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

1. Course title/number, number of credit hours

CGN4803C RI: Civil, Environmental & Geomatics Engineering Design 1	**3 credit hours**

2. Course prerequisites, corequisites, and where the course fits in the program of study

This is a Writing Across the Curriculum (WAC) course

For Civil Engineering Majors:
Prerequisites: CEG 3011C, CES 3102C, CGN 3501C, CWR 3201C, ENV3001C, TTE 3004C, AND SUR 4463 with minimum grades of "C," GPA greater than 2.0, and permission of department.
Corequisite: Registration with the Florida Board of Professional Engineers for the Fundamentals of Engineering (F.E.) Exam eligibility.
Note that registration occurs six months in advance of the date the FE exam is to be taken.

For Geomatics Engineering Majors:
Prerequisites: SUR 4463 with minimum grade of "C", GPA greater than 2.0, and permission of Department
Corequisite: None

For Environmental Engineering Majors:
Prerequisites: ENV4514 AND SUR 4463 with minimum grade of "C", GPA greater than 2.0, and permission of Department
Corequisite: Registration with the Florida Board of Professional Engineers for the Fundamentals of Engineering (F.E.) Exam eligibility (Required after ABET accreditation).

This is a senior level course in which multidisciplinary design teams are formed and projects selected for the senior capstone design project with multiple realistic constraints, which teaches students the principles of civil engineering and prepares them to join the workforce. **This is a writing intensive course and an academic service learning course**

3. Course logistics

Term: Spring 2019
This is a classroom lecture course (lectures will be recorded, if possible)
Class location and time: IS103, Wed. / Thurs. 4:00 pm – 6:50 pm

4. Instructor contact information

Instructor's name	Dr. Daniel E. Meeroff, EI, Professor	Dr. Frederick Bloetscher, PE, Professor	Mr. Albert Muniz, P.E.
Office address	Engineering West (EG-36) Room 206	Engineering West (EG-36) Room 223	
Office hours	T/R 11:00 am – 12:20 pm		
Telephone no.	561-297-3099	561-297-0744	561-297-0744
Email address	dmeeroff@fau.edu	h2o_man@bellsouth.net	amuniz@hazenandsawyer.com

5. TA contact information

Not applicable

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6. Course description

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.

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 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**. *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.*

7. Course objectives/student learning outcomes/program outcomes

Course objectives	I. Develop capstone design project teams and proposals acceptable to a sponsor or client. II. Understand professional practice issues such as the involvement in and contribution to professional societies, licensing, ethics, and life-long learning. III. Develop a fundamental understanding of engineering economics. IV. Develop written and oral communication and leadership skills within a team environment.	
Course outcomes & relationship to ABET 1-7 student outcomes	A. Ability to prepare a preliminary design solution acceptable to a client (1,2,3,4,5,6,7) B. Ability to understand professional practice issues such as procurement of work; quality-based selection processes; how design professionals interact to construct a project; engineering economics, development of specifications (1,2,3,4,5,6,7) C. Ability to communicate effectively about issues in engineering (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)	
Relationship to Civil Engineering educational objectives	**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 (I,II,III).	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 (I,II, III,IV).	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 (III,IV).	H
	Objective D: **Participate as leaders** in activities that support service to, and/or economic development of, the region, the state and the nation (III,IV).	H

Relationship to Geomatics Engineering educational objectives	**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
	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
Relationship to Environmental Engineering educational objectives	**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.

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8. Course evaluation method (note percentages subject to change)

Professional Practice	48%
Final Report	20%
Class Assignments and Board Exam Reviews	15%
Final Exam	17%

Note: The minimum grade required to pass the course is C.

- *Academic Service-Learning assessments count toward the Professional Practice component of the grade.*
- *Reflection assignment counts toward the Class Assignments component of the grade.*

Attendance to class is required. You are expected to participate in all class sessions and keep up with the material. Three (3) unexcused absences (as determined by the instructor) will reduce your grade by one full letter. Participation in University-approved activities or religious observances, with prior notice, will not be penalized.

9. Course grading scale

There are no fixed criteria for the grading scale. The overall performance as related to course objectives and outcomes is evaluated and considered during grading.

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

Exams will be given only at the scheduled times and places. No one is exempt from the final examination.
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.
Late work is not acceptable.
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.
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.

Report all technical problems to the IRM helpdesk (http://www.fau.edu/helpdesk)

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.

