

COURSE SYLLABUS

Location/Time: IACC Building – Room 104 , Tue. & Thur. 2:30 - 3:20PM
Coordinator: Frank Peloubet, PE (MS) , Telephone: 701.231.7293 , E-mail: frank.peloubet@ndsu.edu
Office: Department of Civil Engineering , Old Architecture Building , Room 207A1
Office Hours: Tuesday , Wednesday , & Thursday 10-11:00AM and 1:00 - 2:00PM , or by appointment.

Catalog Description: An open-ended capstone design project encompassing a number of civil engineering disciplines. Two 1-hour lectures. Prerequisite: Graduating Senior standing.

Course Goal: Combine all aspects of the preparation, planning, design, and pre-construction phases of an engineering project into a single comprehensive and meaningful educational capstone experience that integrate engineering and management disciplines that reflect “real-world” engineering design practices. Students will use the knowledge and skills acquired throughout their undergraduate education to develop the documentation required for actual project design and construction (project analysis, design calculations and drawings, material quantities, basic cost estimates, design schedule, and an overall work plan).

Course Objectives: (Objectives are related to the Outcomes.) On completion of this course students will be able to;

1. Apply knowledge of mathematics, science, and engineering to an actual engineering project. (ABET – A)
2. Utilize and apply project data, plans, references, and other resources. (ABET – B)
3. Design an engineering system, component, or process to meet desired needs. (ABET – C, L, M)
4. Work together on a multi-disciplinary team with each member performing a discipline-specific duty. (ABET – D)
5. Think critically to identify, analyze, formulate, and solve complex engineering problems. (ABET - E)
6. Understand engineering professional and ethical responsibilities in a societal context. (ABET – F, H)
7. Work cooperatively and effectively as a team in small groups. (ABET - D, G)
8. Communicate effectively using visual and graphical information, as well as verbal, written, and electronic discussions, project reports and presentations. (ABET - G)
9. Understand the impact of the assigned capstone project in a global and societal context. (ABET – H)
10. Use the acquired knowledge and intellectual skills to assist them in continual/life-long learning. (ABET-I)
11. Experience an actual existing project in light of the contemporary issues it confronts (ABET – J, L)
12. Locate, evaluate and properly use resources, techniques, skills, and modern engineering tools necessary for engineering practice. (ABET – K, L, M)

Program Outcomes: (From the ABET accreditation criteria, A, B, C, D, E, F, G, H, I, J, K, L, M)

- A an ability to apply knowledge of mathematics, science, and engineering
- B an ability to design and conduct experiments, as well as to analyze and interpret data
- C an ability to design a system, component, or process to meet desired needs
- D an ability to function on multi-disciplinary teams
- E an ability to identify, formulate, and solve engineering problems
- F an understanding of professional and ethical responsibility
- G an ability to communicate effectively
- H the broad education necessary to understand the impact of engineering solutions in a global and societal context
- I a recognition of the need for, and an ability to engage in life-long learning
- J a knowledge of contemporary issues
- K an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

L an ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy

M an ability to integrate systems using appropriate analytical, computational and experimental practices

Weighted Outcomes:

ABET Outcome	A	B	C	D	E	F	G	H	I	J	K	L	M
Weight (%)	10	10	15	5	10	5	5	5	5	5	10	10	5

% Scale: 0% has no weight and 100% has the highest weight.

Outcome Assessment: Upon completion of CE 489, students should be able to achieve the abilities / outcomes listed. These abilities will be assessed through written papers, mid-semester and final reports; engineering design calculations, and mid-semester and final formal presentations.

References / Resources: Based on the specific project that is selected, reference and resource material will be distributed in class, provided by the guest speakers, available from the Capstone Course Coordinator, and/or available on the Capstone Blackboard site.

Blackboard Site: Course communications, announcements, information, project data, and resources will be posted on the Capstone course Blackboard site as necessary.

Assignments and Grading:

Individual Reaction Papers (2)

Tau Beta Pi (TBP) Engineering Futures Reaction Paper – to be submitted by March 8th ?

Professional Career and Ethics Reaction Paper – to be submitted by April 26th .

Individual papers will be completed by each student and shall be one page long on 8.5”x11” white paper with 1” margins on all four sides and 10-12 pt Times New Roman or Arial font size. Place the date, your name, and your group number right-justified on the first line, skip two spaces and place title center-justified, skip two spaces and start the body of the report. Submit the paper electronically by email to the course coordinator as an MS Word or Adobe PDF file.

