MINNESOTA STATE UNIVERSITY, MANKATO
COMPUTER SCIENCE

Computer Science Project Syllabus
CS 391W, CS 392W, CS 490W, CS 491W, and CS 492W
Spring 2024
January 8, 2024

From the University course bulletin:

CS 391W: Students learn and practice the essential elements of computer science through research, classical problem, or industry project implementation: scoping, modeling, experimentation, analysis, modern tools, creativity, business plans, and global/societal/environmental impacts. Students learn and develop the elements of professionalism while operating in project teams. Topics include leadership, metacognition, teamwork, written and oral communication, ethics, and professional and personal responsibility. **Course must be taken concurrently with CS 495. Prerequisites: CIS 223 and MATH 280.**

CS 392W: Students further learn and practice the essential elements of computer science through research, classical problem or industry project implementation: scoping, modeling, experimentation, analysis, modern tools, creativity, business plans, and global/societal/environmental impacts. Students continue to learn and develop the elements of professionalism while operating in project teams. Topics include leadership, metacognition, teamwork, written and oral communication, ethics, and professional and personal responsibility. **Course must be taken concurrently with CS 495. Prerequisite: CS 391W.**

CS 490W: Students gain experience working with a team to solve a substantial problem in the field of computer science using concepts that span several topic areas in computer science related to cognitive science. Class time focuses primarily on project design and implementation. Senior standing in the Cognitive Science major with a Computer Science Focus. **Course must be taken concurrently with CS 499 (seminar). Prerequisites: Senior standing and successful completion of all [cognitive science] core requirements.**

CS 491W: The first in a two-semester sequence of capstone design. Students build on the experience gained in CS 391W/392W to bring their research or project implementation and leadership to that expected of contributing computer scientists in industry or research. Course must be taken concurrently with CS 495.
Course must be taken concurrently with CS 495. Prerequisites: CS 301, CS 302, CS 303, CS 304, CS 392W.

CS 492W: The second in a two-semester sequence of capstone design and the fourth project class overall. Students build on the experience gained in CS 391W/392W to bring their research or project implementation and leadership to that expected of contributing computer scientists in industry or research. Expectations include public presentation of project work, patent applications, and/or plan for commercialization of project. **Course must be taken concurrently with CS 495. Prerequisites: CS 491W and at least 4 credits of elective courses chosen from CS 306, CS 401, CS 403, CS 406, CS 410, CS 420, CS 435, CS 440, CS 445, CS 450, CS 465, CS 470, CS 480, or CS 485**

Goals

While studying in the Computer Science program, our students are expected to acquire a wide array of skills and knowledge through project-based learning. This Project course is central to making that happen. Through a mix of related activities described in this Syllabus, you will develop the many important professional and technical competencies needed for both success in this course and in your long-term work life.

Professional competencies include:

- Leadership (Student Outcome #5)
- Ethics (Student Outcome #4)
- Decision making (Student Outcomes #1, #2, #4, #6)
- Situational problem solving (Student Outcomes #1, #2, #3, #5, #6)
- Management of complexity (Student Outcomes #1, #2, #3, #4, #6, #7)
- Project and change management (Student Outcomes #2, #3, #5, #6, #7)
- Constructive and successful teamwork (Student Outcomes #3, #5, #7)
- Technical communication (Student Outcome #3)
- Client management (Student Outcomes #2, #3, #4, #5, #7)
- The ability to recognize one's own limitations (Student Outcome #5)
- Lifelong learning (Student Outcomes #1, #4, #6)

Technical competencies include:

- Student Outcome #1: Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions
- Student Outcome #2: Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of computer science
- Student Outcome #6: Apply computer science theory and software development fundamentals to produce computing-based solutions
- Test-driven development (Student Outcomes #1, #2, #5)

Faculty

I'm Prof. Rushit Dave, rushit.dave@mnsu.edu, and I will be one of the faculty members guiding you through this Project course.

My office hours are by appointment, and may be either in person in WH229 (my office), or via Zoom, depending on my schedule.

Faculty member Prof. Mansi Bhavsar, mansi.bhavsar@mnsu.edu will also be guiding you through this course. Her office hours are by appointment in person in WH221 or you can reach her via email to schedule.

Computer science faculty also include Prof. Becky Bates, Prof. Jonathan Hardwick, Prof. Flint Million and Prof. Ryne Leytem. You'll also be working with a technical communications coach, Prof. Peg Burr, and with project coaches. Some project teams may additionally receive support from industry mentors. All project teams will work with at least one industry project partner on a regular basis.

G = group activity and evaluation
I = individual activity and evaluation

Overall Project Framework (G)

While each project will be different in terms of exactly what happens and when, there are **project elements** used to organize and run every project. Given these definitions,
client *= industry partner who brought us your project*
stakeholder *= client, faculty coach, industry mentor, or other party interested in the outcome of your project work*
user *= someone who runs and benefits from the software system you're working on, possibly the client or the client's customer*
projects typically either touch lightly upon or dive deeply into the following:

a. Learn about the client's domain of work/activity
b. Learn about the client's organization, operational, and political landscape
c. Learn about the client's technical stack (software, data, user interfaces, design standards, testingind frameworks, networks, backup systems, *etc.*)
d. Learn about the client's preferences, if any, for whether the project should be run based on the waterfall model of development, the agile model of development, or some other model
e. Learn a new programming/scripting language, cloud services API, IDE, or other development tool
f. Mockup a User Interface (UI) or other means of describing intended user experience for the client
g. Gather and respond to feedback on UI mockup(s), often through multiple iterations with client's users
h. Perform Requirements Analysis in collaboration with client, document Requirements
i. Gather and respond to feedback on Requirements Analysis from all stakeholders, often through multiple iterations
j. Agree on a set of carefully described Deliverables with the client; these may include user interface mockups, code, working systems, documentation of various types, test results, integration plans, or anything else desired by the client
k. Design a solution and document the solution's Design
l. Create a Test Plan that drives to the solution, organize needed Test Data, and document the Test Plan
m. Create a Timeline of project Milestones, share it with all stakeholders, and adapt it based on feedback
n. Implement a working solution, often through incremental stages and steps
o. Test according to the test plan, often aligned with incremental stages and steps of implementation
p. Perform multiple code and documentation reviews both internally with your team and externally with other teams and faculty coaches
q. Package and share the project Deliverables with the client and other stakeholders identified by the client
r. Write a Handover Report that supports a graceful transition of your work to the next team that will pick up where you left off at the end of your project effort.
s. Meet periodically with your faculty coach (and sometimes industry mentors) for guidance, reporting, and a handful of grading events (see **Grading** below)