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. Honor code policy

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

15. Counseling and Psychological Services (CAPS) Center

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 – 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/

16. Required texts/reading

1. Canvas registration
2. Materials as needed for the design project development
3. Handouts provided by instructor

17. Supplementary/recommended readings

First textbook highly recommended for both semesters of CEGE Design 1 and 2:

1. Bloetscher, F. & Meeroff, D.E. (2015). Practical Concepts for Capstone Design Engineering, J Ross Publishing. ISBN-10: 1604271140; ISBN-13: 978-1604271140

Other Helpful References:

2. Blank, L & Tarquin, A. (2014) Basics of Engineering Economy, 2nd Edition, McGraw-Hill, NY, ISBN: 9780073376356
3. Vesilind, A. (1999) Public Speaking and Technical Writing Skills for Engineering Students by P., Lakeshore Press, NH, ISBN 0-9650539-2-X
4. Colley, B.C. (2005) Practical Manual of Land Development, 4th Ed, McGraw- Hill.
5. Ogaja, C.A. (2011). Geomatics Engineering: A Practical Guide to Project Design. CRC Press, Boca Raton, FL ISBN: 978-1-4398-1743-8.
6. Florida Building Code
7. Plumbing Code
8. ASHRAE
9. South Florida Water Management District Guidebook
10. USGBC LEED Handbook

18. Academic Service Learning Statement

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This course is designated as an "academic service-learning" course. The assistance you provide to the agency/organization during your academic service-learning (AS-L) 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 AS-L activities while demonstrating civic engagement at campus, local, national, and/or global community levels. You will also reflect on your AS-L experience and the impact on the community as well as your professional development. Academic service-learning notation of hours will post to your transcript with submission of hours to your faculty instructor. An Academic Service-Learning Student Survey is required to be taken at the end of your AS-L project. Please visit the Weppner Center for LEAD & Service-Learning website, www.fau.edu/leadandserve, for the survey link and more information on FAU's Academic Service-Learning program.

Minimum project hours: 10

Assumption of Risk Statement for Student* I understand that there are certain physical risks inherent in every form of service-learning. I understand the risks associated with this Academic Service-Learning assignment. I nonetheless agree to assume those risks so as to gain the benefits from participation in this valuable learning experience. I hereby release the State of Florida, the Board of Trustees, Florida Atlantic University and its agents and employees from any and all liability associated with my participation in this assignment at Florida Atlantic University.

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 course LMS.
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.

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

Date	Topic	Reading Assignment	Due
Pre-Class		• Read Bloetscher & Meeroff Chapter 1,2	All canvas homework uploads are due at 2pm the day it is due
Week 1 Wed August 22	• Introduction to Capstone Projects, Course Expectations, and Writing Requirements (Chapter 1) • Career Opportunities, Teaming and Leadership Skills (Chapter 2) • **ATTENTION: Class Might Run Over Time**	• Read Bloetscher & Meeroff Chapter 7	• Forms (Pre-requisite, A-SL, Talent, etc.) • HW#1 – Personal Narrative Statement (Canvas) • HW#2 – Resume (Canvas) • HW#3 – Branding (hard copy due in class)
Week 1 Thu August 23	• High Performance Construction (Chapter 7) • Assign Groups for Capstone Project via Canvas • Team Visioning Activity	• Read Bloetscher & Meeroff Chapter 4&5	• **In Class Writing Assignment #1 (draft design team vision statement)**
Week 2 Thu August 30	• Preparing Engineering Reports, Responses to Proposals, Scoping, Project Management, and Scheduling Skills (Chapter 4,5)	• Read Bloetscher & Meeroff Chapter 6	• HW#4 – Contact list (Canvas) • HW#5– Vision statement (Canvas) • HW#6 – AutoCAD title block (hard copy due in class)
Week 3 Thu September 6	• Peer Review of Draft RFQ Response with Rubrics • Select Order for Presentations • Alternative Analysis (Chapter 6)	• Read Bloetscher & Meeroff Chapter 8	• **Draft RFQ Report AND Draft RFQ slides** • **Bring 2 hard copies to class** • Canvas Board Exam 1 Due at 10 pm Friday