<u>Assignment</u>	<u>Weight</u>	<u>Distribution</u>	<u>Grade</u>
TBP Engineering Futures Reaction Paper	7.5%	90 - 100%	A
Professional Career & Ethics Reaction Paper	7.5%	80 - 89.9%	B
Work Plan & Conceptual Design Report	10%	70 - 79.9%	C
Mid-Semester Oral Presentation	10%	60 - 69.9%	D
Mid-Semester Preliminary Report	15%	Below 60%	F
Pre-Final Project Design Report	10%		
Final Project Oral Presentation	10%		
Final Project Design Report	<u>30%</u>		
TOTAL	100%		

CLASSROOM POLICIES, PROCEDURES and STANDARDS:

Courtesy. Students are expected to respect fellow students, faculty, invited guests, and school property. All individuals will be treated equitably, with dignity and respect, regardless of race, religion, age, and gender. To facilitate effective student learning, students will conduct themselves with maturity and professionalism at all times in the classroom. There will be zero tolerance of any violations of North Dakota University System (NDUS) policies.

Communications, Recording, and Other Electronic Devices: MP-3 Players, cell phones, pagers, including all music, recording, and/or communication devices must be turned off and stored away while in the classroom. Also, please deactivate the beeping function on watches and other electronic devices brought into the class room.

Attendance. Students are expected to attend all classes. Absences for approved documented legitimate reasons are understandable and can be excused if coordinated with the instructor prior to class time. If you cannot attend a class, it is your responsibility to get the notes from fellow students or the course Blackboard site and contact the instructor about tests or assignments.

Instructor Availability. Students should not hesitate to contact their instructor if there are any questions about the course or to discuss any other pertinent matters. Students are here to learn, and instructors are here to promote that process. I check my email regularly and I can be reached at my office phone during office hours. Expect that your email questions will be answered on a timely basis. Also check the course Blackboard site for announcements before class.

Eating/Drinking in Class. No eating is allowed in the classroom unless the instructor specifically approves on a one-time basis. Students are allowed to bring beverages (coffee, soda, water, etc) in re-sealable-top containers into class. Students are responsible for cleaning up, or if necessary, paying for damages caused by any accidents/messes they create with beverages.

Equal Opportunity. The NDUS directs that there shall be no discrimination against persons because of race, religion, age, color, sex, disability, sexual orientation, national origin, marital status, veterans' status, or political belief or affiliation, and that equal opportunity and access to facilities shall be available to all.

Discrimination or Harassment. The NDUS does not tolerate harassment. If you feel that you have been harassed, please attempt to resolve the issue at the lowest level; however, if you cannot resolve the issue at the lowest level, contact your instructor and/or the Affirmative Action Office at NDSU/UND. Further information on the NDUS discrimination and harassment policy and grievance procedures can be found in the University's Code of Student Life.

Disability Access. The NDUS is committed to providing access to all people using its facilities, programs, and services. The NDUS is responsible for making reasonable accommodations and adjustments to ensure there is no discrimination on the basis of disability, as established under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Students with disabilities who need accommodations are encouraged to speak with the instructor as soon as possible to make appropriate arrangements.

Group policies and procedures. Project work plans will be developed by each group during the first week of class. For ALL site visits, each student must read and sign the NDSU waiver of liability form provided by the course coordinator prior to site visits and tours.

Academic Honesty. CEA Honor System: All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct available at <http://www.ndsu.edu/policy/335.htm> and the CEA Honor System available on the course Blackboard site and at <http://ndsu.edu/ndsu/cea/>.

Students shall sign and date a form indicating that they understand the CEA Honor System and accept the CEA Honor Pledge prior to the evaluation and assessment of their course work.

CEA Honor Pledge: “On my honor I will not give nor receive unauthorized assistance in completing assignments and work submitted for review or assessment. Furthermore, I understand the requirements in the College of Engineering and Architecture Honor System and accept the responsibility I have to complete all my work with complete integrity. Students who are suspected of academic dishonesty may not withdraw from the course in which dishonesty is suspected while the case is under review by the Honor Commission (NDSU Policy Manual, Section 335, 2b).”