

**Department of Civil Environmental and Geomatics Engineering
Florida Atlantic University
Course Syllabus**

1. Course title/number, number of credit hours			
CGN4804C RI: Civil, Environmental & Geomatics Engineering Design 2		3 credit hours	
2. Course prerequisites, co-requisites, and where the course fits in the program of study			
<p><i>For Civil Engineering Majors:</i> <i>Prerequisites:</i> structural design restricted elective and CGN 4803C with minimum grades of "C"; GPA greater than 2.0; permission of Department <i>Pre- or Co-requisites:</i> Geotechnical design restricted elective, Transportation design restricted elective, and Water Resources design restricted elective</p> <p><i>For Geomatics Engineering Majors:</i> <i>Prerequisites:</i> GPA greater than 2.0, and permission of Department and CGN 4803C with minimum grade of "C" <i>Co-requisites:</i> None</p> <p><i>For Environmental Engineering Majors:</i> <i>Prerequisites:</i> GPA greater than 2.0, and permission of Department and CGN 4803C with minimum grade of "C" <i>Co-requisites:</i> None</p> <p>This is a senior level course in which multidisciplinary design teams are formed and projects selected for the senior capstone design project which teaches students the principles of engineering design and project management and prepares them to join the workforce. This is a writing intensive course.</p>			
3. Course logistics			
<p><i>Term:</i> Spring 2019 This is a classroom lecture course <i>Class location and time:</i> Tue. / Wed. 4:00 pm – 6:50 pm</p>			
4. Instructor contact information			
Instructor's name	Dr. Frederick Bloetscher, PE, Associate Professor	Dr. Daniel E. Meeroff, E.I. Professor	Mr. Albert Muniz, P.E. Vice President
Office address	Engineering east – Dean's Office	Bldg 5 1 st Floor	Hazen and Sawyer Boca Raton FL
Office hours	T/R 2-3:30	T/R 11:00 am – 12:20 pm	By appt only
Telephone no.	239-250-2423	561-297-3099	561-997-8070
Email address	h2o_man@bellsouth.net	dmeeroff@fau.edu	amuniz@hazenandsawyer.com
5. TA contact information			
Not applicable			
6. Course description			
<p>The class generally meets once per week (for 180 minutes) for lectures and professional practice. The lectures focus on key aspects of the engineering profession relevant to the assignments. Professional practice focuses on the development of a capstone design project and specific engineering skills. The work involves engineering due diligence, basis of design, site reconnaissance, and site planning.</p> <p>This is a writing intensive course and will fulfill the writing across the curriculum (WAC) requirements for 2000-4000 level courses. Writing assignments promote critical thinking, reading of sustained and challenging texts, and analytical writing. Writing assignments during the semester include formal technical reports. These</p>			

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<p>assignments are evaluated not only for technical content but also for clarity, composition, and organization of writing. A final examination is given on lecture materials. Students are also required to attend at least one (1) professional meeting during the semester. <i>If this class is selected to participate in the university-wide WAC assessment program, you will be required to access the online assessment server, complete the consent form and survey, and submit electronically a first and final draft of a near-end-of-term-paper.</i></p>		
7. Course objectives/student learning outcomes/program outcomes		
<i>Course objectives</i>	<ol style="list-style-type: none"> I. Create a preliminary design for a project that is acceptable to a sponsor or client. II. Develop a fundamental understanding of engineering economics and depreciation. III. Understand professional practice issues such as the involvement in and contribution to professional societies, licensing, ethics, and life-long learning. IV. Enhance ability to communicate effectively about designs. 	
<i>ABET 1-7 outcomes</i>	<ol style="list-style-type: none"> 1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors 3. an ability to communicate effectively with a range of audiences 4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts 5. 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 6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies 	
<i>Course outcomes & relationship to ABET 1-7 Student Outcomes</i>	<ol style="list-style-type: none"> A. Ability to create a preliminary design for a project that is acceptable to a sponsor or client (1- 7) B. Ability to understand professional practice issues such as engineering economics and depreciation, engineering ethics, development of specifications and procurement (1- 7) C. Ability to communicate effectively with a range of audiences (3) D. 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 (5) 	
<i>Relationship to Civil Engineering educational objectives</i>	Objective A: Practice civil engineering within the general areas of structural engineering, transportation engineering, geotechnical engineering, and water resources/environmental engineering in the organizations that employ them.	H
	Objective B: Advance their knowledge of civil engineering, both formally and informally, by engaging in lifelong learning experiences including attainment of professional licensure, and/or graduate studies.	H
	Objective C: Serve as effective professionals , based on strong interpersonal and teamwork skills, an understanding of professional and ethical responsibility, and a willingness to take the initiative and seek progressive responsibilities.	H
	Objective D: Participate as leaders in activities that support service to, and/or economic development of, the region, the state and the nation	H
	Objective A: Practice geomatics engineering within the general areas of boundary and land surveying, geographic information systems (GIS), photogrammetry, remote sensing, mapping, geodesy, and global navigation satellite positioning systems in the organizations that employ them.	H

