

# CE 497/499 – Senior Capstone Course in Design-Build

## Course Syllabus

### General Information:

Time: MWF 10:00 am – 10:50 am; Tue. 2:00 pm – 4:00 pm  
Location: Tapy Hall, Room 219

Instructors: Design coordinator: Dr. Kerry J. Howe, P.E.  
Office: 112 Tapy  
Phone: 277-2702  
Email: howe@unm.edu

Construction coordinator: Dr. Susan Bogus, P.E.  
Office: 110 Tapy  
Phone: 277-1395  
Email: sbogus@unm.edu

Textbook: None  
Final exam: None

### Course Goal:

Apply the principles of civil engineering design and construction to a “real-world” project.

### ABET Outcomes Addressed in this Course:

- An ability to design a system, component, or process to meet desired needs
- An ability to function on multi-disciplinary teams
- An ability to identify, formulate, and solve engineering problems
- An understanding of professional and ethical responsibility
- An ability to communicate effectively
- Recognition of the need for and an ability to engage in lifelong learning
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

### ACCE Construction Core Subject Matter Addressed in this Course:

- Cost estimating
- Planning and scheduling
- Construction accounting and finance
- Construction law
- Construction safety
- Project management

## **Conduct of the Course:**

This course is designed to provide an integrated design-build experience for all seniors in the Civil Engineering Department. Design-build is a project delivery system where design and construction professionals form a single team to provide design and construction services to a client. The class will be organized into design-build teams consisting of both engineers and construction managers, ensuring that each team has knowledge in both design and construction.

Each team will be required to produce a Design-Build Proposal for an assigned project. The Design-Build Proposal will include project design requirements and construction management requirements. Each team will do a different project. Throughout the semester, the design-build teams will make weekly progress reports as well as prepare intermediary deliverables and presentations. The final Design-Build Proposal will be formally presented to the entire class, industry mentors, and faculty from the department. Each of the deliverable packages will have a design and construction component.

This class is currently scheduled to meet Monday, Wednesday, and Friday for 50 minutes and Tuesday for 2 hours. There will be a need for teams to meet at other times with the professors and the industry mentors. We will meet as the entire class every Monday in Tapy 219. The Monday sessions will be used to present progress reports by the teams and to allow the professors to provide information on professional practice issues. Periodically, we will invite guest speakers to the Monday sessions to discuss various professional issues (specifications, contracts, ethics, etc.).

Depending on student schedules, the Wednesday and Friday class periods may be combined into one 2-hour session to allow teams more time to work together. After the first few weeks of the semester, we will discontinue formal meetings on all class days except Monday to allow the teams to meet with their industry mentors and professors. In addition to the scheduled class meetings, each team will need to conduct internal team meetings and meet with the professors and with the industry mentors on an as-needed basis.

## **Policies and Procedures:**

- Grading Elements:
  - Statement of Qualifications Submittal and Presentation – 15 %
  - Design-Build Development Submittal and Presentation – 25%
  - Final Design-Build Proposal Submittal – 25%
  - Final Design-Build Proposal Presentation – 15%
  - Weekly Progress Reports – 10%
  - Log Book and Timesheets – 10%
- Team and Individual Grades: Since the projects are team efforts, individual students on each team will nominally all receive the same grade for the submittals and presentations. Individual grades for the semester, however, may be adjusted up or down based on the student's contribution to the team. Individual contributions will be assessed based on the professors' observations of the team, industry mentors' evaluations of individuals, and peer evaluations of each other by the team members.
- Professionalism & Respect: Many very busy people have volunteered to help with this course. Please understand that all of the industry mentors have full time jobs and

respect their time constraints. Be punctual and professional in all of your dealings with the mentors. Be prepared for your meeting; have specific and explicit questions for your mentor and prepare an agenda for each meeting. Meeting minutes that include deadlines and assignments for action items should be produced after each meeting.

- Team Organization: This course requires considerable work. However, the demanding aspect of the course is the coordination and organization of the work. Each team needs to coordinate the work for both the design and construction aspects of the project. Each team will need to decide how to organize and allocate the work among the team members. One approach is to pick one person to be the overall team lead and to have other team members take primary responsibility for sub-areas (e.g., structural design, cost estimate, etc.). Using this approach, the main responsibility of the overall team lead is to plan, coordinate, and control the progress of the work.
- Time Management: Time management will be a crucial aspect of your team's success. To help you make appropriate progress, each team member will be required to submit time cards to Professor Howe or Professor Bogus every Monday. Each team member will prepare a personal time card that details the activities worked on during the week, the date the work was performed and the time spent on each activity. Each team member must sign his/her time cards.

In addition to weekly time cards, each individual must maintain a logbook that records all activity performed on the project. For the purposes of this course, the logbook is a semi-private document that will not be shared with other students. However, the logbooks will be collected by the professors a couple times during the semester to assess progress, organization, and the individual contributions of team members.

- Presentations: Each team member must participate in at least two of the three major presentations during the semester. Each team will also make a 5-minute progress report at the Monday meetings. The report will be presented by one team member. The presenter should change each week so that all team members have equal experience with presenting the progress reports.
- Academic Integrity: UNM expects all students to maintain the highest level of integrity. Cheating or plagiarism will not be tolerated. University policies regarding academic integrity are available in the UNM Student Handbook (Pathfinder) and online at <http://www.unm.edu/~sac/policies.html>.

**Course Schedule:**

<b>Week Beginning</b>	<b>Topic</b>	<b>Assignments</b>
Aug 20	Course Introduction Team Formation Project Introduction Introduction to Design-Build	Individual questionnaire
Aug 27	Elements of Project Delivery	Monday progress report & time card
Sep 3 (No class Monday)	Tuesday: Making Professional Presentations	Tuesday progress report & time card, Internal project control document (Due: Tuesday)
Sep 10	TBD	Statement of Qualifications and Presentation (Due: Tuesday)
Sep 17	TBD	Monday progress report & time card
Sep 24	TBD	Monday progress report & time card
Oct 1	TBD	Monday progress report & time card
Oct 8 (Fall Break Thu/Fri)	TBD	Design-Build Development Report and Presentation (Due: Tuesday)
Oct 15	TBD	Monday progress report & time card
Oct 22	TBD	Monday progress report & time card
Oct 29	TBD	Monday progress report & time card
Nov 5	TBD	Monday progress report & time card
Nov 12	TBD	Monday progress report & time card
Nov 19 (Turkey Break Thu/Fri)	TBD	Monday progress report & time card
Nov 26	TBD	Monday progress report & time card
Dec 3	Course Evaluation	Design-Build Proposal and Presentation (Due: Tuesday)
Final Exam: None		