Some projects may also include Integration Plans *for* Systems Interfaces *that address how the project solution will be connected into and tested "live" in the client's operational context. If this is the case for your project, these activities can either be called out explicitly or simply included in the agreed Deliverables.*

Your Project Team (G)

There will typically be four members assigned to your team. During the first two weeks of the semester, as you get to know your client, the client problem you're solving, your coaches, and each other, you will decide together what roles each of you will play on the team.

One team member will serve as **Team Lead**, with the following responsibilities:

1. Collaborate with the team to determine what needs to be done to achieve Milestones agreed upon in the project Timeline (see Project course syllabus for definitions)
2. Constrain the scope of the project to ensure feasibility of deliverables, meet project timelines, and minimize scope creep and other undesirable outcomes
3. Delegate tasks and track progress toward completion of tasks, assist in achieving on-time task completion where possible

4. Serve as the main point of communication with the client, the primary faculty coach, the specialist faculty coaches, the technical communications coach, and the industry mentor
5. With faculty support and guidance, enforce consequences in the case of Team Contract breach (see below)
6. Provide final approval of all reports and presentations prior to final submission
7. Collaborate/assist with other members of the team in the design activities of the project
8. Take on additional project work as agreed

Additional **Team Members (A-C)** will take on responsibilities for various technical and operational aspects of the project. These will typically be in close alignment with the **project elements a through s** (see above) that your team decides to include in your approach, Timeline, and Milestones.

Together you will complete, sign, and file a **Team Contract** that formalizes what you decide. A template Team Contract is available on D2L.

The more detailed and explicit you can be among the team members about who will do what, the better off you'll be. The earlier you get agreement within the team on these details, the better off you'll be. You may want to include a plan for reviewing the team contract later in the semester in your contract.

If you are on an individual project, you are the team lead and should use this contract to define how you will be accountable to yourself and your client during the semester.

You must submit a signed Team Contract that has been approved by your faculty coach no later than Friday, January 19 at 11:59pm. Your team leader should submit your Team Contract on D2L by this deadline.

IMPORTANT: Industry clients, faculty coaches, industry mentors, and other non-student participants in this Project course are busy people with many responsibilities. YOU MUST PLAN AHEAD WHEN YOU NEED SOMETHING FROM ONE OF THEM. Do not wait until the last minute. Plan carefully to give your non-student collaborators multiple days for turnaround times.

You are strongly encouraged to submit your approved Team Contract earlier than the deadline.

Your Project (G)

Your project will **not** need to "go deep" on all of the **project elements a through s** in the section "Overall Project Framework" above.

Instead, during the first weeks of work, you and your teammates will collaborate with your client and your faculty coach to decide the following **for each project element a through s**:

1. The element is very important and should be included and addressed in detail
2. The element is useful and should be included at some appropriate level, but not treated fully
3. The element is not needed

Once you have decided which elements you will include in your project, and at what level of importance and detail, you will then put together a semester-long project **Timeline**. This Timeline will include all the key **Milestones** for creating and delivering the elements of your project that you have chosen to include from the list of project elements a through s.

Seven Specific Required Milestones and One Optional Milestone

In general, you and your teammates will plan your Timeline of Milestones in collaboration with your client. But there are a few internal course Milestones that you must include in your Timeline:

1. [Milestone] **Quarter Term Project Review (1Q):** On either January 31st or February 2nd your team will present an internal (MSU only) status update on your project progress. This will be an in-person information sharing and feedback session and will not be graded. There is no requirement to upload anything to D2L, but if there is something you'd like your coach to review, you may do so.
2. [Milestone] **Code and Documentation Review #1**: No later than February 16th all teams will participate in a code and documentation review. (See below for details.). Upload of results is required, but this is not a graded activity.
3. [Milestone] **Midterm Project Evaluation:** During the week of February 28th or March 1st your team will present an internal (MSU only) mid-term report on your project status. You will also submit your presentation contents (along with the project artifacts and supporting materials you refer to and/or use in your presentation) via D2L by March 2nd at 11:59pm. The presentation will be delivered in-personand will be graded on both content and delivery. (See **Grading** below.)
4. [Milestone] **Code and Documentation Review #2**: No later than March 15th all teams will participate in a code and documentation review. (See below for details.). Upload of results is required, but this is not a graded activity.
5. [Milestone] **Three Quarter Term Review (3Q):** During the week before 1st April, your team will consider your project progress. Depending on progress, faculty may ask your team to present an internal (MSU only) status update on your project progress during the week of April 1st or your team may request broader faculty feedback on your progress in consultation with your coach. This will be an in-person information sharing and feedback session and will not be graded. Teams asked by faculty to present may be required to submit supporting documents and artifacts for review.
6. [Optional Milestone] **Project Code Freeze:** It is highly recommended (by previous student project teams!) that you pick a date somewhere around April 16th to halt code development. This does not mean that you can't make bug fixes or small changes in response to user testing beyond this date. Rather, the idea is that your team should plan to make no substantive changes or expansions to functionality after this point in time. Previous project teams have found that taking this approach gives them the time and space they need to test and perfect system performance, get client acceptance, finalize documentation, polish demos, and complete other wrap-up and handover activities.
7. [Milestone] **Final Project Package:** To record what you accomplished for inclusion in your graduation portfolio (and to communicate effectively with future students and faculty in the case of projects that move on in the future and thus require a careful hand-off), you will combine and "package up" all the elements of your completed project. As part of this "packaging up", your team will write a concise **Handover Report**. Your Handover Report (see below for more details) should point to and contextualize all the major components of your project, especially information you received from and results you delivered to your client. In addition to the Handover Report, your package should also include the major artifacts you created both for the client and for internal reviews. The Final Project Package, including the Handover Report and all project components, should be submitted via D2L no later than April 27th at 11:59 pm. This will be graded. (See

Grading below.)