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<i>Relationship to Geomatics Engineering educational objectives</i>	Objective B: Advance their knowledge of geomatics engineering, both formally and informally, by engaging in lifelong learning experiences including attainment of professional licensure, and/or graduate studies.	H
	Objective C: Serve as effective professionals , based on strong interpersonal and teamwork skills, an understanding of professional and ethical responsibility, and a willingness to take the initiative and seek progressive responsibilities.	H
	Objective D: Participate as leaders in activities that support service to, and/or economic development of, the region, the state and the nation.	H
<i>Relationship to Environmental Engineering educational objectives</i>	Objective A: Practice environmental engineering within the general areas of water and wastewater, air quality, solid and hazardous waste, and groundwater and soils in the organizations that employ them.	H
	Objective B: Advance their knowledge of environmental engineering, both formally and informally, by engaging in lifelong learning experiences including attainment of professional licensure, and/or graduate studies.	H
	Objective C: Serve as effective professionals , based on strong interpersonal and teamwork skills, an understanding of professional and ethical responsibility, and a willingness to take the initiative and seek progressive responsibilities.	H
	Objective D: Participate as leaders in activities that support service to, and/or economic development of, the region, the state and the nation.	H

Research-Intensive (RI) Designated Course

This course contains multiple assignments designed to help students conduct research and inquiry at an intensive level. If this class is selected to participate in the university-wide assessment program, students will be asked to complete a consent form and submit electronically some of their research assignments for review. Visit the Office of Undergraduate Research and Inquiry (OURI) for additional opportunities and information at <http://www.fau.edu/ouri>.

OURI Student Learning Outcomes

Capstone projects are expected to achieve all six of the following Student Learning Outcomes (SLOs):

SLO 1: Knowledge. Students are expected to demonstrate content knowledge, and knowledge of core principles and skills.

SLO 2: Formulate Questions. Students are required to formulate research questions, scholarly or creative problems in a manner appropriate to the planning discipline.

SLO 3: Plan of Action. Students are expected to develop and implement a plan of action to address research and inquiry questions or scholarly problems.

SLO 4: Critical Thinking. Students are expected to apply critical thinking skills to evaluate information, their own work, and the work of others.

SLO 5: Ethical Conduct. Students are expected to identify significant ethical issues in research and inquiry and/or address them in practice.

SLO 6: Communication. Students will convey all aspects of their research and inquiry (processes and/or products) in appropriate formats, venues, and delivery modes.

Progress Reports	49%	<i>Note:</i> The minimum grade required to pass the course is C. 79% of your grade is your written progress reports
Final Exam -MiniFE	10%	
5 FE quizzes	5%	
Final Report	30%	
Class Assignments and professional commitment	6%	

9. Course grading scale

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Course grades are assigned according to the attached Department of Civil, Environmental & Geomatics Engineering Grading Guidelines. Assignments and reports must be prepared according to the required formats (see attached documents: (a) Assignment Presentation and (b) Technical/Project/Laboratory Report Writing). Additional requirements may be given by the instructor.

10. Policy on makeup tests, late work, and incompletes

1. Exams will be given only at the scheduled times and places. No one is exempt from the final examination.
2. *Makeup tests* are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exams will be administered and proctored by department personnel unless there are other pre-approved arrangements.
3. *Late work* is not acceptable.
4. *Incomplete grades* are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation, incomplete grades will not be given.
5. *Attendance* to class is required. You are expected to attend and participate in all class sessions. Final grades will be reduced by one letter for every three (3) unexcused absences (as determined by the instructor).

11. Special course requirements

This is a writing intensive course and will fulfill the writing across the curriculum (WAC) requirements for 2000-4000 level courses. The goal of integrating writing in this course is to improve students' ability to produce professional quality engineering reports. For more information, contact the University Center for Excellence in Writing at 561-297-3498 or www.fau.edu/UCEW.

12. Classroom etiquette policy

1. Cell phones and beepers should have the ringers turned off as a courtesy to the instructor and your fellow classmates.
2. You are expected to complete the assigned reading prior to the date indicated on the class schedule, to do all homework assignments, and to participate fully in the group projects.
3. Assignments are due at the beginning of class on the date indicated on the assignment sheet. Late assignments are not accepted. Assignments turned in early will receive extra credit.
4. University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.

12. Classroom etiquette policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.
Students walking out the classroom during lecture are not allowed to return except for medical conditions.

13. Disability policy statement

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

14. Counseling

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services –

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individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

15. Honor code policy

Consultation with your classmates on assignments is expected and encouraged; however what you turn in must be your own work. Representing the work of others as your own is unethical and may result in sanctions (see the FAU Policy on Academic Honesty). FAU is committed to a policy of honesty in academic affairs. The instructor's duty is to pursue any reasonable allegation, taking action where appropriate, as described in the appropriate section of the FAU Catalog (<http://www.fau.edu/ug-cat/academic.htm#irregular>) and the Florida Administrative Code. Please be advised that the copying of material from the world wide web or any other written material is considered plagiarism and is also a breach of the Honor Code.

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at

http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

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Regulation 4.001 Code of Academic Integrity

(1) Purpose. Students at Florida Atlantic University are expected to maintain the highest ethical standards. Dishonesty is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility.

(2) Definitions. The FAU Code of Academic Integrity prohibits dishonesty and requires a faculty member, student, or staff member to notify an instructor when there is reason to believe dishonesty has occurred in a course/program requirement. The instructor must pursue any reasonable allegation, taking action where appropriate. Examples of academic dishonesty include, but are not limited to, the following:

(A) Cheating

1. The unauthorized use of notes, books, electronic devices, or other study aids while taking an examination or working on an assignment.
2. Providing unauthorized assistance to or receiving assistance from another student during an examination or while working on an assignment.
3. Having someone take an exam or complete an assignment in one's place.
4. Securing an exam, receiving an unauthorized copy of an exam, or sharing a copy of an exam.

(B) Plagiarism

1. The presentation of words from any other source or another person as one's own without proper quotation and citation.
2. Putting someone else's ideas or facts into your own words (paraphrasing) without proper citation.
3. Turning in someone else's work as one's own, including the buying and selling of term papers or assignments.

