ENGR XXX Final Design Report Evaluation Form

Group/Student Name: _____

	Below Expectations (Major Errors or lack of Depth; Unacceptable quality)		**Marginal** (Some significant errors or lack of depth Satisfactory quality)		**Meet Expectations** (Appropriate depth / few errors Good quality)		**Exceed Expectations** (Exceptional depth / accuracy Outstanding quality)		**Weight**	**Indicator**
	F	**C-/D**	**C**	**C+/B-**	**B**	**B+/A-**	**A**	**A+**		
Need and Constraint Identification • Description/overview of company and stakeholders • Overview and specifics of problem (i.e. what you have been asked to do) • Describe previous solutions • Describe scope and constraints (including appropriate attention to health and safety risks, applicable standards, and economic, environmental, and societal considerations)										4.2
Problem Specification • Specify requirements based on needs and constraints • Express requirements as specifications using measurable quantities										4.3
Design Process • Adapt and apply an iterative design process to address open-ended complex problem										4.1
Solution Generation and Selection • Brief review of potential design solutions and evaluation										4.4
Detailed Design • Provided clear and sufficiently detailed explanation of design • Used sound engineering judgement and methods • Applied engineering tools to develop diagrams/equations (if applicable)										4.5
Solution Assessment • Assess final design based on requirements, needs, and constraints										4.6
Engineering Tools • Select/apply appropriate software, lab equipment/techniques • Model, analyze, fabricate, prototype or visualize an engineering task										5.2
Evaluate/Adapt Tools										5.3 or 5.4

• Identify limitations • Adapt or extend tools to address limitations										
Information Retrieval • Sufficient/appropriate support is provided for claims and/or facts • Citations are present and correct • References are present and correct										5.1
Quality of Visuals and Data Presentation • Effectiveness of figures, maps, photos, etc. • Graphics referred to and used in text • Quality of engineering drawings • Correct captions, titles, source lines										7.2
Quality of Writing • Format conforms to expectations • Document is organized effectively at macro and micro levels • Sentences are correct and concise • Document has been proofread (misspellings and typos)										7.1
Impact of Human Activity • Describe impact on health, safety, and environmental systems										9.1
Sustainability • Demonstrate consideration of societal, ecological, and economic issues in design										9.2
Cost Consideration • Incorporate throughout the design execution • Manage project budget										11.2
Project Risk • Demonstrate understanding of risks in project • Suggest strategies for their management										11.3
Project Management • Demonstrate skill in managing cost, planning scheduling, safety analysis, or human resources.										11.4

Category	Mark
1 - F	34.5
2 - C-/D	54.5
3 - C	61.5
4 - C+/B-	67.5
5 - B	73.5
6 - B+/A-	80
7 - A	87
8 - A+	95

ENGR XXX Project Report Evaluation Rubric Descriptors

	Below Expectations (Major Errors or lack of Depth; Unacceptable quality)	**Marginal** (Some significant errors or lack of depth Satisfactory quality)	**Meet Expectations** (Appropriate depth / few errors Good quality)	**Exceed Expectations** (Exceptional depth / accuracy Outstanding quality)
	F/D/C-	**C/C+/B-**	**B/B+/A-**	**A/A+**
Need and Constraint Identification	Does not understand the problem nor the objectives. Does not identify the constraints.	Has an incomplete understanding of the nature of the complex/open-ended engineering problems. Defines some of the technical objectives. Identifies some of the constraints imposed by factors such as health and safety, standards, economics, environment, etc.	Understands the nature of the complex/open-ended engineering problems and some of the broader in context. Defines most of the technical objectives and some of health & safety, standard, economics and environments objectives Identifies most of the constraints imposed by factors such as health and safety, standards, economics, environment, etc.	Fully understands nature of the complex/open-ended engineering problems and defines the problem and the objectives in the broader context Defines all the objectives including technical and safety and environmental, etc. Identifies all constraints imposed by factors such as health and safety, standards, economics, environment, etc.
Problem Specification	Lack requirements based on needs and constraints and specifications using measurable quantities were not given.	Provided requirements based on needs and constraints and incomplete specifications using measurable quantities were given.	Provided requirements based on needs and constraints and incomplete specifications using measurable quantities were given.	Provided complete requirements based on needs and constraints and detailed specifications using measurable quantities were given.
Design Process	Design process elements are present but they are contradictory or important elements are missing. Output from one stage of the process is not used as input to the next stage.	Evidence that elements of the design process were used. The major stages of the process are presented but they are not explicitly linked together. Significant issues may be present in terms of appropriate emphasis or consistency in information.	Evidence that a formal design process was followed. All required stages of the process are represented, but the flow from one stage to the next may not be explicit. Minor issues may be present in terms of appropriate emphasis at each stage or consistency in information	Extensive evidence that a formal design process was rigorously followed. Outcomes from one stage are clearly presented as inputs to the next stage. Emphasis at each stage is appropriate for the project.
Solution Generation and Selection	Screening, scoring, and selection methods are mentioned or described, but it is not clear how or if they were used in the project. Outcomes may be described, but details are not provided. Project decisions may contradict outcomes from screening / scoring / selections.	Screening, scoring, and selection methods are used but the progression of tools or relationship to the project is not clearly presented. There is a reliance on assertion and/or a lack of justification.	Screening, scoring, and selection methods appear to be used effectively. Methods are well described; justification for key decisions and ratings may be lacking, not well-supported, or overly detailed; outcomes are highlighted.	Screening, scoring, and selection methods are used very effectively. Methods are clearly described; justification for key decisions and ratings is complete, well-supported, and concise; outcomes are clearly highlighted.