8. [Milestone] **Final Project Presentation:** During finals week, at times TBD according to the University's published final exam schedule, your team will make its final internal (no client attending, MSU only) presentation. Prior to your in-person presentation you will submit your final presentation materials via D2L by May 3rd at 11:59 pm. The presentation will be graded on both content and delivery. (See **Grading** below.) *(This presentation is separate from and above/beyond any presentations or other actions you will take as you make final delivery to your client. Those items should be included in your Timeline as Milestones as you have agreed with your project client. Handing off the final work to the client is expected and is required before the client feedback comes to the faculty. No passing grades will be assigned without receipt of the client evaluation form.)*

You are required to include the seven Milestones [1-5 and 7-8] in your project Timeline. You are encouraged to include the Optional Milestone [6]. These eight items are all for internal review only; thus, they will only be seen by our students, faculty, mentors, and staff.

Your team's **Quarter Term Project Review** (not graded) and **Midterm Project Evaluation** (**graded!**) presentations should include, at a minimum, the following items:

- Description/summary of agreed client deliverables
- Status of progress towards completion of client deliverables
- Team performance against Timeline and Milestones
- What's going well?
- Where are you experiencing problems or challenges?
- What do you need help with?

You should focus on defining the problem in the 1Q presentation as well as your initial plans. In the mid-term, you should focus on any changes since 1Q and the technology you have developed. A brief overview of your problem is still helpful.

Your **Three-Quarter Term Project Review** may simply be a team discussion about whether your team will benefit from progress feedback or it may be a required (but not graded) presentation of a progress update. The presentation can be a dry run for your final presentation and should briefly include the items listed above as well as:

- Planned list of artifacts you will be submitting as part of your wrap-up and handover Final Project Package

If your team has had to pivot or address significant challenges in the implementation, you should discuss what has gone wrong and how your team is addressing the challenges.

Your team's **Final Project Presentation (graded!)** should include, at a minimum, the following items:

- Description of goals of project from the client's perspective
- Analysis of whether client's project goals and team's Milestones were met
- Report on client satisfaction with project outcomes

- Descriptions of key technical elements of project work (user interface, system interface(s), testing framework and approach, data representations, algorithms, efficiency and effectiveness measures of system performance, *etc.*)
- Report on all types of challenges met (professional and technical), whether they were overcome, and if so, how they were overcome
- If possible, **a live or video demonstration of your project results** in action

Your team's **Handover Report (graded!)**, as part of this "packaging up", should summarize your project approach, client deliverables, and outcomes. This Handover Report should be concise. It should point to and contextualize all the major components of your project, especially client deliverables. It should serve as a "tour guide" for a new team who might be coming in as total novices to take over your work. Some suggested elements for the Handover Report include:

- A short summary of the client's business and their goals in undertaking this project
- A summary of, including pointers to, all reference documents, software and other artifacts, and systems descriptions supplied by the client as context for the project
- A short summary of how your timeline for the project evolved – what were your initial plans, how did they change, and why
- A summary of, including pointers to, all client deliverables – especially well-documented code, built working systems, user interface mockups or wireframes, requirements documents, design documents, user guides, reference manuals, test plans, and test results documents.

Your team's **Final Package (graded!)** captures and wraps up everything you accomplished while working on your project. Your team will combine and "package up" all the elements of your completed project. You will include the Final Package (or significant components of it) in your graduation portfolio. The Final Package will include a Handover Report (see above) which will serve as a helpful orientation tool for anyone who wants to understand and use what's been included in your Final Package.

See the **Grading** section below for the grading rubrics for these items.

Important Additional Project Milestones

Additional Milestones that you agree upon with your client, and/or your faculty coach (and industry mentor) will make up the bulk and remainder of your Timeline content. The Milestones you include could be things such as:

- Deadlines for learning your new programming language or development framework
- Dates for completing your requirements analysis sessions with the client
- Deadlines for getting sign-off from the client on your proposed user interface designs
- Deadlines for internal code review of your first draft solution code base
- Deadlines for getting all stakeholders to agree on your test plan
- Dates and times when you will run your systems tests at the client site
- Date and time for your final presentation to the client

Your Timeline should include Milestones that cover every project element (a through s) that you choose to include in your project.

The earlier you complete and get agreement on your project Timeline, the better off you'll be. Teams that settle on a clear plan early in the process end up doing the best work.

You must **submit a project Timeline that has been pre-approved by your primary faculty coach** no later than **Wednesday, January 24th at 9:59am**. Your Team Lead should submit your primary faculty coach-approved project Timeline on D2L by this deadline.

You are strongly encouraged to submit your approved Timeline earlier than the deadline.

Observing and Giving Feedback on Other Teams' 1Q and Midterm Project Presentations

As a way to learn more about projects in general, and about presenting project work in particular, you will attend and evaluate at least two other teams' project presentations at 1Q and Midterm.

To help you frame your thinking about how to evaluate and learn from other teams' presentations, you will use the grading rubric that the faculty use (see p.16 of this Syllabus). You will refer to this rubric and make notes on it as you observe the two other teams' presentations. You will be prompted in that week's Reflections to write about what you learned. This will happen for 1Q and Midterm team presentations.

In addition to making notes and writing a Reflection, for the Midterm Presentation you will also fully complete the grading rubric for each of the two teams' presentations you attend, and upload your feedback to D2L. This upload to D2L will be due on March 2nd at 11:59pm. The teams for whom you submit your evaluations will see your comments. Student evaluations do not affect other project teams' grades, however. Grading of Midterm project presentations remains in the hands of the faculty.