(C) Other Forms of Dishonesty

1. Falsifying or inventing information, data, or citations.
2. Failing to comply with examination regulations or failing to obey the instructions of an examination proctor.
3. Submitting the same paper or assignment, or part thereof, in more than one class without the written consent of both instructors.
4. Any other form of academic cheating, plagiarism, or dishonesty.

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(3) Procedures.

(A) If the instructor determines that there is sufficient evidence to believe that a student engaged in dishonesty, the instructor will meet with the student at the earliest possible opportunity and provide notice to the student of the instructor's perception of the facts, the charges against the student, and the sanction. The instructor may not remove the student from the course until the appeal process has come to a conclusion.

(B) If, after this meeting, the instructor continues to believe that the student engaged in dishonesty, the instructor will provide the student written notice of the charges and the penalty. A copy of this statement shall be sent to the chair of the department or director of the school/program administering the course.

(C) The student is entitled to an opportunity to be heard at a meeting with the instructor and chair/director to review and discuss the instructor's charges/statement. Such request for a meeting must be made in writing and received by the chair/director within five (5) business days of receipt of the instructor's charges/statement. The purpose of the meeting is to discuss the facts and to advise the student of the appeal process. The chair/director will provide the student, the instructor, and the dean of the college administering the course a summary of both the student's position and the instructor's position.

(D) The student may appeal in writing to the dean of the college administering the course. The appeal must be received by the dean within five (5) business days of receipt of the chair/director's summary from the review meeting. The dean will convene a Faculty-Student Council ("Council"), which will be composed of the dean (or designee), two faculty members, and two students. The dean (or designee) will act as chair of the Council, direct the hearing, and maintain the minutes and all records of the appeal hearing, which will not be transcribed or recorded. The hearing is an educational activity subject to student privacy laws/regulations, and the strict rules of evidence do not apply. The student may choose to be accompanied by a single advisor, but only the student may speak on her/his own behalf. The student and instructor may present testimony and documents on his/her behalf. Additional witnesses may be permitted to speak at the dean's (or designee's) discretion and only if relevant and helpful to the Council. The Council will deliberate and make a recommendation to the dean to affirm or void the instructor's findings of academic dishonesty. The dean (or designee) will inform the student and instructor in writing of his/her findings of academic dishonesty after receipt of the Council's recommendation.

(E) The student may request an appeal in writing of the dean's findings of academic dishonesty to the University Provost (or designee) and include relevant documentation in support of such appeal. The University Provost (or designee) will notify the student, dean, and instructor of his/her decision in writing. This decision by the Provost (or designee) constitutes final University action.

(F) If there is a finding that the Code of Academic Integrity has been violated, the chair will notify the University Registrar that the following notation be included on both the student's official transcript and on the student's internal record: "Violation of Code of Academic Integrity, University Regulations 4.001." If such violation is appealed and overturned, the dean or University Provost (or their designees) will notify the University

Registrar that such notation should be removed from the student's transcript and internal record.

(4) Penalties.

(A) The instructor will determine the penalty to be administered to the student in the course. Penalty grades cannot be removed by drop, withdrawal, or forgiveness policy. Students should be aware that, in some Colleges/programs, failure in a course or a finding of dishonesty may result in other penalties, including expulsion or suspension from the College/program.

(B) In the case of a first offense, the student may elect to complete a peer counseling program administered by the Division of Student Affairs by the end of the semester following the semester in which the dishonesty occurred. Upon successful completion of this program, the notation regarding violation of the Code of Academic Integrity will be expunged from the student's official transcript. The grade, however, will remain unchanged and

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cannot be removed by drop or forgiveness policy. Also, the notation will remain in internal University student records.

(C) In the case of a repeat offense, even if the notation of violation of the Code of Academic Integrity from the first offense had been expunged from the official transcript as a result of successful completion of the peer counseling program, the student will be expelled from the University.

Specific Authority: Article IX of the Florida Constitution, 1001.706, 1001.74 F.S., Board of Governors Regulations 1.001, 6.010, and 6.0105. History–New 10-1-75, Amended 12-17-78, 3-28-84, Formerly 6C5-4.01, Amended 11-11-87. Formerly 6C5-4.001. Amended 5-26-10

16. Required texts/reading

First 2 textbooks required for both semesters of the Capstone Engineering Design sequence

1. **Bloetscher, F. and Meeroff, D.M. (2015) Capstone Engineering Design, JRoss, Plantation FL**
2. **Dropbox** - Materials as needed for the design project development
3. Blank, L & Tarquin, A. (2014) Basics of Engineering Economy, 2nd Edition, McGraw-Hill, NY, ISBN: 9780073376356
4. Colley, B.C. (2005) Practical Manual of Land Development, 4th Ed, McGraw- Hill
5. Handouts provided by instructor
6. Blackboard registration

17. Supplementary/recommended readings

1. Florida Building Code
2. Plumbing Code
3. ASHRAE
4. South Florida Water Management District Guidebook
5. USGBC LEED Handbook

18. Academic Service Learning Statement

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Due to the nature of the course content, this course is designated as an “academic service-learning” course. The assistance you provide to the agency/organization during your academic service-learning experience is a service to the community and will allow you to apply knowledge from the course to local, national, and/or global social issues. Throughout this course you will be participating in academic service-learning activities while demonstrating civic engagement at campus, local, national, and/or global community levels. You will also reflect on your academic service-learning experience and the impact on the community as well as your professional development.