Detailed Design	No or very little explanation of design. Lack engineering judgement and methods. Incapable to use engineering tools to develop diagrams and use math to derive calculations.	Some explanations of design. Showed engineering judgement and methods. Used engineering tools to develop diagrams use math to derive calculations.	Good explanations of design. Showed engineering judgement and methods. Sufficient use of engineering tools to develop diagrams and use appropriate math to derive calculations.	Provided clear and sufficiently detailed explanation of design Used sound engineering judgement and methods Applied engineering tools and principles to develop diagram and conduct calculations.
Solution Assessment	There is no clear application of analysis (calculation and data analysis) towards evaluating potential design solutions.	Analysis (calculation and data analysis) is present but may be limited and its use towards evaluating potential design solutions is not clear or explicit.	Evaluation (i.e. screening / scoring / selection) is largely supported and guided by analysis (including calculation and data analysis). Appropriate analysis approaches, tools, and data are selected for most stages of evaluation.	Evaluation (i.e. screening / scoring / selection) is clearly and effectively supported and guided by analysis (including calculation and data analysis). The most appropriate analysis approaches, tools, and data are selected for each stage of evaluation.
Engineering Tools	Simulation and/or analysis tools are described but in very limited detail. There may be errors in the use of the tools. Better tools clearly exist and the elements studied do not include those most important to the project.	Simulation and/or analysis tools are described but only limited detail is included. There may be minor errors in the use of the tools. Better tools may exist and/or the elements studied may not be the most important ones to project success.	Appropriate tools for simulation and/or analysis are selected, described with sufficient detail to be reproducible, and used correctly. The results have value to the project.	Ideal tools for simulation and/or analysis are selected, clearly described with sufficient detail to be reproducible, and used correctly. The results are highly valuable to the project.
Evaluate/Adapt Tools	unaware of tool's error and limitations Does not understand the role of a tool in the broader subject	Aware of limitation of tools but does not account for them	Identifies the limitation of tools Accounts for some of the limitation of the tools	Critiques these tools and justify the use of a particular one; Critically evaluates and account for the limitations of tools
Information Retrieval	No or very little support is provided for claims and/or facts. Citations are not present or incorrect. References are not present or incorrect.	Some support is provided for claims and/or facts Citations are present but there are lots of inconsistencies. References are present but there are lots of mistakes.	Good support is provided for claims and/or facts Citations are present and mostly consistent. References are present and mostly correct.	Sufficient/appropriate support is provided for claims and/or facts Citations are present and correct. References are present and correct.
Quality of Visuals and Data Presentation	Diagrams, sketches, and tables are used infrequently. Many additional visualizations are required. Some visualizations may appear unprofessional. The visualizations present do not significantly add to the quality or impact of the document.	Diagrams, sketches, and tables are used occasionally. Additional visualizations would be beneficial. Some visualizations may not appear professionally produced. They generally add to the quality and impact of the document.	Diagrams, sketches, and tables are used frequently and appropriately. There may be instances where additional visualizations would be beneficial. Most are professionally produced. They add to the quality and impact of the document.	Diagrams, sketches, and tables are used extensively and appropriately. All are professionally produced. They significantly add to the quality and impact of the document.

Quality of Writing	The report is somewhat difficult to read and poorly constructed. The tone may be unprofessional and/or inappropriate in multiple places. Sections do not smoothly flow from one to the next. There are regular typographical, grammatical, and formatting errors.	The report is somewhat difficult to read or poorly constructed in places. The tone may be unprofessional and/or inappropriate in isolated places. Sections generally flow smoothly from one to the next. There are many typographical, grammatical, and formatting errors.	The report is clear, concise, and generally well-constructed. The tone is generally professional and appropriate, and sections flow smoothly from one to the next. There are multiple typographical, grammatical, or minor formatting errors.	The report is very clear, concise, and well-constructed. The tone is highly professional and appropriate, and sections flow seamlessly from one to the next. There are very few typographical, grammatical, or minor formatting errors.
Impact of Human Activity	Demonstrates minimal understanding of diverse interactions of engineering on society and the environment.	Demonstrates some understanding of diverse interactions of engineering on society and the environment	Demonstrates understanding of diverse interactions of engineering on society and the environment.	Considers and evaluates diverse interactions of engineering on society and the environment.
Sustainability	Cannot define sustainable development or sustainable design	Understands the three dimensions of sustainable development (social justice, environmental preservation, economic growth) but does not know how they relate to engineering	Demonstrates a good grasp of the three pillars of sustainable development as well as the trade-offs between them	Formulates sustainable development into a set of design objectives as well as into evaluation criteria for engineering project alternatives Develops novel methods for evaluating the sustainability of engineering designs
Cost Consideration	No consideration of cost and benefit throughout the design execution. No understanding of engineering economics. Project budget is managed poorly.	Some consideration of cost and benefit throughout the design execution. Some understanding of engineering economics. Project budget is managed but with deficiency	Enough consideration of cost and benefit throughout the design execution. Understanding of engineering economics and able to apply to project. Project budget is managed	Incorporate cost and benefit throughout the design execution thoroughly. Fully understand of engineering economics and able to apply to project. Manage project budget efficiently.
Project Risk	No consideration of risks in project. No strategies for risk management	Has consideration of risks in project. Has strategies for risk management	Some consideration of risks in project. Showed strategies for risk management	Demonstrate full understanding of risks in project. Suggest sound strategies for risk management
Project Management	Does not understand the various tools of project management (e.g., planning, organizing, securing, managing resources, safety analysis, life-cycle etc.) Is unable to apply project management tools	Has an understanding of some project management tools but cannot apply them	Identifies, selects, and uses the appropriate project management tools	Demonstrate proficient skill in managing cost, planning scheduling, safety analysis, or human resources.