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Week 4 Wed/Thu September 12/13	**ORAL PRESENTATION #1**: Proposal/RFQ Response (groups) **[Revised Report also due]** **Peer review of presentations**	**NOTE: This presentation should show that you understand the project, have an outline/theme to create the design, know how to manage your team, and convince us you that your group is the best to do this work**	• **Revised Report Writing Assignment #1: Proposal/RFP Response (bring 1 hard copy to class)**
Week 5 Wed September 19	• Board Exam Review 2 • Phase 1 Environmental Site Assessments and Writing Requirements (Chapter 8) • Asset Assessment	• Read Bloetscher & Meeroff Chapter 9	• Canvas Board Exam 2 Due at 10 pm Friday
Week 5 Thu September 20	• Site Planning: Water, Sewer, Drainage, Building Program, and Writing Requirements (Chapter 9) • Codes, Permits, and Regulations (Chapter 9)	• Research applicable codes, permits, and regulations affecting your project • Read Bloetscher & Meeroff Chapter 10	• HW#7 – Selection Matrix + Personal/Group Critique of RFQ (Canvas)
Week 6 Wed September 26	• Floor Plan Development (Chapter 10) • Discuss/Review Alternative Analysis in Class	• Read Bloetscher & Meeroff Chapter 3	• **Draft Writing Assignment: Group Alternative analysis report for group project due (Canvas)**
Week 6 Thu September 27	• Ethics for the Fundamentals of Engineering Exam (Chapter 3)	• Read Bloetscher & Meeroff Chapter 11	• **HW#8: Chapter 5 (Canvas)**
Week 7 Thu October 4	• Introduction to Engineering Economics (Chapter 11) • Expectations for Presentations • Select Order for Presentations • Discuss/Peer Review of ESA Slides		• **Bring draft Phase 1 Environmental Site Assessment Slides to Class** • Canvas Board Exam 3 Due at 10 pm Friday
Week 8 Wed/Thu October 10/11	**ORAL PRESENTATION #2**: Phase 1 Site Assessment (groups – include out of scope issues associated with the project)		
Week 9 Wed October 17	• **CODES PRESENTATION (individual presentation)**		• **Code Section Presentation Ready to Present**
Week 9 Thu October 18	• Engineering Economics Continued • Site Planning Charrettes		• **Revised Writing Assignment: Phase 1 site assessment report due** • Canvas Board Exam 4 Due at 10 pm Friday
Week 10 Thu October 25			• **HW#9: Last day to meet 1st professional meeting commitment**
Week 11 Wed/Thu October 31/ November 1	**ORAL PRESENTATION #3**: Preliminary Site Plan (groups)	• **Revise writing assignment #4: Preliminary Site Plan**	• Canvas Board Exam 5 Due at 10 pm Friday
Week 12 Thu November 8	• Discuss Effective Assignment and Strategies for Improvement	• Review Bloetscher & Meeroff Chapter 11	• **Draft Report Writing Assignment #4: Preliminary Site Plan (Bring 2 hard copies to class)** • **HW#10 Ethics Due (Individual)**

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Week 13 Wed, Thu November 14/15	**ORAL PRESENTATION #4: Practice Final Pre-design of Capstone Project (groups – taped – attendance required)**	• **Be prepared for the final presentation**	• **Draft final report due** • **Academic Service Learning hours and survey due** • **HW#12 :Reflection piece due (Canvas)** • Canvas Board Exam 6 Due at 2 pm
November 22-25	• Mid-Semester Break – Happy Thanksgiving!		
Week 15 Thu November 29	• **Engineering Economics Review** • Review for Final • Select Order for Presentations • Board Exam Review 7		• **HW#11 Due** • Canvas Board Exam 7 Due at 10 pm Friday
Week 16 December 5-6	**ORAL PRESENTATION #5: Capstone Engineering Design 1 Final Presentations (groups)**		• **Present for the Alumni Advisory Council**
Week 17 TBA	**College Capstone Design Showcase**		
Week 17 Wednesday December 12, 2018	**Final Exam**		• **Final Notebook Due**
Next semester in CGN4804	• Engineering Ethics • Law for Civil Engineers • Construction Management	As part of the Design Project: • Design Process (continued) • Teaming/Leadership Skills (continued) • Technical Writing (continued) • Public Speaking (continued) • Project Management (continued) • Engineering Economics and Cost Estimating (continued) • Completion of the Design Project!	
Summary of Assignments	**REPORTS/ PRESENTATIONS** 1. Response to an RFQ 2. Group Alternative Analysis Report 3. Phase 1 Environmental Site Assessment 4. Site Plan/Characterization and Draft Pre-Design Report 5. Final Pre-Design Notebook	**OTHER HOMEWORK** 1. Personal Narrative Statement 2. Resume 3. Branding Assignment 4. Contact List 5. Vision Statement 6. AutoCAD Title Block 7. Personal/Group Critique 8. Chapter 5 9. Professional Meeting Commitment 10. Ethics 11. Engineering Economics 12. Reflection Piece	

Board Exam Reviews	**1. Units Conversions and Math & Probability/Statistics** **2. Materials & Statics/Dynamics** **3. Fluids, Hydraulics, Hydrology, Groundwater** **4. Civil Structural & Civil Geotech or Env Chemistry & Thermo** **5. Civil Surveying/Construction & Transportation or Env Risk & Air & Waste** **6. Water/Wastewater** **7. Engineering Economics & Computational Tools & Ethics**		

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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).