To receive academic service-learning notation of hours on your transcript, your hours must be logged electronically through **NobleHour**, www.noblehour.com, while completing your academic service-learning project. Also, pre-assessment and post-assessment surveys through Survey Monkey are required to be taken by academic service-learning students. Please visit the Weppner Center for Civic Engagement & Service website, www.fau.edu/volunteer, for instructions on how to log hours through NobleHour and the links for the surveys. Once your hours have been approved and both surveys have been completed, you will receive an academic service-learning notation on your transcript.

Assessment of your performance in this aspect of the course is accomplished using your Professional Practice Assignments/Presentations/Reports, the Final Report, and Class Assignments, as evaluated using the rubrics at the end of this syllabus and also found in blackboard.

If you are selected to participate in the university-wide Academic Service-Learning program, you will be required to document a minimum of 10 hours of student service to the community agency.

The reflection paper is for you to write what you learned in this class, what were your personal contributions to the project, what was your perception of your teammates' contributions, how the experience can be improved, and the impact on the community as well as your professional development. This assignment goes as an appendix to the final report and is required for the Academic Service Learning and Writing Across the Curriculum portions of the course. Reflection paper is due by email the Morning of the final presentations.

19. Other

1. College of Engineering and Computer Science (COECS) Technology Services Group (TSG)

TSG provides support for students with issues related to the use of College computing resources such as lamp.cse.fau.edu, the student web server, and GENIE, the Citrix Remote Application Server. TSG also supports the Microsoft Developer Network Academic Alliance portal through which students taking courses in CEECS can obtain free copies of many software products from Microsoft. Details of these and other resources are described on the TSG web site at tsg.eng.fau.edu.

For support issues not covered on the web site students must send email to help@eng.fau.edu. TSG responds to help requests only through this email address. Do not attempt to phone them or contact them personally. TSG support is limited to assistance with COECS computing resources such as having your password on lamp reset. They do not handle specific course related questions. Those should be directed to the instructor for the course.

2. FAU Information Resource Management (IRM)

IRM provides support for general computing and network issues at FAU. General information and many resources can be found on the IRM site, www.fau.edu/irm/index.php. IRM provides direct student through an online Help Desk at www.fau.edu/helpdesk/. The help desk includes extensive online support resources and a “Ticket” submission system for support requests. Areas of particular concern to students in this course covered by the Help Desk include general Blackboard, FAU NetId and network login, and FAU Google Email. The Help Desk can also be accessed by phone at (561) 297-3999. Phone access should generally be used

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only if you are unable to log in to FAU systems. For most other issues the phone consultant will simply record your concern and submit a help ticket on your behalf. The help ticket will get the same treatment as one you submit directly.

3. College of Engineering and Computer Science (COECS) Division of Engineering Student Services (ESS)

ESS provides general advising and academic support for students in COECS including free tutoring support for all students in computer science courses. Additional information can be found on their web page at www.eng.fau.edu/engineering-student-services.

4. FAU University Center for Excellence in Writing (UCEW)

The UCEW, sometimes referred to simply as the Writing Center, provides assistance to students with writing assignments through consultants. They can assess student writing skills and suggest approaches to dealing with problem areas. The center web site is at www.fau.edu/UCEW/WC.

20. Course topical outline, including dates for exams/quizzes, papers, completion of reading

This is an approximate schedule of topics to be covered. The seminar meets from 4:00 – 6:50 PM on Tuesdays (although presentations will be Tue/Wed).

Date	Topic	Assignment
Week 1 T 8/21	Introduction (Bloetscher) Preparing Progress Reports (Muniz/Bloetscher)	
Week 2 T 8/28	Discussion of TMs and Drawing expectations Discussion of Roof Drainage Approach Water and Sewer Design Stormwater Design HVAC Design	
Week 2 W 8/29	Discussion of Structural Building Concepts Discussion of Foundation Concepts for Buildings	
Week 3 T&W 9/4&5	PRESENTATION #1: Progress Report #1 and proposed work schedule (groups)	<ul style="list-style-type: none"> • Canvas Board Exam 1 Friday 9/7 – all FE exams open at noon and close at 10 pm
Week 4 T 9/11	Discussion of Roadway Design, Grading, Drainage Cut and Fill (Bloetscher)	<ul style="list-style-type: none"> • Progress Report #1 Due
Week 5 T 9/18	Getting Work, Accounting for it	<ul style="list-style-type: none"> • Canvas Board Exam 2 Friday 9/21
Week 6 T 9/25	Economics Review	
Week 7 T&W 10/2&3	PRESENTATION #2 – Progress Report 2 w <ul style="list-style-type: none"> • Structural design with preliminary details in AutoCAD • Water/Sewer design drawing set with details, incl. EPANET simulation output with lift station design and details in AutoCAD • HVAC design • Energy Model outline • Soil borings, Geotech analysis, Grading plan • Preliminary traffic counts and Horizontal/vertical curves, pavement design and cross-section in AutoCAD 	<ul style="list-style-type: none"> • Draft TMs for Structures, Water/Sewer, HVAC • Canvas Board Exam 3 Friday 10/5

