

EE476 Syllabus

Capstone Design - Project Design

General Information

- *Course title:* Project Design Procedures
- *Semester/Section:* Fall 2018 - August 28 to December 15
- *Credit hours:* 2
- *Meeting time and location:* Lecture is on Friday from 2:20 to 3:10pm in Egr 101
Lab A is on Monday from 2:20 to 4:50pm in Egr 235
Lab B is on Tuesday from 2:20 to 4:50pm in Egr 235
Lab C is on Thursday from 4:00 to 6:30pm in Egr 234
Lab D is on Monday from 5:30 to 8:00pm in Egr 235
- *Class Fees:* \$45.16
- *Instructor:* Dr. Kyle N. Winfree
- *Instructor email:* kyle.winfree@nau.edu
- *Instructor phone:* 928.523.7165
- *Office location:* SICCS 216
- *Office hours:* posted outside of Dr. Winfree's office
- *Course URL:* www.cefns.nau.edu/~knw5/capstone/

Course Pre- or Corequisites

EE325, EGR386W/EE386W, EE364/EE380, and EE310/EE348 with grades of C or better.

Academic Catalog Description

Proposal phase for the capstone, industry-sponsored, team design project. Proposal includes design and build documentation. Topics include teaming, sponsor negotiations, proposal writing, documentation, and computer design and management tools. 1 hr. lecture 3 hrs. lab. Letter grade only. Course fee required.

Course Description

The EE Capstone Design Experience is a one-year capstone learning experience that must be taken over two contiguous semesters. In EE 476C, student teams complete two major client reports, begin building a website, give two graded presentations along with other smaller assignments as detailed in the grading section of this syllabus. EE 486C is the spring semester section where teams execute the proposal that was approved by their client by doing the detailed design, build, integration, testing and delivery of their project. EE 486C culminates in the Undergraduate Research and Design Symposium (UGRADS) in late April 2019.

Required Textbook

None.

Optional Textbook

Design for Electrical and Computer Engineers – Theory, Concepts and Practice, by Ralph M. Ford and Chris S. Coulson

Managing Cultural Differences, Eighth Edition: Global Leadership Strategies for Cross-Cultural Business Success, by Moran Ph.D., Robert T., Harris, Philip R., Moran MA, Sarah V

Sketching User Experiences, by Bill Buxton

Attendance

I understand that you may not be able to attend all classes, but please make every effort to. If you are going miss class, be sure to let me know before hand by submitting a letter of absence from Student Life.

You will be responsible for missed content. There will be occasional pop-quizzes or surveys. These are required, and serve the double function of attendance tracking. Your final grade will be scaled by your attendance.

Grading System

The final grade for each individual will be influenced by both individual and team-assigned work and reports. It will also be influenced by sponsor evaluations, and individual team member peer evaluations. Sponsor and peer evaluations can have a significant impact on an individual's final grade. All such evaluations are considered confidential. Your grade will also be influenced by your attendance.

Your grade will be based upon a point scoring system outlined below. Grade cutoffs will be no higher than 90% for an A, 80% for a B, 70% for a C and 60% for a D.

Your final grade will be determined by fractional contribution from assignments, quizzes, surveys, group work, individual work, presentations, and demonstrations. Aspects of each part of your grade will be scaled by peer evaluations, sponsor evaluations, and your attendance. This grading scheme can be expressed mathematically with percent of contributions as:

$$\begin{aligned} \text{grade} &= \text{attendance} \cdot \left[(\text{essay} \cdot 15\%) + (\text{lab} \cdot 15\%) + (\text{quizzes} \cdot 10\%) + \dots \right. \\ &\quad \left. ((\text{team} \cdot 30\%) + (\text{proto} \cdot 30\%)) \cdot (\text{eval}) \right] \\ &= \text{attendance} \cdot \left[(\text{essay}_{dr} \cdot 5\% + \text{essay}_{re} \cdot 5\% + \text{essay}_{fi} \cdot 5\%) + \dots \right. \\ &\quad (\text{lab}_{br} \cdot 5\% + \text{lab}_{mm} \cdot 5\% + \text{lab}_{sb} \cdot 5\%) + \dots \\ &\quad (\text{quizzes} \cdot 10\%) + \dots \\ &\quad ((\text{team}_{bl} \cdot 5\% + \text{team}_{br mm} \cdot 15\% + \text{team}_{me} \cdot 10\%) + \dots \\ &\quad \left. (\text{proto}_{pres} \cdot 15\% + \text{proto}_{demo} \cdot 15\%)) \cdot \frac{(\text{eval}_{spon} + \text{eval}_{peer})}{2} \right] \end{aligned}$$

where:

