting days when teams make presentations, including but not limited to [Project Plan Presentations](#), [Alpha Presentations](#) and [Beta Presentations](#), we may begin our meetings approximately 10 minutes early to provide a bit of extra time which we may need in the event that teams experience problems setting up their equipment.

We will be viewing the final project videos together during the regularly scheduled meeting times on December 4 and December 6 and during the scheduled final exam time, which is Monday, December 11, 3:00 – 5:00 p.m.. Attendance by everyone for viewing all project videos is required. Do not schedule any trips during these times. Interviews will not be accepted as an excuse for missing any of the final project video viewings. If you are absent for any of these final all-hands meetings, you may lose all of your Attendance points.

#### 14. Use of Laptops and Mobile Devices During All-Hands Meetings

Laptops and mobile devices are not to be used during all-hands meetings except when giving presentations and demonstrations. In particular, reading email, IM-ing, texting, web surfing, etc. are prohibited.

If you continue to use a laptop or mobile device after being asked to refrain, you may be asked to surrender it until the end of our meeting.

#### 15. Triage Meetings

Each team will hold a weekly triage meeting with their teaching assistant. Attendance by every team member is required. Almost no excuses for absences will be accepted. Attendance will be a factor in your grade. Attendance will be a factor in your grade comprising 5% of your final grade. Up to one full percentage point may be deducted for each unexcused absence at triage meetings.

One or two triage meetings may be missed in the case of job interviews. In order to be excused, you must supply the instructor and your teaching assistant in advance with the meeting date to be missed, the name of the company, the name and contact information (email and phone number) of your recruiter.

#### 16. The Capstone Experience Lab Sponsored By Urban Science

The lab is [3352 Engineering Building](#).

The Capstone Experience Lab has a key code lock, which we will give to you. Each team will be assigned iMacs and a rack-mounted server if required. Each team will be completely responsible for its machines, including building them, maintaining them, securing them (both internally and externally), and backing them up.

The Capstone Experience Lab includes a conference area that can be used for team meetings and for conference calls with clients. Use of the conference area is scheduled via a shared Google calendar. Follow the [Conference Calendar](#) link on the course web site to access the calendar. Follow the [Calendar Help and Policies](#) link for instructions on using the calendar.

The lab also includes a water cooler with bottled water, a refrigerator, a microwave and a coffee maker. You are welcome to use all three. These are shared resources. Please keep these appliances along with the entire lab clean.

#### 17. Scheduled Lab Times

There will be no formal lab sessions. However, teams are expected to meet at least twice weekly, once for triage meetings with the instructor and/or teaching assistant and once for team meetings.

#### 18. Design Day

The College of Engineering sponsors [Design Day](#) on which student teams demonstrate their projects to the public. We will be participating in Design Day, which will be held on Friday, December 8. You will be involved on Thursday, December 7 doing the setup and on Friday, December 8 doing the exposition, a presentation to the judges, and the tear-down.

Everyone is required to attend and participate in Design Day on both Thursday, December 7 and Friday, December 8. Do not schedule any trips during these times. Interviews will not be accepted as an excuse for missing any of the Design Day activities.

If you do not participate in Design Day, you may lose all of your Attendance points and you may lose Team Contribution points.

#### 19. Expectations and Workload

We have high workload expectations for this course. It is one of your most important courses for your resume and your portfolio of experiences. It will be the capstone of your computer science career at MSU. This course will provide each of you the opportunity to showcase your abilities on a significant non-academic software project. Your capstone experience can provide you with some significant talking points for future job interviews.

#### 20. Grading

Your final grade will be based both on your team performance and your individual performance. What follows is a list of grading categories along with the point distribution.

##### Team Grade (70%)

<u>Project Plan Presentation</u> & Document	10
<u>Alpha Presentation</u>	10
<u>Beta Presentation</u>	10
<u>Project Video</u>	10
Project Software & Documentation	25
<u>Design Day</u>	<u>5</u>
Team Total	70

##### Individual Grade (30%)

Technical Contribution	10
Team Contribution	10
Team Evaluation	5
All-Hands and Triage Meeting Attendance	<u>5</u>
Individual Total	30

For a final grade, each individual will earn the sum of their individual grade plus a prorated percentage of the team grade based on the corresponding percentage of their "Team Contribution" grade as follows:

$$\text{Prorated Team Total} = (\text{Team Total}) * (\text{Team Contribution}) / 10.0,$$

$$\text{Grand Total} = (\text{Individual Total}) + (\text{Prorated Team Total}).$$

Note that your Team Contribution grade has a very significant effect on your final grade.

For example, if an individual's Team Contribution grade is 10, then they will earn 100% of the team grade. If the Team Contribution is 9, then they will earn 90% of the team grade, and so on.

So, if you are not a contributing team member, you run the risk of not passing CSE498, which is required for graduation.

In other courses, you may have experienced team projects in which one person or a few persons did all of the work, while everyone on the team received the same credit and the same grade for the entire team. This is not the case in CSE498. You will be evaluated on your individual technical contribution and your team contribution. If you do not contribute significantly, you may not pass.

No special consideration will be given for final grades including but not limited to status as a CSE major, status in any academic program, financial aid, rank in the armed forces, job while a student at MSU, job after anticipated graduation from MSU, commute to MSU, graduation, mortgage, upcoming weddings, ability to enroll in CSE498 next semester, or visa status.

We reserve the right to make reasonable changes during the semester with sufficient notice.

#### 21. Travel Reimbursement Policy

Teams traveling to their project sponsor may be reimbursed for mileage for the use of a personal car. Travel reimbursement is limited to travel within the State of Michigan outside of the Lansing area. Reimbursement is also limited to one car per team per trip.

To be reimbursed for travel mileage, see one of the administrative assistants in the CSE office in advance. If you do not request permission to travel and be reimbursed in advance, we will not be able to reimburse you.

#### 22. VISA (Verified Individualized Services and Accommodations)

If you have a VISA document, contact one of the instructors as soon as possible. We are committed to working with you.

#### 23. Integrity of Scholarship

The Department of Computer Science and Engineering expects all students to adhere to MSU's policy on Integrity of Scholarship and Grades, which includes the statement, "...all academic work will be done by the student to whom it is assigned, without unauthorized aid of any kind" (Academic

Programs, General Procedures and Regulations). General Student Regulation 1.00 in the student handbook (Spartan Life) also addresses this issue.

24. *Nota Bene*

In the case of discrepancies between the version of the syllabus posted on the course web site [Syllabus](#) page and the [downloadable PDF version](#), the web site version takes precedence.

We reserve the right to make reasonable changes to this syllabus during the semester with reasonable notice.

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