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	<ul style="list-style-type: none"> Preliminary drainage plan preliminary calculations 	
Week 8 T 10/9	Ethics (guest) Maybe no class- FB out on ABET visit	
Week 10 T 10/16	Review of Engineering Economics	<ul style="list-style-type: none"> Final TMs for Structures, Water/Sewer, HVAC Canvas Board Exam 4 Friday 10/19
Week 11 T&TH 10/23&25	PRESENTATION #3 – Progress Report 3 w <ul style="list-style-type: none"> Foundation design with cross section details in AutoCAD Final Roof design concept and drainage calculations Drainage plan with details in AutoCAD Landscaping plans and details Final Transportation drawing set with details <p>You need to be pretty well done by now!!!! If you are not, this will be a problem for you</p>	<ul style="list-style-type: none"> Draft TMS for Foundation, Stormwater, Roads, Energy Model TMs
Week 12 Wed 10/24	INFRASTRUCTURE NIGHT – mandatory attendance	
Week 12 T 10/30	Feedback on TMs – Individual groups to meet	<ul style="list-style-type: none"> Canvas Board Exam 5 Friday 11/2
Week 13 T 11/6	Exercise - Ethics and Economics on Board	<ul style="list-style-type: none"> Economics Final TMS for Foundation, Stormwater, Roads, Energy Model TMs
Week 14 T 11/13	Group meets	<ul style="list-style-type: none"> Canvas Board Exam 6 Friday 11/16 Reflection paper DUE
Week 15 T&W 11/20&21	PRESENTATION #4: Progress Report #4 - DRAFT FINAL, incl LEED TM, Cost TM, Landscaping plan – ALL Technical Memoradums (groups)	<ul style="list-style-type: none"> Progress Report #4 w Final TMs
Week 16 T 11/27	MINI-FE	
Week 16 tbd	FINAL PRESENTATION: Design of Capstone Project (groups)	
12??	Senior Showcase	<ul style="list-style-type: none"> Final Capstone Design Report, specifications, drawings, poster, TMs and cost estimates due All other documents!
Summary of Assignments	REPORTS/ PRESENTATIONS <i>Tentative Requirements</i> <ol style="list-style-type: none"> Proposed work schedule/task assignments, modified site plan, proposed structural plan Preliminary structural plan, final site utility plan, utility details Completed structural plan, proposed roof, foundation, HVAC, plumbing plans 	HOMEWORK ASSIGNMENTS <ol style="list-style-type: none"> Economics Progress reports Draft Final Report Final Report Reflection paper <p><i>Drawing sets are expected to be in AutoCAD format.</i></p>

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	<ol style="list-style-type: none">4. Completed roof, foundation, HVAC, plumbing plans, draft details5. Final landscape, drainage, site improvements plan, final details, costs, LEED points, economic feasibility, construction phasing plans	
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20. Writing Assignments

This is a report writing intensive class. The class builds on work efforts (defined in four progress reports in this syllabus) to develop a full design report for your project. Each progress report will be graded by the instructor and returned to you. Two of the reports (Progress Reports 2 and 3) will be reviewed by your peers prior to grading by the instructor. A substantial revision is expected as the final progress reports for this assignment.

Each progress report is a stand-alone document that should explain where you are in the project, your assumptions, progress, a demonstration of the calculations, codes, and other material you are using for your design and an explanation how the pieces fit together to reach your final recommended solution. The progress reports should contain the data and information that you will configure into separate technical memoranda for each design aspect for the class. These will be appendices in the final report.

The written descriptions below identify the expected content for each report. The evaluation criteria is included at the end of the syllabus. The class will spend time in three classes discussing strategies for improving writing (first class and two peer review classes). Students with writing difficulties will be referred to the Writing Lab.

NOTE: Presentations are to provide a verbal summary of the Progress reports and to get input and feedback in areas where there are questions or issues.

Upon completing this WAC-designated course, students will be able to:

- Produce both finished writing and preparatory writing (e.g., multiple drafts of formal writing);
- Use writing to engage actively with course material;
- Employ critical thinking based on well-reasoned assumptions;
- Demonstrate the distinction between learning-to-write activities from writing-to-learn activities;
- Recognize and practice writing as a recursive process that demands substantial reworking of drafts (global revision) to revise content, organization, clarity, argument structures, etc., as distinct from editing and correction of surface error (local revision);
- Demonstrate enhanced learning through global and local revision that is based on "learning-centered" grading criteria;
- Demonstrate the ability to respond to readings, including student texts, during class-wide or small-group discussions and/or in informal writings;
- Demonstrate disciplinary forms and styles of writing that include proper citation format;
- Demonstrate the abilities to identify, understand, and edit for global organization, style, and the patterns of error recurrent in their own writing.

Students will receive substantive feedback on graded assignments and drafts from the instructors, in a timely fashion. You will be required to incorporate the feedback into assigned revisions (or supply a written response if not in agreement with a specific or contradictory comment).

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Summary of CGN 4804

Reports

Content of Progress Report #1:

- Final site plan, floor plan, elevations, and surveying in AutoCAD
- Discussion of Structural/Foundation concepts and options
- Discussion of Transportation concepts and options
- LEED, Green features
- Costs

Presentation #2 Technical Memorandums

- Structural design with preliminary details in AutoCAD
- Water/Sewer design drawing set with details, incl. EPANET simulation output with lift station design and details in AutoCAD
- HVAC design
- Energy Model outline
- Soil borings, Geotech analysis, Grading plan
- Preliminary traffic counts and Horizontal/vertical curves, pavement design and cross-section in AutoCAD
- Preliminary drainage plan preliminary calculations
- Update LEED, Green features
- Update Costs

Presentation #3 Technical Memorandums

- Foundation design with cross section details in AutoCAD
- Final Roof design concept and drainage calculations
- Drainage plan with details in AutoCAD
- Landscaping plans and details
- Final Transportation drawing set with details

Presentation #4 Draft Final

- Final Structural details in AutoCAD
- Final Foundation details in AutoCAD
- Final Transportation details in AutoCAD
- Final Water/Sewer details in AutoCAD
- Final HVAC details in AutoCAD
- Final Drainage details in AutoCAD
- Final Landscaping details in AutoCAD
- Final LEED, Green features
- Preliminary Cost Analysis

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OUTLINE OF FINAL PROJECT

Transmittal memo

Cover page

TOC

TOF

TOT

Executive Summary

Introduction (outline project, locations, goals, criteria)

Final Progress report – summarize everything you have done both semesters, incl ESA, site plan, Building rendering, floor plan and summary of design parameters for each of the technical memoranda included as the appendices. The expectation is that the progress report will permit the reader to understand your design, its issues, and the work accomplished in the class.