Your Coaches (G)

Your **primary faculty coach** will help you plan and execute your project. The primary faculty coach will work with you on every aspect of your project from how you work with your client to how you design and test your software to how you manage your time and team relationships. Your faculty coach will play a major role in grading both team and individual performance on all assigned work.

Your **subject matter expert (SME) faculty coaches** will help you with specific aspects of your project. Some may assist you with user experience design and testing. Others may provide expertise on specific programming languages or frameworks, or on testing protocols. You may have multiple specialist faculty coaches working with you, depending on the nature of your project. These faculty may or may not participate in grading, depending on the situation.

Some projects will also have an **industry mentor**. Your industry mentor is a volunteer who is a working expert in the domain or problem area being addressed by your project. The industry mentor can help you make good choices about everything from what makes a user interface work well to how to best design your system and plan your testing and deployment work. Industry mentors may sometimes give your faculty coach input related to team or individual performance. They will not play a direct role in grade assignment.

Your **technical communication coach** will work with both your team as a whole and with you as an individual. When working with the team, your tech comm coach will be focusing on the clarity and quality of your communications with stakeholders such as the client, the users, and your faculty coach and industry mentor. This may include any form of communication from written emails and documents to visual presentation materials to spoken presentations and conversations. When working with you as an individual, your tech comm coach will focus on the skill areas where you can benefit the most from improvement and individual learning.

The tech comm coach will also play a direct role in grading both team and individual performance (see **Grading** below).

Meet with your faculty coach (and, if appropriate, your SME coaches) to do the following:

1. **Schedule** a cadence of **regular meetings – a Coach Meeting Plan –** between your project team and your coaches for regular check-ins and discussions. Due by 11:59 pm on January 16th.
2. Create a **Project Learning Plan** that lays out the topics, skills, and tools you will need to master as part of your project. Create a plan for how to find training and resources to achieve this plan. Due by 11:59pm on January 17th.

Your Learning Plan (I)

How do you do your best learning? How do you devote and apply the limited, precious hours available in your days and weeks?

You will write out the answers to these questions in a document called a Learning Plan. You must include **at a minimum** the following items:

- The physical spaces you will learn in
- The way you will achieve a productive learning mindset
- How you will monitor your learning effectiveness
- How you will adjust your learning process when it is not working for you
- A weekly schedule that identifies blocks of time you are allocating to spend on course work (including both meeting with others and working alone), project work, employment, travel, social time, and self-care.

As an **extra topic**, we encourage you to write about your learning style. How do you best learn? What modalities work best for you? What maximizes your learning effectiveness?

A first complete version of this document is due in D2L by 11:59pm on Saturday, January 20th.

This is a graded activity. Team leads will grade their team members' learning plans. Faculty coaches will be available to discuss this with the team leads and will grade the team lead learning plans. (See **Grading** below.)

As an optional extension of this exercise, you can resubmit new versions of your Learning Plan at any time before March 2nd. Your faculty coach will be happy to discuss changes and review your submission, and a course instructor may give out bonus points on the assignment for good work.

Your Professional Development Plan (I)

What are your career goals? What steps can you take to move yourself towards achieving those goals?

You will write out the answers to these questions in a short document called a Professional Development Plan (PDP). This will be a living document that evolves over time as you grow, develop yourself, and get more experience. You should feel free to ask any coach (faculty, communication, or industry mentor) for help in creating this document.

We will provide you with a spreadsheet template to use to document your PDP. When you turn it in on D2L, you will use the "print to pdf" functionality to create a snapshot that is easy to review.

If you are a J2, S1, or S2, you should start with the most recent PDP document you submitted in your previous semester in the program and modify from there. The document should then include archived information about prior semester goals.

A first draft version of this document is due in D2L by 11:59pm on Saturday, February 3rd.

You should seek feedback on this plan from a mix of campus assistance organizations, faculty, other students, industry clients, and industry mentors. Based on this feedback you will submit an updated version on D2L by 11:59pm on Saturday, February 24th.

This is a graded activity. (See **Grading** below.)

As an optional extension of this exercise, you may resubmit new versions of your Professional Development Plan at any time. Your faculty coach will review your submission, and a course instructor may give out bonus points for your additional improvements to your plan.

Your Performance Evaluation (I)

During the week of April 1st, you will complete a performance review document (which is available on D2L). The form asks you to evaluate your abilities to meet the professional expectations of a Minnesota State Mankato CS student and to maintain a positive working environment. When you fill out the form, you should complete both the numeric sections and the "Comments" sections. After completing this form, you will send yours to your Team Lead, who will enter their own numeric markings and "Comments". You will then have a one-on-one meeting with your Team Lead to discuss the results. Your Team Lead will then summarize the results from all team members with your Faculty Coach and upload the final document to D2L no later than 11:59pm on April 13th. You are responsible for giving your Team Lead enough time to review the document and meet with you. Respect their time and any internal deadlines set by the Team Lead. Failure to meet internal deadlines will affect individual grades.

If you are a Team Lead, you will follow the same process directly with your Faculty Coach.

All Performance Review documents are due on D2L by 11:59 pm on April 13th.

This is a graded activity. (See **Grading** below.)

A standard template that will be used for performance evaluations is available on D2L.

Your Jobs Package (I)

You will pick one company represented at the job fair that seems like a place you might like to work. You will write a resume and a cover letter addressed to this potential employer. You will attend a Career Fair and/or Expo as your schedule allows. The Engineering Job Fair will include positions for CS majors.

This is a graded activity. (See **Grading** below.)

You must submit a first draft of your resume and cover letter via D2L no later than 11:59 pm on Saturday, January 27th.

Feedback on your resume will be available from the MSU Career Counseling Center, as well as industry mentors and faculty. You must submit a final draft of your resume and cover letter via D2L no later than 11:59pm pm on Saturday, February 10th.

Additional item: At some point during the semester, you will be encouraged to participate in at least one mock or real job interview, which should focus at least in part on technical/coding topics.

Your Reflection Journal (I)

Each week we're going to ask you to reflect in writing about your learning. Each week you'll write about three topics or experiences, and how you learn, have learned, or will learn about each of them. Some of these topics will be assigned, and some you can choose yourself ("You get to choose").

