Princeton University: Department of Civil and Environmental Engineering

CEE 478 Senior Thesis

Evaluation of Interim Progress Report

Student Name: _____

Thesis title: _____

Advisor: _____

↓Performance categories (PC)

↓Performance indicators (PI's), ABET a-k mapping, and assessment rubrics

PC: Technical Quality

PI: Application of math, science, engineering principles for analysis and solution of problems in civil and environmental engineering. (ABET criterion 3a)

Identify the areas of math, science and engineering being applied in this thesis:

Math and computing	Science and engineering science	Engineering
☐ Calculus and/or linear algebra ☐ Probability and statistics ☐ Computer programming ☐ Other _____	☐ Solid mechanics ☐ Fluid mechanics ☐ Materials science ☐ Chemistry ☐ Geology and earth science ☐ Biology ☐ Other _____	☐ Structural engineering ☐ Environmental engineering ☐ Geological engineering ☐ Other _____

PI: An ability to collect data. (ABET criterion 3b)

The student is using the following method(s) to obtain or generate data/information relevant to the project:

- ☐ Laboratory experiments
- ☐ Field observations or measurements
- ☐ Photography
- ☐ Digital imaging (e.g. electron microscope images)
- ☐ Collection of historical information or data
- ☐ Obtained data from government or industry sources
- ☐ Computer programing to conduct model simulations and generate data
- ☐ Commercial or government software to generate data
- Other _____
- ☐ None

Comments (optional):

_____

_____

	PI: An ability to collect high-quality data using modern engineering techniques and tools. (ABET criterion 3k) Regarding the efforts to collect data, the student: ☐ has gone above and beyond expectations, using great care to learn the method, collect precise and accurate information, and ultimately collecting substantial amounts of data. ☐ has demonstrated proficiency in the methods used and collected a satisfactory amount of data. ☐ has made some procedural errors in the lab/field/other, and/or produced very little data. ☐ has not yet obtained or generated any data.
	PI: An ability to interpret data. (ABET criterion 3b) For the data collected, check the analysis (or analyses) conducted or check "None": ☐ Generated graphical display of data ☐ Generated tabular display of data ☐ Statistical analysis of data, e.g. computed statistics, conducted ANOVA, generated histograms, ☐ Calibrated a model or conducted regression analysis ☐ Engineering economic or financial analysis ☐ Image processing and interpretation ☐ Other _____ ☐ None Comments (optional): _____ _____ Regarding the analysis of the data collected, or the plan for analysis: ☐ The student's analysis (or planned analysis) is excellent, with clever approaches, accurate treatment of the data, and comprehensively included alternative analyses. ☐ The student's analysis (or planned analysis) is good: tables, graphs and images are complete and accurate, the analysis methods do not introduce bias, etc. ☐ The student's analysis (or planned analysis) has some errors or is missing important components. ☐ The analysis (or planned analysis) is inaccurate or inappropriate, or there is no plan for an analysis. Regarding the interpretation of the data and findings, and the conclusions drawn, ☐ the interpretations are sound and the conclusions are defensible. ☐ the interpretations and conclusions are made but poorly substantiated, or the student did not go as far as he or she could have in interpreting the findings. ☐ the interpretations and conclusions are weak and/or missing. OR ☐ Cannot evaluate the ability to interpret data and findings at this time.
	PI: An ability to identify, formulate and solve engineering problems. (ABET criterion 3e) Your overall assessment of the technical quality of the work at this stage is: ☐ The work is of high technical quality; information is factual, analysis is accurate, inferences are sound. The work plan is comprehensive, and ultimately will include relevant analyses, summary of findings, inferences, interpretations, implications, and conclusions.

☐ The work is of acceptable technical quality, but falls short in one way.
☐ The work is of fair technical quality, falling short in several ways.
☐ The work is of poor quality, that is: there are factual errors and mistakes in the analysis, inferences are unsubstantiated or missing. The work is incomplete, lacking key components.

Comments (optional):

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PC: Originality and Creativity

PI: An ability to conduct thesis work that is original and creative. (ABET criterion 3e)

The student:

☐ has been the intellectual lead on the project, showing exceptional originality and creativity and clearly demonstrating independent and novel thinking.
☐ has contributed some key ideas that extend current thinking.
☐ has only slightly moved beyond the bounds of current thinking from the literature or the advisor.
☐ has struggled to think independently about the project, and was unable to take steps without constant guidance.