Schedule Update

Conclusions with costs, LEED summary , etc

Appendix A – Site plan Tech. Memo (last semester revised)

Appendix A.1 Calculations

Appendix A.2 – Drawings

Appendix A.3 Tech documentation

Appendix A.4 - Codes

Appendix A.5 - Other

Appendix B – Structural TM

Appendix B.1 Calculations

Appendix B.2 – Drawings

Appendix B.3 Tech documentation

Appendix B.4 - Codes

Appendix B.5 - Other

Appendix C – Geotech TM

Appendix C.1 Calculations

Appendix C.2 – Drawings

Appendix C.3 Tech documentation

Appendix C.4 - Codes

Appendix C.5 - Other

Appendix D – Water and Sewer Service TM

Appendix D.1 Calculations

Appendix D.2 – Drawings

Appendix D.3 Tech documentation

Appendix D.4 - Codes

Appendix D.5 - Other

Appendix E – Drainage TM (incl roof)

Appendix E.1 Calculations

Appendix E.2 – Drawings

Appendix E.3 Tech documentation

Appendix E.4 - Codes

Appendix E.5 - Other

Appendix F – Transp TM

Appendix F.1 Calculations

Appendix F.2 – Drawings

Appendix F.3 Tech documentation

Appendix F.4 - Codes

Appendix F.5 - Other

Appendix G – HVAC TM

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- Appendix G.1 Calculations
- Appendix G.2 – Drawings
- Appendix G.3 Tech documentation
- Appendix G.4 - Codes
- Appendix G.5 - Other
- Appendix H – Landscape TM
 - Appendix H.1 Calculations
 - Appendix H.2 – Drawings
 - Appendix H.3 Tech documentation
 - Appendix H.4 - Codes
 - Appendix H.5 - Other
- Appendix I – Cost Estimate
 - Appendix I.1 Calculations
 - Appendix I.2 – Drawings
 - Appendix I.3 Tech documentation
- Appendix K – LEED Templates
- Appendix M – Green Building report
- Appendix N - RFP
- Appendix O - ESA
- Appendix P - PR 1
- Appendix Q – PR 2
- Appendix R - PR 3
- Appendix S – PR 4
- Appendix T – Meeting Minutes
- Appendix U – Time Sheets
- Appendix V - Anything else you need

Each appendix is designed to be a stand-alone technical memorandum that is designed to be a complete summary of the design for a particular aspect of the project. It is expected that the reader will be able to take this information and replicate your work. Hence all calculations, codes and drawings must be included. A written description of your methods, assumptions and application of technical data is required. The outline for each Technical Memorandum includes:

Intro to the problem

Alternative decision used

Detailed design with calculations (can be an appendix to TM (i.e. for Structures, the App would be A-1, A-2, A-3, etc)

Final design

- Appendices
- A - Calculations
 - B – Drawings
 - C - Tech documentation
 - D - Codes
 - E - Other

It is expected that the Technical memoranda will be written in a professional manner acceptable to the engineering community and future clients.

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Report Rubric**

	Excellent	Good	Fair	Poor	Unacceptable
<input checked="" type="checkbox"/> Letter of Transmittal	Format is correct. Opening and closing provide primacy and recency. Professional tone. No obvious errors. Signed.	Format is correct, but has deficiencies in opening, closing, or tone. Includes obvious errors or not signed.	Format is incorrect, or has deficiencies in opening, closing, or tone. Includes obvious errors or not signed.	Format is incorrect, and has deficiencies in opening, closing, or tone. Includes obvious errors or not signed.	No letter included.
<input checked="" type="checkbox"/> Executive Summary	Stand alone, with all essential elements summarized.	Too long or too short or missing one of the essential elements.	Too long or too short and missing one of the essential elements.	Too long or too short and missing more than one of the essential elements.	No summary included.
<input checked="" type="checkbox"/> Opening	Report starts strong with scope and objectives clearly presented. Fully and completely expresses the primary argument in its context at the beginning of the report.	Generally expresses the primary argument in its context at the beginning of the report.	Vaguely or partially expresses the primary argument with minimal context in the report.	May not express the primary argument or provide context anywhere in the report.	Not an argument driven report.

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	Excellent	Good	Fair	Poor	Unacceptable
<input checked="" type="checkbox"/> Organizational Structure	Presents a clear statement located in the beginning of paper that demonstrates how the argument will track the fundamental, secondary, and implied problems, questions, issues.	Presents a general statement located in the beginning of the paper that demonstrates how the argument will track the fundamental, secondary, and implied problems, questions, issues.	Presents a vague or partial statement located somewhere in the paper that demonstrates how the argument will track the fundamental, secondary, and implied problems, questions, issues.	Presents no organizational statement. Readers are not able to determine how the report will proceed.	Not an argument driven report.
<input checked="" type="checkbox"/> Content	Report displays professional level of knowledge of subject matter with no important content left out and no incorrect material presented.	Report displays professional level of knowledge of subject matter with minor amount of subject material left out or minor amount of incorrect materials presented.	A substantial amount of the report fails to display professional level of knowledge of subject matter with substantial amounts of subject material left out or substantial amounts of incorrect materials presented.	A substantial amount of the report fails to display professional level of knowledge of subject matter with substantial amounts of subject material left out and substantial amounts of incorrect materials presented.	Not an argument driven report.