All three reflections should be submitted together in one document by the end of Saturday night each week. YOU WILL RECEIVE ZERO POINTS IF YOU MISS THIS DEADLINE. See the table below for exact details.

We'll also ask you when reflecting to either do a **full reflection**, or a **lite reflection**.

When you do a **full reflection**, we'd like you to spend equal effort to cover each of these four points:

1. Answer our direct prompt (or for "You get to choose", write your own prompt and response). If the question asks for a yes/no response, you should expand on why you are responding yes or no.
2. Describe what you learned or are challenged by in your response to #1
3. Explain how this new knowledge will be used in your future as a student or practicing computer scientist
4. Identify what new learning or additional questions you could pursue to make what you learned this week more impactful in the future

When you do a **lite reflection**, you cover each of those same four points, but do it with no more than thirty words per each point.

When a topic is "You get to choose", you must still write a reflection! We encourage you to think about your emotional reactions to things you experience since strong reactions often indicate topics that deserve further reflection. You get to pick your specific topic from any of these broad areas:

- Technical learning
- Professional learning
- Computing practice
- Metacognition
- Ethics
- Contemporary issues
- Inclusion, diversity, equity & access
- Any topic connected to computer science education

Here is the schedule of reflections that are due each week this semester. **You will submit all your reflections for the week in one .pdf file** via D2L.

Due date and time	Full reflection	Lite reflection	Lite reflection
Sat Jan 13 11:59pm	What do you think is going to be the most engaging or exciting part of your project?	You get to choose	What do you think is going to be the most difficult part of your project?
Sat Jan 20 11:59pm	Do you have someone you can talk to when you're "stuck" on a problem?	You get to choose	Are you afraid to be wrong?
Sat Jan 27 11:59pm	How have you experienced and/or facilitated inclusion already this semester?	Are you getting along with your project's client?	You get to choose
Sat Feb 3 11:59pm	Your observations from having attended two other teams' 1Q project review sessions	Is your workspace working for you?	What technical learning have you done so far in this Project course?
Sat Feb 10 11:59pm	What have you learned about yourself when putting together (or updating) your jobs package?	What's going well right now?	You get to choose
Sat Feb 17 11:59pm	IDEA topic: Prompt to be provided in seminar 02/12	You get to choose	What's the most impactful thing you've learned so far this semester in any course?
Sat Feb 24 11:59pm	How is your team verifying that you are on track to deliver with the client wants?	What's going poorly right now?	You get to choose
Sat Mar 2 11:59pm	How will your project work this semester affect your career path?	You get to choose	Your observations from having attended two other teams' Midterm Project review sessions
Sat Mar 16 11:59pm	How well is your team functioning?	You get to choose	Of the midterm project feedback you received, was expected? Unexpected?
Sat Mar 23 11:59pm	How will your project impact your client if you succeed? If you fail?	What are you afraid of right now?	The code review process
Sat Mar 30 11:59pm	When did you make a decision in your own life or work that could be considered an ethical choice?	What feedback have you received while working on your project that made you change direction in some way?	You get to choose
Sat April 6 11:59pm	You get to choose	Are you afraid of conflict?	Your observations from having attended two other teams' 3Q project review sessions
Sat April 13 11:59pm	IDEA topic: Prompt to be provided in seminar 04/08	What ethical issues have you seen come up this semester anywhere for anyone?	What are the big things that still need to get done on your project this semester?
Sat April 20 11:59pm	What has been your most useful interaction with your faculty coach, SME, or industry mentor?	What was the most valuable failure in your project this semester?	You get to choose
Sat April 27 11:59pm	What was the most important thing you learned this semester?	You get to choose	Are you glad you're in the CS program?

IDEA (inclusion, diversity, equity & access) topics are related to seminar discussions.

Reflections can by typed or they can be scans or photographs of handwritten remarks. **Submit all three reflections for the week in one combined .pdf file.** *If any portion of your submission is handwritten, we ask that you be sure it is legible.*

Additional reflection packages with entries on individual guest speakers, seminars, completion of jobs package, any formal group discussions, communications seminars, volunteerism, outreach, workshops, and other appropriate activities (according to the judgement of the faculty) will be counted towards your grade if they raise it but will not be counted against you. All reflection entries should include closing the loop to look at how an experience will be useful for you.

Code and Documentation Reviews (G)

At two points during the semester each team will undertake a code and documentation review. A background guidance resource that will help you organize your review work is available on D2L, as are templates that we suggest you use to organize and document your reviews. A faculty member will help your team understand and work with these materials.

Each team gets to decide the exact documentation practices to adopt for their specific review process. Teams should pick a method that best serves the goal of maximizing correctness, clarity, and reusability of the artifacts the team is producing. We strongly recommend that whatever is adopted as your team's standard meets at least the minimum content represented in the templates we make available on D2L.

We recommend attending another team's review for Code Review #1. We require attending another team's review for Code Review #2 where you will contribute to the review, either with questions or feedback about the other team's code. Team review times will be assigned. As many as possible will happen during Project meetings times but some will happen outside of the WF 10-11:50am windows.

This is not a graded activity, but we do want to see the results of what each team produces as output after each of the two rounds of review. The team lead will be responsible for uploading results.

Uploads are due on D2L no later than 11:59pm on Friday February 17th for round one and Friday March 16th for round two.

Focus and Exam Week

During the week of February 26th, we will be taking a special week to have a little breathing room to study, catch up on work, and do well on midterm exams, CS core/elective final exams, and presentations. **No core/elective CS classes will meet except for exams**. However, other courses will proceed as usual. Your project team's Midterm Evaluation will occur during this week. Seminar time will be used to meet with the tech comm coach (by appointment) and to give your team time to finish preparing for the Midterm Evaluation.

Grading

You will have both client and internal deadlines during this course. Your client deadlines will be negotiated with the client and should be included in your project Timeline as Milestones.