attendance will be assessed through a combination of quizzes, surveys, and lab activities;

essay_{dr} is the draft essay, *essay_{re}* is the peer review of the essay, and *essay_{fi}* is the final essay;

lab_{br} is a lab brainstorming activity, *lab_{mm}* is a lab mind mapping activity, *lab_{sb}* is a lab story boarding activity;

quizzes will be at the start of some, but not all classes;

team_{bl} are team by-laws, *team_{br mm}* is a team combined brainstorming and mind mapping activity, *team_{me}* is a team client memo;

proto_{pres} is the team prototype presentation, *proto_{demo}* is the team prototype demonstration;

eval_{spon} is your sponsor evaluation, *eval_{peer}* are your peer evaluations.

As your instructor, I reserve the right to modify both sponsor and peer evaluations when appropriate. If you feel a mistake has been made in grading your assignment, please address your concerns during office hours or via email.

Submission of Assignments

Homework assignments must be submitted on BBLearn before the deadline. All deadlines posted reflect a midnight deadline (11:59 pm, AZ time). Homework not submitted before the deadline will not be accepted. You will need to submit a pdf (not a Word, Pages, ODF, or plain text document).

Class Policies

- Students who have not completed the prerequisite(s) for this course, or who are absent from the lecture class during the first week may be administratively dropped from the course.
- The makeup and late work policies are as follows:
 - Quizzes/Surveys: No make-ups or late submissions allowed.
 - Homework: No make-ups or late submissions allowed.
 - Lab Activities: No make-ups or late submissions allowed.
 - Team Activities and Assignments: No make-ups or late submissions allowed.
 - Peer Evaluations: No make-ups or late submissions allowed.
- Cheating and plagiarism are strictly prohibited. All academic integrity violations are treated seriously. All work you submit for grading must be your own. You are encouraged to discuss the intellectual aspects of assignments with other class participants. However, each student is responsible for formulating responses and solutions on their own and in their own words. You are also encouraged to consider that intellectual property theft and plagiarism are not necessarily the same. Academic integrity violations will result in penalties including, but not limited to, a zero on the assignment, a failing grade in the class, or expulsion from NAU. Any questions or concerns should be directly addressed to the instructor via email or during office hours.
- Electronic device usage must support learning in the class. All cell phones, PDAs, music players and other entertainment devices must be turned off (or in silent mode) during lecture, and may not be used at any time. Laptops or workstations (if present) are allowed for note-taking and activities only during lectures; no web surfing or other use is allowed. I devote 100% of my attention to providing a high-quality lecture; please respect this by devoting 100% of your attention to listening and participating.
- Grades will be entered in BBLearn but your final grade will be calculated in Excel/Numbers using the grading system described above and then entered in LOUIE. Your final course grade will not necessarily appear in BBLearn. Please check LOUIE for your final grade.
- Emails to the instructor and teaching assistants must be respectful and professional. Specifically, all emails should:
 - Contain a salutation, (for example, "Dear Dr. Winfree")
 - Contain a closing, (for example, "Best, Jane Doe")
 - The body should contain complete sentences and correct grammar including correct usage of lowercase and uppercase letters. Composing emails on a mobile device is not an excuse for poor writing. Poorly composed emails may be returned without a response to the questions asked.
 - The body of your message should also be respectful and explain the full context of the query.
 - The subject should be prefixed with "EE Capstone" so that the message can be easily identified or placed in an auto-folder. The subject should also use lower case and upper case correctly.
- Although email will typically be answered quickly, you should allow up to three (3) business days for a response.
- If you have a question that would require a long response or you have a lot of questions, please come to office hours or schedule an appointment with the instructor.
- Visiting the instructor during office hours is encouraged! I am happy to talk about the class, careers, research, and topics related (even loosely) to this course.

University Policy Statements

ACADEMIC INTEGRITY

NAU expects every student to firmly adhere to a strong ethical code of academic integrity in all their scholarly pursuits. The primary attributes of academic integrity are honesty, trustworthiness, fairness, and responsibility. As a student, you are expected to submit original work while giving proper credit to other people's ideas or contributions. Acting with academic integrity means completing your assignments independently while truthfully acknowledging all sources of information, or collaboration with others when appropriate. When you submit your work, you are implicitly declaring that the work is your own. Academic integrity is expected not only during formal coursework, but in all your relationships or interactions that are connected to the educational enterprise. All forms of academic deceit such as plagiarism, cheating, collusion, falsification or fabrication of results or records, permitting your work to be submitted by another, or inappropriately recycling your own work from one class to another, constitute academic misconduct that may result in serious disciplinary consequences. All students and faculty members are responsible for reporting suspected instances of academic misconduct. All students are encouraged to complete NAU's online academic integrity workshop available in the E-Learning Center and should review the full academic integrity policy available at <https://policy.nau.edu/policy/policy.aspx?num=100601>.

