UNIVERSITY OF NORTH DAKOTA
SCHOOL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

EE480/CSCI492   **Course Syllabus**   **Fall 2024**

EE480 Senior Design I / CSCI 492 Senior Project I /CSCI 482 Senior Design for Data Science I

Catalog Descriptions:

EE 480 Senior Design I (3 credits): First course in the two-semester capstone design experience for the electrical engineering undergraduate degree, emphasizing design methodologies, advanced communication, and teamwork. Student teams will select an electronic system to design, capture end-user requirements, and perform component trade studies, resulting in an oral and written critical design review at the end of the semester.

CSCI 492 Senior Project I (3 Credits): The first course in a two-semester sequence in which computer science majors undertake a culminating research or software development project. The course requires written documents, oral presentations, and peer review for the initial phases of the project, including a project proposal, a review of previous work, and a complete software design or research plan.

CSCI 482. Senior Project for Data Science I. (3 Credits)

The first course in a two-semester sequence in which data science majors undertake a culminating project. The course requires written documents, oral presentations, and peer review for the initial phases of the project, including a project proposal, a review of previous work, and a complete design or research plan.

Prerequisites: EE 480 Senior Design I: EE 421 and two out of the four following classes: EE 401, EE 405, EE 409, EE 452.
CSCI 492 Senior Project I: CSCI 370, CSCI 455, and CSCI 463, each with a grade of C or better.
CSCI482 Senior Design for Data Science I : CSCI 384, CSCI 445, and CSCI 455, each with a grade of C or above, and completion of two semesters in an approved application area. F.

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Lectures: Tuesday and Thursday 4:00 pm – 5:15 pm

Location: UND Education, Rm 7

Course Web Site: Blackboard

Office Hours: Friday 11:00 am – 12:00 pm (other times by appointment)

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I-PURPOSE:

The Senior Capstone courses are a two-semester sequence in which both electrical engineering and computer science students at the SEECS will have an opportunity to work on projects that will apply the fundamental knowledge gained in B.S.E.E or B.S.C.S programs. The course requires written documents, oral presentations, and peer review of the initial phases of the project, including a project proposal, a review of related work, and a complete software design or research plan. Students will gain the appropriate oral and written communication skills, as well as critical and creative thinking skills to successfully enable them to work in teams and as future graduate students or employees.

II. ABET student outcomes addressed:

1. An ability to communicate effectively with a range of audiences in a professional context
2. An ability an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
3. An ability to recognize professional responsibilities and make informed judgements in computing or engineering practice based on legal and ethical principles.

III- GOALS
The following are overall goals of capstone courses:

1)   *Critical and creative thinking*: Your senior project will require that you design and implement an engineering circuit design or software product or conduct a formal research project in computer science/electrical engineering. In either case, you will be required to apply critical thinking skills in the review and analysis of previously published material and to apply creative thinking skills in the design of an original project that draws upon your specific interests in computing/engineering.

2)   *Oral and written communication*: This course has four phases, each of which entails an oral presentation and a written document.

3)   *Professional Responsibility*: An ability to recognize professional responsibilities and make informed judgments in computing or engineering practice based on legal and ethical principles.

EE, CS and DS capstone course sequences also carries the Essential Studies Capstone Advanced Communication (A) designation. More than one-third of the course activities and graded work will be dedicated to the development of discipline-specific communication skills. You will be expected to apply feedback on the quality of your work from one phase to the next in an effort to improve and refine your communication skills.

IV-GENERAL:

1. Class/Course related announcements could take place during the classroom interaction, or/and posted on Blackboard. It is each student responsibility to keep up with this class and stay up to date with the developments in this course.
2. Blackboard may be used to post class related announcements, assignments and grades. All students should check Blackboard regularly for any new announcements or updates. Students need to make sure their UND e-mail addresses on blackboard and campus connection are current. Best way of contacting the course instructor is through emails. Mostly all emails will be replied to within 24 to 48 hours.
3. All assignments are due on the assigned dates. No late assignments are accepted without PRIOR written approval. DEDP students should submit their work online on Blackboard and follow the same deadlines as campus students.