The important internal deadlines that you must meet are:

Item	Type	Due on D2L	Final Grade Weight

Orientation (9am-5:30pm, January 5) & Project Preference Submitted by Deadline	I	January 6 11:59am	
Reflections (weekly)	I	Saturdays 11:59 pm	20%
Coach Meeting Plan	G	January 16 11:59pm	-
Project Learning Plan	G	January 17 11:59pm	-
Team Contract	G	January 19 11:59 pm	5%
Learning Plan	I	January 20 11:59 pm	5%
Project Timeline and Milestones	G	January 24 9:59 am	10%
Jobs Package (first draft)	I	January 27 11:59 pm	-
Quarter Term (1Q) Project Review	G	Week of January 29	-
Professional Development Plan (first draft)	I	February 3 11:59 pm	-
Jobs Package (final)	I	February 10 11:59 pm	5%
Code and Documentation Review #1	G	February 16 11:59 pm	-
Professional Development Plan (final)	I	February 24 11:59 pm	5%
Midterm Project Evaluation	G	Week of February 26	10%
Midterm Project Review Materials (upload due)	G	March 2 11:59 pm	-
Midterm Project Presentation Grading Rubrics (2)	I	March 2 11:59 pm	-
Code and Documentation Review #2	G	March 15 11:59 pm	-
Three Quarter Term (3Q) Project Review	G	Week of April 1	-
Performance Review (upload due by Team Lead)	I	April 13 11:59 pm	5%
(Suggested) Project Code Freeze	*G*	*Around April 16*	-
Final Project Package, including Handover Report (upload due)	G	April 27 11:59 pm	25%
Final Presentation (upload due)	G	April 30 11:59 pm	10%
Evaluation Form from Client to Faculty Coach *Not graded, but required for a passing grade.*	G	May 3 11:59 pm	-

G = group activity & evaluation
I = individual activity & evaluation

Your overall grade for the course will be a weighted average of the rubric scores (0-5) that you receive for each of the listed items in the table above. At the discretion of your faculty coach and the course instructors, your individual multiplier, calculated as described in the template Team Contract, may be applied to your grade calculation on particular items listed above.

If you miss a deadline, you will receive ZERO POINTS for your submission. If you anticipate having difficulties meeting a deadline, you must contact your faculty coach or the instructor of record in advance of the deadline with sufficient notice to make appropriate alternative arrangements.

Your final letter grade for the course will be calculated according to this table:

	Minimum Score	
Letter Grade	J1	J2, S1, S2, CogSci
A	4	4.25
A-	3.83	4.08
B+	3.67	3.92
B	3.5	3.75
B-	3.33	3.58
C+	3.16	3.42
C	3	3.25
C-	2.75	2.875

D	2.5	2.5
F	< 2.5	< 2.5

- Faculty may adjust grading to reward early submissions, extra work completed above and beyond stated requirements, and any other specific circumstances that arise that they deem should be reflected in grading.
- Violation of Minnesota State Mankato safety policies and procedures will result in a grade of F.
- Violation of Minnesota State Mankato academic honesty and Computer Science professional behavior policies will result in a grade of F.

Grading of Team Project

The Quarter Term and Three-Quarter Term Checkups are not graded.

Grading Rubric for Team Contract, and Project Timeline and Milestones

Category	0 = Unacceptable	1 = Deficient	2 = Weak	3 = Acceptable	4 = Desired	5 = Exemplary
Technical Content (50%)	The needed content has not been included	There are components that have not been included, and/or most of the content is not understandable	Some content is not fully included or discussed, and/or some content is not understandable	All needed content is included and discussed to and acceptable level of detail, and most of the content is understandable	All needed content is included and discussed to a good level of detail, and all content is clearly understandable	All possibly desired content is included, thoroughly yet concisely discussed, and presented with clarity and context
Client and User Sensitivity (20%)	Neither the client's nor the users' needs were considered	Either the client's needs or the users' needs were ignored	The client's and users' needs have not been fully considered	The client's and users' needs have been considered and addressed to an acceptable level	The client's and users' needs have been considered and addressed carefully	The client's and users' needs have been prioritized above other concerns and have been addressed thoroughly
Communication (20%)	The material is either not present or incomplete	The writing in this document is such that the reader is unable to receive the content being communicated, or important content is missing and/or the content included is not understandable	The writing substantially detracts from communication of the technical information in the document, or some content is not present and/or most of the content is not understandable	The writing is on a par with industry standards and is acceptably clear, concise, understandable, and organized, and most content is present and is acceptably understandable	Most of the writing is clear, concise, appropriate for the audience, and well organized for understanding	All the writing is clear, concise, appropriate for the audience, and well organized for understanding
Professional Comportment (10%)	Teams or individuals fail to meet even the minimum standards of professional comportment	Teams or individuals exhibit major deviations for expected standards of professional comportment	Team members and individuals are often not responsive, prompt, well represented, respectful, inclusive, helpful, or	Team members and individuals are acceptably responsive, prompt, well represented, respectful, inclusive, helpful, and	Team members and individuals are mostly responsive, prompt, well represented, respectful, inclusive, helpful, and	Team members and individuals are universally responsive, prompt, well represented, respectful, inclusive, helpful, and

			accountable to others	accountable to others	accountable to others	accountable to others