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	Excellent	Good	Fair	Poor	Unacceptable
<input checked="" type="checkbox"/> Rhetorical Structure	The argument's focus is clear to the reader and paragraphs logically and coherently build upon each other through the complete and fluent use of transitions and/or headings towards a logical conclusion supported by data.	The argument's focus is generally clear to the reader, and the use of transitions lends a sense of progression and coherence towards a logical conclusion with some data support.	The argument's focus is unclear to the reader. Some transitions are used, providing little or no sense of direction. Conclusion is unclear or not supported.	Transitions and sense of progression are absent. Conclusion is weak with little or no data support.	Not an argument driven paper.
Reasoning	Exhibits substantial depth and complexity of thought supported by sophisticated ideas/analysis/evidence that support the report's argument.				
Continuity	Facts are presented in a logical sequence and transitions effectively between topics and authors. Builds towards an effective conclusion. Considers context, assumptions, data, and evidence.				
Data Support	Seamlessly incorporates and explains the accuracy and relevance of data/evidence/ quotations/paraphrase/visuals; offers evidence from a variety of sources, including counterarguments, contrary evidence, and quantitative analysis. Presents data in graphical, tabular, or sketch format, follows all rules for tables/figures format, include proper units and labels, raw data goes in appendix, tables/figures are numbered independently, all mentioned in the text.				
Conclusion	Finishes strong with a reasonable summary and/or recommendations presented, as justified from the body of the report using primacy and recency.				

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	Excellent	Good	Fair	Poor	Unacceptable
<input checked="" type="checkbox"/> Overall Impression	Presentation addresses all important subject matter; demonstrates conceptual understanding of the content, and responds to the purpose of the report; slides are cohesive, clear, concise, and organized well; presentation has many strengths; delivery is professional; question and answers show excellent engineering judgment.	Presentation addresses most of the important subject material; demonstrates conceptual understanding of the content, and responds to the purpose of the report; majority of slides are cohesive, clear, concise, and organized well; presentation has strengths; delivery is professional; question and answers show good engineering judgment.	Presentation addresses some of the important subject material; demonstrates conceptual understanding of the content, and responds to the purpose of the report; some of the slides are cohesive, clear, concise, and organized well; presentation has few strengths; delivery is professional; question and answers show some engineering judgment.	Presentation addresses little of the important subject material; demonstrates conceptual understanding of the content, and responds to the purpose of the report; some of slides are cohesive, clear, concise, and organized well; presentation has requires major revision; delivery is professional; question and answers show lack of engineering judgment.	Presentation is completely unprofessional.
<input checked="" type="checkbox"/> References Follow the format in http://pubs.asce.org	Cites and formats sources accurately and consistently and provides appropriate and complete references.	Cites and formats sources consistently and provides appropriate references. Some errors or flaws are present.	Cites some sources but often inaccurately. May neglect to cite some sources altogether. References typically present, but inaccurate.	Little or no use of citation formats.	No references.
<input checked="" type="checkbox"/> Appendix	Raw data/photos correctly arranged and labeled.	Missing one item, except raw data, or	Missing two items, except raw data and	Missing more than two items and	No appendix.

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	Excellent	Good	Fair	Poor	Unacceptable
		unnecessary items in the appendix.	unnecessary items in the appendix.	unnecessary items in the appendix.	
<input checked="" type="checkbox"/> Writing Format	Follows all format requirements: 1-inch margins, 1.5 - spaced 11 pt Times / Arial font Block justification.	Missing one of the format requirements.	Missing two of the format requirements.	Missing three of the format requirements.	Failed to respect any of the format requirements.
	Excellent	Good	Fair	Poor	Unacceptable
<input checked="" type="checkbox"/> Grammar and Syntax	Spelling and grammar checked; Sentences consistently communicate thoughts clearly, while relatively free of sentence level patterns of error; technically sound sentence structure that is varied, convincing, nuanced, eloquent with appropriate tone. Evidence of good editing.	Spelling and grammar checked, but minor sentence level patterns of error, improper sentence structure, or tone issues. Evidence of decent editing.	Minor spelling or grammar errors with sentence level patterns of error, improper sentence structure, or tone issues. Evidence of fair editing.	Spelling or grammar errors throughout, and major sentence level patterns of error, improper sentence structure, or tone issues. No evidence of editing.	Gross disregard for readability.