4. Grading: Grades for CSCI 492, CSCI482 and EE 480 will be based on the grading weights of the assessments. Final grades will be computed on the following scale:

   a. A=100-90%, B=89-80%, C=79-70%, D=69-60%, F=59-0%.

5. Any grading problems, appeals or questions can be brought before the instructor for discussion.

6. Plagiarism: You are expected to write your own assignments. In any/all cases of plagiarism the grade for that assignment will be zero for all persons involved. However, I do encourage students to discuss and work together on labs and assignments. But, do not copy solutions, programs, or code fragments from other students.

7. If you plan to request disability accommodations in this course, you are expected to register with Disability Services for Students, McCannel Hall, Rm 190, 777-3425 v/tty, dss@und.edu, www.und.edu/dept/dss.

8. If you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with the instructor as soon as possible. My office hours are indicated as above.

VI-PROJECT LIST and PROJECT TEAMS

The project list will be posted on the blackboard at the first week of the semester. You will be allowed to select a project from the list. You may bring your project idea as well. Each project has to have at least two student members and a project advisor, faculty member form SEECS.

VII- Assignments for EE 480/ CSCI 492/482

Assignment Item No.	Assignment Type		Grading Weight
A1	1-page Creative Thinking (CTR) Report (e.g., how innovative and impactful your work in CS/EE discipline?)		5%
A2	Quiz		5%
A3 Oral Communication			**35%**
	a)	Initial Project Proposal Presentation	10%
	b)	Selected Related Work and Project Planning Presentation	10%
	c)	Refined Project Proposal Presentation	15%
A4. Written Communication			**50%**
	a)	Initial Project Proposal Report	10%
	b)	Related Work Survey and Project Planning report	10%
	c)	Progress Reports	15%
	d)	Team Module Report	5%
	e)	Refined Project Proposal	15%

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VIII WEEKLY SCHEDULE (CSCI 492-482/ EE 480)

#	Dates	Class Focus	Deadline/Submissions(Friday Midnight)
		Week 1	
1	August 27th , Tuesday	First Day of Classes – Introductions of the Courses and the Syllabus	
	August 29th, Thursday	-Project Presentations from faculty/industry -Project selection	
		Week 2	
2	September 3th, Tue	-Project Presentations from faculty/industry -Project selection	
	September 5th, Thu	- Engineering Design Process	- Project Selection due
		Week 3	
3	September 10th, Tue	- Software Design process	
	September 12th, Thu	-How to prepare initial Proposal, Related Work and Presentation - Requirement Specifications	Final date for Project and Team selection
		Week 4	
4	September 17th, Tue	Concept Generation & System Design	
	September 19th, Thu	Concept Generation & System Design in Software Projects	Initial Project Proposal Report (A4a) Due
		Week 5	
5	September 24st, Tue	Initial Project Proposal Presentation (initial idea) by each team (A3a)	
	September 26rd, Thu	Initial Project Proposal Presentation (initial idea) by each team (A3a)	Progress report 1 (A4c) Due
		Week 6	
6	October 1th, Tue	Initial Project Proposal Presentation (initial idea) by each team (A3a)	

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	October 3th, Thu	Initial Project Proposal Presentation (initial idea) by each team (A3a)	
		Week 7	
7	October 8th, Tue	Preparing Related Work & Project Planning	
	October 10th, Thu	Preparing Related Work & Project Planning in Software project	Progress report 2 (A4c) Due
		Week 8	
8	October 15th, Tue	Prof Hassan Reza's Presentation (recorded)	
	October 17th, Thu	Overview of CTR	
		Week 9	
9	October 22th	Selected Work and Project Plan Presentation (A3b)	
	October 24st	Selected Work and Project Plan Presentation (A3b)	Related Work and Project Plan Report (A4b) due
		Week 10	
10	October 29th	Selected Work and Project Plan Presentation (A3b)	
	October 31th	Selected Work and Project Plan Presentation (A3b)	Progress report 3 (A4c) Due
		Week 11	
11	November 5th	Testing and Reliability	
	November 7th	Testing and Reliability in Software projects	-CTR report (A1) due
		Week 12	
12	November 12th	- Ethical and legal Issues	
	November 14th	Quiz (A2)	Progress Report (A4c) 4 Due
		Week 13	
13	November 19th	Overview of Team Module	
	November 21th	Industry Talk	Team Module Report (A4d) due
		Week 14	
14	Nov 26rd	Preparing Refined Project Proposal Presentation	
	Nov 28th	Thanksgiving Day	
		Week 15	
15	Dec 3th	Refined Project Proposal Presentation (A3c)	
	Dec 5th	Refined Project Proposal Presentation (A3c)	Progress Report (A4c) 5 Due