Grading Rubric for Midterm Evaluation Presentation and Final Presentation

Category	0 = Unacceptable	1 = Deficient	2 = Weak	3 = Acceptable	4 = Desired	5 = Exemplary
Technical Content (50%)	The needed content has not been included	There are components that have not been included, and/or most of the content is not understandable	Some content is not fully included or discussed, and/or some content is not understandable	All needed content is included and discussed to and acceptable level of detail, and most of the content is understandable	All needed content is included and discussed to a good level of detail, and all content is clearly understandable	All possibly desired content is included, thoroughly yet concisely discussed, and presented with clarity and context
Client and User Sensitivity (20%)	Neither the client's nor the users' needs were considered	Either the client's needs or the users' needs were ignored	The client's and users' needs have not been fully considered	The client's and users' needs have been considered and addressed to an acceptable level	The client's and users' needs have been considered and addressed carefully	The client's and users' needs have been prioritized above other concerns and have been addressed thoroughly
Written Communication (10%)	The material is either not present or incomplete	The writing in this document is such that the reader is unable to receive the content being communicated	The writing substantially detracts from communication of the technical information in the document	The writing is on a par with industry standards and is acceptably clear, concise, understandable, and organized	Most of the writing is clear, concise, appropriate for the audience, and well organized for understanding	All the writing is clear, concise, appropriate for the audience, and well organized for understanding
Oral Communication (10%)	The content is either not present or incomplete	Important content is missing and/or the content included is not understandable due to either disorganization or communicator deficiencies	Some content is not present and/or most of the content is not understandable due to either disorganization or communicator deficiencies	Most content is present and is acceptably understandable and concise, and the presenter exhibits acceptable communicative competence	Most content is clear, concise, appropriate for the audience, and well organized for understanding, the presenter exhibits good communicative competence	Content is clear, well laid out, and memorable. The presenter exhibits excellent communicative competence
Professional Comportment (10%)	Teams or individuals fail to meet even the minimum standards of professional comportment	Teams or individuals exhibit major deviations for expected standards of professional comportment	Team members and individuals are often not responsive, prompt, well represented, respectful, inclusive, helpful, or accountable to others	Team members and individuals are acceptably responsive, prompt, well represented, respectful, inclusive, helpful, and accountable to others	Team members and individuals are mostly responsive, prompt, well represented, respectful, inclusive, helpful, and accountable to others	Team members and individuals are universally responsive, prompt, well represented, respectful, inclusive, helpful, and accountable to others

Grading Rubric for Final Package

Category	0 = Unacceptable	1 = Deficient	2 = Weak	3 = Acceptable	4 = Desired	5 = Exemplary
Technical Content (35%)	The needed content has not been included	There are components that have not been included, and/or most of the content is not understandable	Some content is not fully included or discussed, and/or some content is not understandable	All needed content is included and discussed to and acceptable level of detail, and most of the content is understandable	All needed content is included and discussed to a good level of detail, and all content is clearly understandable	All possibly desired content is included, thoroughly yet concisely discussed, and presented with clarity and context
Client, User, and/or Future Team Sensitivity (20%)	Neither the client's nor the users' needs were considered	Either the client's needs or the users' needs were ignored	The client's and users' needs have not been fully considered	The client's and users' needs have been considered and addressed to an acceptable level in both documentation and deliverables	The client's and users' needs have been considered and addressed carefully	The client's and users' needs have been prioritized above other concerns and have been addressed thoroughly
Communication (20%)	The material is either not present or incomplete	The writing in this document is such that the reader is unable to receive the content being communicated, or important content is missing and/or the content included is not understandable	The writing substantially detracts from communication of the technical information in the document, or some content is not present and/or most of the content is not understandable	The writing is on a par with industry standards and is acceptably clear, concise, understandable, and organized, and most content is present and is acceptably understandable	Most of the writing is clear, concise, appropriate for the audience, and well organized for understanding	All the writing is clear, concise, appropriate for the audience, and well organized for understanding
Completeness (25%)	The material is either not present or incomplete	Some required components of handover documentation are presented; at least one high priority project deliverable was met.	Some required components of handover documentation are presented in an organized fashion; some high priority project deliverables were met.	All required components of handover documentation are presented in an organized fashion; high priority project deliverables were met.	All required components of handover documentation are presented clearly with additional context and organized; all project deliverables were met by the end of the semester.	All required components of handover documentation are presented clearly with useful, concise context and organized well; all project deliverables were met in a timely fashion and presented clearly.

Grading of Reflections

Grading Rubric for Reflections (Student Outcomes #3, #4, #5, #7)							
Performance Levels							
		0 = Unacceptable	1 = Deficient	2 = Weak	3 = Acceptable	4 = Desired	5 = Exemplary
Full Entries	Point 1: Briefly describe learning activity in response to prompt (25%)	No description or description is not of assigned activity	Description provides only minimal context for rest of entry	Description generally provides context but is missing some key points	Description adequately provides context for the rest of the entry	Description provides excellent context for the rest of the entry without being overly verbose	Description succinctly provides excellent context for the rest of the entry
	Point 2: Describe take-away knowledge (25%)	No take-away knowledge identified	Only most obvious take-away knowledge is identified but not well described	Only most obvious take-away knowledge is identified and clearly described OR Less obvious take-away knowledge is identified but not well described.	Less obvious take-away knowledge is identified and adequately described	Less obvious take-away knowledge is identified and clearly described	Less obvious take-away knowledge is identified, clearly described, and well contextualized
	Point 3: Explain how the knowledge will be used in your future as a student or practicing computer scientist (25%)	Does not identify future use or description of future use is absurd	States future use only in vague or generic ways	Provides specific examples of future use	Describes broad applications but does not provide examples	Describes broad application with minimal support in the form of examples	Describes broad applications with multiple specific well stated examples
	Point 4: Identify learning or state questions that addressing will make the learning from this experience more impactful (25%)	No further question or further learning identified	Further questions or further learning identified in a vague or generic way OR Questions are rhetorical	Specific narrow questions or further learning identified	Specific narrow questions or further learning are identified and provided some context OR Insightful questions or learning are identified	Insightful questions or learning are identified and provided some context	Insightful questions or learning are identified and well contextualized
Lite Entries	Address each of the four points with 30 words or fewer per section.	Reflection not submitted	No attempt is made to address the four points of a reflection	N/A	Connections between each of the four points are not clear	N/A	Each of the four points is addressed and the entry as a whole is cohesive

Each full reflection will earn three times the weight of the lite reflections. Thus, your weekly Reflections grade will be calculated as $G_W = \frac{4G_F + G_{L_1} + G_{L_2}}{6}$, where G_W is the weekly grade, G_F is the grade of the full reflection, G_{L_1} is the first lite reflection, and G_{L_2} is the second lite reflection. Your overall Reflections grade will be the average of all your weekly scores.