COURSE TIME COMMITMENT

Pursuant to Arizona Board of Regents guidance (Academic Credit Policy 2-224), for every unit of credit, a student should expect, on average, to do a minimum of three hours of work per week, including but not limited to class time, preparation, homework, and studying.

DISRUPTIVE BEHAVIOR

Membership in NAU's academic community entails a special obligation to maintain class environments that are conducive to learning, whether instruction is taking place in the classroom, a laboratory or clinical setting, during course-related fieldwork, or online. Students have the obligation to engage in the educational process in a manner that does not breach the peace, interfere with normal class activities, or violate the rights of others. Instructors have the authority and responsibility to address disruptive behavior that interferes with student learning, which can include the involuntary withdrawal of a student from a course with a grade of "W". For additional information, see NAU's disruptive behavior policy at <https://nau.edu/university-policy-library/disruptive-behavior>.

NONDISCRIMINATION AND ANTI-HARASSMENT

NAU prohibits discrimination and harassment based on sex, gender, gender identity, race, color, age, national origin, religion, sexual orientation, disability, or veteran status. Due to potentially unethical consequences, certain consensual amorous or sexual relationships between faculty and students are also prohibited. The Equity and Access Office (EAO) responds to complaints regarding discrimination and harassment that fall under NAU's Safe Working and Learning Environment (SWALE) policy. EAO also assists with religious accommodations. For additional information about SWALE or to file a complaint, contact EAO located in Old Main (building 10), Room 113, PO Box 4083, Flagstaff, AZ 86011, or by phone at 928-523-3312 (TTY: 928-523-1006), fax at 928-523-9977, email at equityandaccess@nau.edu, or via the EAO website at <https://nau.edu/equity-and-access>.

TITLE IX

Title IX is the primary federal law that prohibits discrimination on the basis of sex or gender in educational programs or activities. Sex discrimination for this purpose includes sexual harassment, sexual assault or relationship violence, and stalking (including cyber-stalking). Title IX requires that universities appoint a "Title IX Coordinator" to monitor the institution's compliance with this important civil rights law. NAU's Title IX Coordinator is Pamela Heinonen, Director of the Equity and Access Office located in Old Main (building 10), Room 113, PO Box 4083, Flagstaff, AZ 86011. The

Title IX Coordinator is available to meet with any student to discuss any Title IX issue or concern. You may contact the Title IX Coordinator by phone at 928-523-3312 (TTY: 928-523-1006), by fax at 928-523-9977, or by email at pamela.heinonen@nau.edu. In furtherance of its Title IX obligations, NAU will promptly investigate and equitably resolve all reports of sex or gender-based discrimination, harassment, or sexual misconduct and will eliminate any hostile environment as defined by law. Additional important information about Title IX and related student resources, including how to request immediate help or confidential support following an act of sexual violence, is available at <http://nau.edu/equity-and-access/title-ix>.

ACCESSIBILITY

Professional disability specialists are available at Disability Resources to facilitate a range of academic support services and accommodations for students with disabilities. If you have a documented disability, you can request assistance by contacting Disability Resources at 928-523-8773 (voice), 928-523-6906 (TTY), 928-523-8747 (fax), or dr@nau.edu (e-mail). Once eligibility has been determined, students register with Disability Resources every semester to activate their approved accommodations. Although a student may request an accommodation at any time, it is best to initiate the application process at least four weeks before a student wishes to receive an accommodation. Students may begin the accommodation process by submitting a self-identification form online at <https://nau.edu/disability-resources/student-eligibility-process> or by contacting Disability Resources. The Director of Disability Resources, Jamie Axelrod, serves as NAU's Americans with Disabilities Act Coordinator and Section 504 Compliance Officer. He can be reached at jamie.axelrod@nau.edu.

RESPONSIBLE CONDUCT OF RESEARCH

Students who engage in research at NAU must receive appropriate Responsible Conduct of Research (RCR) training. This instruction is designed to help ensure proper awareness and application of well-established professional norms and ethical principles related to the performance of all scientific research activities. More information regarding RCR training is available at <https://nau.edu/research/compliance/research-integrity>.

SENSITIVE COURSE MATERIALS

University education aims to expand student understanding and awareness. Thus, it necessarily involves engagement with a wide range of information, ideas, and creative representations. In their college studies, students can expect to encounter and to critically appraise materials that may differ from and perhaps challenge familiar understandings, ideas, and beliefs. Students are encouraged to discuss these matters with faculty.