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		Week 16	
16	December 10th	Refined Project Proposal Presentation (A3c)	
	December 12th	Refined Project Proposal Presentation (A3c)	
		Finals week	
	December 16	Submission of Refined Project Proposal (A4e) in Blackboard	Refined project proposal (A4e).

IX RULES

1. Each team has to have a weekly project meeting, and meet with the project advisor once in a week or in two weeks. Progress reports must include meeting minutes.
2. Each team (project) will submit one report per assignment (except Team Module Report that will be submitted individually).
3. How to prepare reports and presentations, and their formats are described in the Student Project Guide document (will be posted on the BB), and will be discussed in the lectures.
4. All submissions will be on the blackboard. Before you submit your assignment on the Blackboard, you have to share it with your project advisor.

5. The oral communication assignments (A3) will be done by each team. Each presentation will be maximum 15 minutes including Q&A. All team members are required to contribute and attend the presentation. A team member who does not attend to his/her team's presentation will get zero for that presentation/assignment. In case of a team member will not be able to attend their presentation, the instructors must be informed with a reason before the day of presentation.

6. Presentations will be done alive during the lecture hours (Tu & Th at 4:00pm to 5:15 pm CST, in designated 15 minutes time slot per team), DEDP students will join online. Once the presentation schedule is posted, DEDP students will be allowed to reschedule their presentation time (15 minutes) if they have a conflict with their job schedule.

7. The time schedule for the presentation for each team will be posted later on.
8. The teams that complete their presentation must upload their slides as a pdf in the BB on the day of presentation.
9. Reports (except A4e) are due on Friday (Midnight) of the relating week.

10. Quiz will be done individually and will include multiple choice and T/F questions.

Disclaimer: This syllabus is intended to suggest the outline of the course; it is not absolute. Changes to the syllabus will be announced in class.

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UNIVERSITY OF NORTH DAKOTA POLICIES & RESOURCES

Academic Integrity

Academic integrity is a serious matter, and any deviations from appropriate behavior will be dealt with strongly. At the discretion of the professor, situations of concern may be dealt with as a scholastic matter or a disciplinary matter.

As a scholastic matter, the professor has the discretion to determine appropriate penalties to the student's workload or grade, but the situation may be resolved without involving many individuals. An alternative is to treat the situation as a disciplinarymatter,whichcanresultinsuspensionfromtheUniversity,orhavelesserpenalties.BeawarethatIviewthis as a very serious matter, and will have little tolerance of or sympathy for questionable practices. A student who attempts to obtain credit for work that is not their own (whether that be on a paper, quiz, homework assignment, exam, etc.) will likely receive a failing grade for that item of work, and at the professor's discretion, may also receive a failing grade in thecourse. For more information read the Code of Student Life.

Access & Opportunity, Disability Support and Medical Services

If you have emergency medical information to share with me, or if you need accommodations in this course because of a disability, please visit with me as soon as possible. My office hours are at the top of this syllabus. If you plan to request disability accommodations, you are expected to register with the Disability Support Services (DSS) office online, (180 McCannel Hall, 701.777.3425).

If you have a temporary medical condition such as a broken arm or recovering after surgery, you may be able to arrange for courtesy services. In most cases, it is expected that you will make your own arrangements for these services. Examples of courtesy services include access to a test scribe if the student has a broken hand; lift equipped van transportation when the student has a broken leg or temporary accessible parking for a student using crutches for a short period. If you are unable to make your own arrangements, please contact DSS (777-3425). Unlike services and/or accommodations provided to eligible students with disabilities, the University is NOT obligated to provide courtesy services.