PC: Quality of the writing and scholarly depth

PI: An ability to do scholarly writing, which includes finding, reading, summarizing, synthesizing, and interpreting relevant literature. (ABET criterion 3g)

The background material is well researched, and the arguments put forth in the discussion are well supported by scholarly literature.

☐ The student has demonstrated the ability to use the library and other resources to identify, retrieve, and organize pertinent information. The information is scholarly, accurate, from relevant sources. The student has read, synthesized and interpreted the relevant literature in an insightful way, such as comparing, contrasting, and identifying contradictions and similarities.
☐ The student has demonstrated good use of information resources, but for some things has resorted to simple google-searching. The information that has been cited is a mix of scholarly/credible information, and information from web sites of questionable relevance. The student has read and summarized the literature, but does not synthesize and interpret the literature.
☐ Most of the cited information sources are not scholarly, relevant, or even reliable. The student does cite literature but may not have thoroughly read the literature.
☐ There are very few citations (or none), and the student has done little to put the work in context with relevant background information.

PI: In writing and producing a technical report, effectively communicate project objectives, progress and plans. (ABET criterion 3g)

☐ The report includes all the major sections: problem definition, motivation for the work, objectives and scope, methods, preliminary findings, plans for completion. The writing is polished and the material is well-organized. The key points are made clearly and concisely.

	☐ The report includes all the major sections and is fairly well-written, but would have benefitted from another revision. ☐ The report is missing important sections. The quality of the writing is mixed, with some sections still rough. ☐ The report is missing important sections. The writing is unpolished, and seems like a rough draft. The material is disorganized and it is difficult to follow the train of thought.
	PI: In technical writing, adhere to ethical standards of giving credit. (ABET criterion 3f) ☐ The student appropriately gives credit to other contributors and funding sources. The student cites references for key ideas, sources of borrowed graphics, and quoted text. ☐ There are a few instances in which the student did not acknowledge other contributors, funding courses, or sources for key ideas, graphics, and verbatim text. ☐ There are numerous instances in which the student did not acknowledge other contributors, funding sources, or sources for key ideas, graphics and verbatim text.
PC: Independence, work ethic, and professional ethics	
	PI: An ability to learn independently. (ABET criterion 3i) ☐ The student has demonstrated substantial learning of a new subject and mastery of the engineering principles. ☐ The student has learned some. ☐ The student has learned very little. PI: An ability to work independently. (ABET criterion 3i) ☐ The student has worked independently and persevered to solve or overcome problems on his/her own. ☐ The student needs some guidance but is able to “take the ball and run with it”. ☐ The student needs guidance but can usually take the next step before needing more guidance. ☐ The student needs constant guidance from the advisor, and is unable to take steps without it being spelled out in detail. PI: Having a solid work ethic. (ABET criterion 3i) ☐ The student devotes sufficient time to the thesis, diligently adhering to a weekly schedule of work. ☐ The student devotes sufficient time to the thesis, but the work is sporadic and mostly done right before deadlines. ☐ The student has devoted less than the equivalent of one semester of coursework to the thesis.
	PI: Demonstrating ethical, professional, and responsible behavior. (ABET criterion 3f) ☐ The student behaves as a responsible professional engineer with respect to planning and meeting deadlines, regularly reviewing progress with advisors, and being responsive to feedback from advisors and peers.

	☐ The student missed a few meetings/deadlines but was always communicative and respectful of advisors. ☐ The student missed meetings with advisors, ignored emails, and did not show evidence of following through on guidance from advisors. (This might be true even for a student that, in the end, produced a good thesis.)
PC: Relevance	
	PI: Relate the thesis work to economic, environmental and societal impacts. (ABET criterion 3h) ☐ The student has demonstrated great insight in relating the thesis work to relevant economic, environmental and societal impacts ☐ The student has some idea of the related economic, environmental, and societal impacts. ☐ The student has not yet thought about related economic, environmental, and societal impacts.
	PI: Identify relevant contemporary issues and relate to the thesis work. (ABET criterion 3j) ☐ The student has identified one or more contemporary issues that are relevant to the thesis topic and can discuss the connection with the thesis work. Examples include global climate change, sustainable energy and water use, pollution, public health threats, challenges faced by developing nations. ☐ The student has, to a limited extent, identified relevant contemporary issues and wrote only a limited discussion about this. ☐ The student has yet to identify contemporary issues that are relevant to the thesis topic and does not discuss the connection with the thesis work.

Additional comments (optional):

Grade: _____

Signature (electronic) _____

Date: _____