Grading of Jobs Package

Grading Rubric for Jobs Package (Student Outcomes #3 and #7)

0 = Unacceptable	1 = Deficient	2 = Weak	3 = Acceptable	4 = Desired	5 = Exemplary
Fails to submit any of the jobs package	N/A	Fails to submit at least one of the jobs package deliverables or fails to participate in EXPO or Job Fair	N/A	Cover letter and resume are submitted	Cover letter and resume are submitted, and student participates in the Minnesota State Mankato EXPO or Career Fair or mock interview

Grading of Learning Plan

Grading Rubric for Learning Plan (Student Outcome of lifelong learning)

0 = Unacceptable	1 = Deficient	2 = Weak	3 = Acceptable	4 = Desired	5 = Exemplary
Fails to submit a schedule or learning plan.	Schedule and/or learning plan incomplete	Schedule and/or learning plan include only some detail	N/A	N/A	Detailed schedule and learning plan are well thought out and described

Grading of Professional Development Plan

Grading Rubric for Professional Development Plan (Student Outcome of lifelong learning)

0 = Unacceptable	1 = Deficient	2 = Weak	3 = Acceptable	4 = Desired	5 = Exemplary
Fails to submit a schedule or learning plan.	Plan incomplete	Plan has only some detail	N/A	N/A	Detailed plan is well thought out and each element is clearly and thoroughly described

Grading of Performance Review

Grading Rubric for Performance Review

0 = Unacceptable	1 = Deficient	2 = Weak	3 = Acceptable	4 = Desired	5 = Exemplary
Fails to submit documentation of performance review	Performance review document not fully completed or signed	Performance review content is complete but cursory or slapdash, or document was produced but one-on-one meeting did not take place	Performance review content is complete with minimally acceptable detail in comments	Performance review is well thought out and each analyzed issue is carefully considered	Performance review is well thought out and each analyzed issue is clearly and carefully considered. Also, a clear plan of action to remediate issues has been articulated and placed on a realistic timeline.

Accessibility

Minnesota State Mankato provides students with disabilities reasonable accommodation to participate in educational programs, activities, or services. Students with disabilities requiring accommodation to participate in class activities or meet course requirements should first register with the Office of Accessibility Resources by following the process described at https://mankato.mnsu.edu/university-life/campus-services/accessibility-resources/getting-started/ to establish an accommodation plan and then contact me if needed.

Veterans Information: As a particular acknowledgment of an individual's service to our country, faculty members are committed to providing resources to veterans/military students, who will assist in smooth navigation of the university environment and a successful educational experience. Resources for veterans are available at https://mankato.mnsu.edu/university-life/campus-services/veterans/. *Student veterans and current military members with special circumstances or who are activated are encouraged to notify a faculty coach.*

Emergency Preparedness
On days when the University cancels classes due to pandemic, weather, or any other reason), this class will not meet. In any other case when class must be cancelled, you will be notified via email as early as possible, and the cancellation will also be posted on D2L.
More information is available at https://mankato.mnsu.edu/university-life/health-and-safety/university-security/emergency-preparedness/weather-closings/

Diversity Statement. The diversity of the participants in this course is a valuable source of ideas, problem solving strategies, and computational creativity. We consider our classrooms and project spaces to be places where you will be treated with respect, and we welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the community.

Academic Honesty
As members of this University community, students assume the responsibility to fulfill their academic obligations in a fair and honest manner. This responsibility includes avoiding inappropriate activities such as plagiarism, cheating or collusion. Students found responsible for one or more of these activities may face both academic sanctions (such as lowering a grade, failing of a course, etc.) and disciplinary sanctions (such as probation, suspension, or expulsion).
The full policy, including definitions of plagiarism, cheating, and collusion, is available at https://admin.mnsu.edu/organizational-information/policies-procedures/university-policies/academic-honesty/.
Further resources are available through the libguide to academic honesty and avoiding plagiarism: https://libguides.mnsu.edu/c.php?g=76536&p=495780

Electronic Recording of Lectures and Materials
Students are not permitted to make unauthorized, electronic recordings of lectures or electronic copies of course materials (e.g., PowerPoints, formulas, lecture notes) using personally owned recording devices (e.g., smart phone, iPad, computer, digital recorder) unless prior permission from the instructor or lecturer is obtained, and there are no objections from other students.
Permission is limited to the student's own personal use and for educational purposes only.
Recorded lectures or copied material must be destroyed at the end of the course or semester. Unauthorized downloading, file sharing, distribution of any part of a recorded lecture or course materials or using information for purposes other than the student's own learning may be deemed a violation of Minnesota State University, Mankato's "Statement of Student Responsibilities" subject to disciplinary action.
The full policy is available at https://admin.mnsu.edu/organizational-information/policies-procedures/university-policies/electronic-recording-of-lectures-and-materials/

Safe Zone: Rebecca Bates is a member of a Safe Zone Ally community network and is available to listen and support you in a safe and confidential manner. As a Safe Zone Ally, she can help you connect with resources on campus to address problems you may face that interfere with your academic and social success on campus as it relates to issues surrounding sexual orientation and gender identity. Her goal is to help you be successful and to maintain a safe and equitable campus.

Preferred Name/Pronoun: We will gladly honor your request to address you by an alternate name or gender pronoun. Please advise us of this preference early in the semester so that we may make appropriate changes to our records.

Client Project Evaluation: Send this to your project client and ask them to respond to the statements below and provide a brief justification. This form needs to be sent to your faculty coach by your industry client no later than **May 3rd at 11:59pm.**

Statement (Weight)	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The student team completed the project deliverables and submitted them.					
1-2 sentence justification					
The student team's overall performance was beyond expectations and could be offered as an example for future students.					
1-2 sentence justification					
The student team was able to effectively communicate project information over the course of the engagement (emails, chat channels, presentations, Zoom, *etc.*).					
1-2 sentence justification					
The student team's ability to apply their knowledge of mathematics, computer science theory, and software development fundamentals was exceptional.					
1-2 sentence justification					
The student team demonstrated a strong ability to design, implement, and evaluate a solution given the project requirements.					
1-2 sentence justification					