Resolution of Problems

Should a problem occur, you should speak to your instructor first. If the problem is not resolved, meet with [School Director]. If the problem continues to be unresolved, go to the department chair, and next to the college Dean. Should the problem persist, you have the right to go to the Provost next, and then to the President.

Notice of Nondiscrimination

It is the policy of the University of North Dakota that no person shall be discriminated against because of race, religion, age, color, gender, disability, national origin, creed, sexual orientation, gender identity, genetic information, marital status, veteran's status, or political belief or affiliation and the equal opportunity and access to facilities shall be available to all. Concerns regarding Title IX, Title VI, Title VII, ADA, and Section 504 may be addressed to: Donna Smith, Director of Equal Employment Opportunity/Affirmative Action and Title IX Coordinator, 401 Twamley Hall, 701.777.4171, UND.affirmativeactionoffice@UND.edu or the Office for Civil Rights, U.S. Dept. of Education, 500 West Madison, Suite 1475, Chicago, IL 60611 or any other federal agency.

Reporting of Sexual Violence
If you or a friend has experienced sexual violence, such as sexual assault, domestic violence, dating violence or stalking, or sex-based harassment, please contact UND's Title IX Coordinator, Donna Smith, for assistance: 701.777.4171; donna.smith@UND.edu; or visit the Title IX webpage.

Faculty Reporting Obligations Regarding Sexual Violence
It is important for students to understand that faculty are required to share with UND's Title IX Coordinator any incidents of sexual violence they become aware of, even if those incidents occurred in the past or are disclosed as part of a class assignment. This does not mean an investigation will occur if the student does not want that, but it does allow UND to

provide resources to help the student continue to be successful at UND. If you have been the victim of sexual violence, you can find information about confidential support services on the Title IX webpage.

UND Cares Program
The UND Cares program seeks to educate faculty, staff and students on how to recognize warning signs that indicate a student is in distress.

How to Seek Help When in Distress
We know that while college is a wonderful time for most students, some students may struggle. You may experience students in distress on campus, in your classroom, in your home, and within residence halls. Distressed students may initially seek assistance from faculty, staff members, their parents, and other students. In addition to the support we can provide to each other, there are also professional support services available to students through the Dean of Students and University Counseling Center. Both staffs are available to consult with you about getting help or providing a friend with the help that he or she may need. For more additional information, please visit the UND Cares program Webpage.

How to Recognize When a Student is in Distress
The term "distressed" can mean any of the following:
- Studenthassignificantchangesineating,sleeping,grooming,spending,orotherdailyactivities.
- Student has cut off or minimized contact with family orfriends.
- Studenthassignificantchangesinperformanceorinvolvementinacademics,sports,extracurricular,orsocial activities.
- Studentdescribesproblems(missingclass,notremembering,destructivebehavior)thatresultfromexperiences with drinking ordrugs.
- Student is acting withdrawn, volatile, tearful,etc.
- Student is acting out of character or differently thanusual.
- Student is talking explicitly about hopelessness orsuicide.
- Studenthasdifficultyconcentratingordifficultycarryingonnormalconversation.
- Student has excessive dependence on others for company orsupport.
- Student reports feeling out of control of one's emotions, thoughts, orbehaviors.

UND Cares about Your Success
Important information is available to you through Starfish, which is an online system used to help students be successful. When an instructor observes student behaviors or concerns that may impede academic success, the instructor may raise a flag that notifies the student of the concern and/or refer the student to their academic advisor or UND resource. Please pay attention to these emails and take the recommended actions. They are sent to help you be successful!

Starfish also allows you to (1) schedule appointments with various offices and individuals across campus, (2) request help on a variety of topics, and (3) search and locate information on offices and services at UND.

You can log into Starfish by clicking on Logins on the UND homepage and then selecting Starfish. A link to Starfish is also available in Blackboard once you have signed in.