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Presentation Rubric**

	Excellent	Good	Fair	Poor	Unacceptable
<input checked="" type="checkbox"/> Content	All team members display professional level of knowledge of subject material with no important content left out and no incorrect material presented.	All team members display professional level of knowledge of subject material with minor amount of subject material left out or minor amount of incorrect materials presented.	Majority of team members display professional level of knowledge of subject material with minor amount of subject material left out or minor amount of incorrect materials presented.	Some team members display professional level of knowledge of subject material with minor amount of subject material left out or minor amount of incorrect materials presented.	No team members display professional level of knowledge of subject material with minor amount of subject material left out or minor amount of incorrect materials presented.
<ul style="list-style-type: none">• Subject Matter	All important topics are covered during the presentation with no essential elements missing or misrepresented.				
<ul style="list-style-type: none">• Knowledge of Subject	Each member of the team demonstrates an understanding of the essential topics presented.				
<input checked="" type="checkbox"/> Organization	Presentation has a strong introduction, an effective body of material that supports the conclusions, and a strong ending.	Presentation has deficiencies in only one of the following: introduction, body, or conclusion.	Presentation has deficiencies in two of the following: introduction, body, or conclusion.	Presentation has deficiencies in all of the following: introduction, body, or conclusion.	Presentation is missing introduction, body, or conclusion.
<ul style="list-style-type: none">• Introduction	Presentation starts strong with scope and objectives clearly presented.				
<ul style="list-style-type: none">• Continuity	Facts are presented in a logical sequence and transitions effectively between speakers.				
<ul style="list-style-type: none">• Conclusion	Finishes strong with reasonable summary and/or recommendations presented, as justified from the body of the presentation.				
<input checked="" type="checkbox"/> Delivery	Presentation is effective in terms of rhythm, visuals, and presenters' body language.	Presentation has deficiencies in only one of the following: rhythm, visuals, and presenters' body language.	Presentation has deficiencies in two of the following: rhythm, visuals, and presenters' body language.	Presentation has deficiencies in all of the following: rhythm, visuals, and presenters' body language.	Presentation is clearly not rehearsed, visuals are unprofessional, and/or presenters' body language is unprofessional.
<ul style="list-style-type: none">• Rhythm	Presentation demonstrates effective use of time, presenters seem well-prepared, and appears rehearsed.				
<ul style="list-style-type: none">• Visuals	Visuals are effective, free of clutter, related to the discussion, and meaningful.				
<ul style="list-style-type: none">• Body Language	Presenters maintain eye contact with the audience and are free of any distracting or annoying mannerisms.				

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	Excellent	Good	Fair	Poor	Unacceptable
<input checked="" type="checkbox"/> Discussion	All questions are fielded professionally, confidently, and correctly while avoiding defensive or argumentative responses.	Majority of questions are fielded professionally, confidently, and correctly while avoiding defensive or argumentative responses.	Some questions are fielded professionally, confidently, and correctly while avoiding defensive or argumentative responses.	Only one question is fielded professionally, confidently, and correctly while avoiding defensive or argumentative responses	None of the questions are fielded professionally, confidently, and correctly while avoiding defensive or argumentative responses
<input type="checkbox"/> Question and Answer Session	Answers supplied reflect an understanding of the topic.				
<input checked="" type="checkbox"/> Overall Impression	Presentation addresses all important subject matter; demonstrates conceptual understanding of the content, and responds to the purpose of the report; slides are cohesive, clear, concise, and organized well; presentation has many strengths; delivery is professional; question and answers show excellent engineering judgment.	Presentation addresses most of the important subject material; demonstrates conceptual understanding of the content, and responds to the purpose of the report; majority of slides are cohesive, clear, concise, and organized well; presentation has strengths; delivery is professional; question and answers show good engineering judgment.	Presentation addresses some of the important subject material; demonstrates conceptual understanding of the content, and responds to the purpose of the report; some of the slides are cohesive, clear, concise, and organized well; presentation has few strengths; delivery is professional; question and answers show some engineering judgment.	Presentation addresses little of the important subject material; demonstrates conceptual understanding of the content, and responds to the purpose of the report; some of slides are cohesive, clear, concise, and organized well; presentation has requires major revision; delivery is professional; question and answers show lack of engineering judgment.	Presentation is completely unprofessional.

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OURI Student Learning Outcomes (SLO)	Description of Assignment Requirements and Assessments
SLO 1: Knowledge	Students will demonstrate a fundamental basis of discipline-specific knowledge required for effective professional practice in the fields of civil, environmental, and/or geomatics engineering. Students will also demonstrate working knowledge of tools and practical skills needed to analyze engineering design problems related to multiple realistic constraints, such as environmental issues, transportation, engineering economics, historic preservation, hurricane resiliency, design codes, ethics, land use, population change, climate change, and/or other contemporary design issues.
SLO 2: Formulate Questions	Students will develop and refine a problem statement in which they specifically address their research questions. Students are expected to articulate the scope of the problem to be able to address the research question with an engineering solution. When appropriate, students should be able to create additional (albeit related) questions for smaller subsections of the overall design project.
SLO 3: Plan of Action	Students will create a plan of action that will include the problem statement (or research question), scope of work, literature review and background context, methodology or approach to the solution, analysis plan (including sensitivity analysis), conclusion and design documents. Students will develop a hypothesis if needed, identify research methods and experimental designs, and select appropriate statistical techniques, if warranted.
SLO 4: Critical Thinking	Students will demonstrate critical thinking skills by taking into consideration multiple perspectives and examining implications and consequences of design decisions or engineering alternatives. Students will also demonstrate an ability to use evidence and reasoning to objectively justify decisions and an ability to apply codes and design standards to make reasonable engineering judgments. Students are asked to peer review student work and provide feedback during the juried presentations.
SLO 5: Ethical Conduct	Students will familiarize themselves with the Code of Ethics of their engineering discipline. All work is held to the standards established by the governing professional societies (FES, ASCE, FSMS, ASPRS, AWWA, WEF, AW&MA, SWANNA, etc.). Student projects involving primary data collection through surveys and interviews will be required to complete CITI training.
SLO 6: Communication	Students will present and defend their work in written and oral formats, including a final poster presented at the Engineering Design Showcase. All deliverables are expected to be of professional quality. Students are expected to demonstrate knowledge of technical report writing, visualization in 3D, and persuasive presentation skills.