Summary of Professional Practice Sessions Major Writing Assignments	
1. Response to an RFQ	This piece requires you to brainstorm ideas and concepts that you would like to incorporate in your proposed design. It also requires the team to detail its project management plan, come up with a realistic schedule for accomplishing the work, refine consultant's resumes, and use your persuasive communication skills to win the job. This piece also answers the question, "What is a high performance building?" and also details the team's interpretation of the capstone project scope, design goals and objectives. You should describe high performance buildings as well as agencies and checklists (ISO14001, FGBC, LEED certification, etc.) that can be used to dictate design. You should also investigate green building elements, strategies, and precedents that are relevant to your capstone project. You should be able to make a case to convince the client that high performance buildings are worth the investment.
2. Alternative Analysis Assignment	*This is a group assignment, written submittal only*. This piece will analyze three options for developing a site. The goals and perspective of the analysis will be clearly defined. Then selection criteria will be defined with weighting factors, and each alternative will be analyzed for advantages and disadvantages with respect to the selection criteria. A selection matrix will be constructed and evaluated. A sensitivity analysis will be performed, and a final recommendation will be made.
3. Phase 1 Environmental Site Assessment	This piece requires the students to investigate the existing site for recognized environmental conditions (RECs), past activities, impacts of development, construction safety concerns, long-term sustainability issues, and due diligence. During this exploration, the teams will conduct site reconnaissance, interviews, and record reviews with Federal, State, and local regulatory agencies. This work allows the students to interact with regulatory agencies and work on their interpersonal communication skills.

4. Site Plan and Draft Pre-Design Report	This piece focuses on developing a preliminary site plan and floor plan for the project. Once again, the scope of work is restated in relation to the design goals, site constraints, and opportunities for innovation. Using this framework, the existing site conditions are presented and a set of viable alternatives are analyzed. The proposed site plan is then presented along with solutions for stormwater, drainage, parking, accessibility, utilities, preliminary cost estimates, and "green" features. Final floor plans are also presented for approval.
5. Final Pre-Design Report	This piece is an integrated final design report that provides an introduction and justification for building green, a scope of the project, a summary of the group member's qualifications and design approach, a summary of existing site conditions that will influence the design, and a basis of design for stormwater, drainage, parking, accessibility, and utilities solutions as well as floor plans, site plans, and elevations of the proposed building and site-civil considerations. The report will also include appendices for resumes, timecards, peer evaluation of performance, supporting documentation, preliminary cost estimates, checklists, credit templates, and green features/specifications. This final notebook will also include the second draft revisions of writing assignments 1, 2, 3, 4, and 6.
Codes Presentation	This individual assignment is an oral presentation only. Each student will select one code section and provide a brief summary of the code requirements along with a brief explanation of how it applies to the project. Each student will then answer questions about how to implement the code in design applications.
Reflection piece	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.

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Presentation Rubric

	Excellent	Good	Fair	Poor	Unacceptable
☑ **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.
• **Subject Matter**	All important topics are covered during the presentation with no essential elements missing or misrepresented.				
• **Knowledge of Subject**	Each member of the team demonstrates an understanding of the essential topics presented.				
☑ **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.
• **Introduction**	Presentation starts strong with scope and objectives clearly presented.				
• **Continuity**	Facts are presented in a logical sequence and transitions effectively between speakers.				
• **Conclusion**	Finishes strong with reasonable summary and/or recommendations presented, as justified from the body of the presentation.				
☑ **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.
• **Rhythm**	Presentation demonstrates effective use of time, presenters seem well-prepared, and appears rehearsed.				
• **Visuals**	Visuals are effective, free of clutter, related to the discussion, and meaningful.				
• **Body Language**	Presenters maintain eye contact with the audience and are free of any distracting or annoying mannerisms.				

	Excellent	Good	Fair	Poor	Unacceptable
☑ **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
• **Question and Answer Session**	Answers supplied reflect an understanding of the topic.				
☑ **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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Report Rubric

	Excellent	Good	Fair	Poor	Unacceptable
☑ **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.
☑ **Executive Summary**	Stand alone, with all essential elements summarized briefly with primacy and recency.	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.
☑ **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.

	Excellent	Good	Fair	Poor	Unacceptable
☑ **Content**	Report displays professional level of knowledge of subject matter with no important content left out and no incorrect material presented. Report displays effective organizational structure, rhetorical structure, reasoning, data support, and finishes strong.	Report displays professional level of knowledge of subject matter with minor amount of subject material left out or minor amount of incorrect materials presented. Report displays minor failures in organizational structure, rhetorical structure, reasoning, data support, and finishes strong.	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. Report displays failures in organizational structure, rhetorical structure, reasoning, or data support, and finishes weakly.	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. Report displays failures in organizational structure, rhetorical structure, reasoning, and data support, and finishes weakly.	Not an argument driven report.
• **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.				
• **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. Facts are presented in a logical sequence and transition effectively between topics and authors.				
• **Reasoning**	Exhibits substantial depth and complexity of thought supported by sophisticated ideas/analysis/evidence that support the report's argument. 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, includes proper units and labels, 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.				

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

	Excellent	Good	Fair	Poor	Unacceptable
☑ **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.
☑ **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.

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

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.