P2.3.2 Structural Design with West Point Bridge - Rubric

Total _____/84 points

Team Documentation

Topics/Multiplier		4 points	3 points	2 points	1 point
Professional Appearance	**1 ×**	Includes all required sections, has page numbers and appropriate headings for the different sections.	Includes most required sections, has page numbers and appropriate headings for the different sections.	Does not include all required sections, has page numbers, but headings for the different sections should have been titled better.	Is missing several required sections, has page numbers, but headings for the different sections should have been titled better.
Title Page/Table of Contents	**1 ×**	Includes all components required for a complete title page.	Includes 80% or more of the necessary components for a complete title page.	Includes 60% or more of the necessary components for a complete title page.	Includes 50% or more of the necessary components for a complete title page.
Design Brief	**1 ×**	Includes all 6 parts of a design brief organized into one page. Clearly details design problem & constraints.	Includes all parts of a design brief organized into one page.	Includes most parts of a design brief organized into one page.	Includes some parts of a design brief organized into one page.
Research Summary	**2 ×**	Is grammatically correct, clearly summarizes data gathered in an organized and concise manner. Resources used are properly cited.	Is grammatically correct, clearly summarizes data gathered in an organized manner. Resources used are cited.	Is grammatically correct, summarizes data gathered in an organized manner.	Has many grammatical errors, summarizes data gathered.
Brainstorming Ideas	**1 ×**	Produces at least two viable and accurate pictorial sketches or electronic models of the required design concepts per group member. Each is properly detailed for effective communication, including material descriptions and cost estimates.	Produces at least 2 marginally sufficient and accurate pictorial sketches or electronic models of the required design concepts per group member. Each is marginally detailed for effective communication, including material descriptions and cost estimates.	Produces sketches or electronic models that are difficult to visualize. Lacks details in sketches such as material types and cost estimates.	Produces incomplete sketches or electronic models. Does not present concept. Missing most descriptions.
Decision Matrix & Assignment of Values	**1 ×**	Effectively demonstrates important considerations and clearly communicates the process that contributes to selecting a final solution. A logical, well-explained method of evaluating each specification or constraint for each of the listed possibilities is presented to the reader of the matrix.	Somewhat effectively demonstrates important considerations and the process that contributes to selecting a final solution. A method of evaluating each specification or constraint for each of the listed possibilities is used. An attempt to explain it is made but is unclear to the reader of the matrix.	Is missing elements that should have been considered for selecting a final solution. Each specification or constraint for each of the listed possibilities is assigned an evaluation, but no attempt is made to present it to the reader of the matrix.	Is missing elements that should have been considered for selecting a final solution, and poorly communicates the final solution selection process. Each specification or constraint for each of the listed possibilities is either assigned an apparently random value or is not evaluated at all.
Decision Matrix - Paragraph	**1 ×**	A well-written paragraph description of procedure included based on the results of the matrix evaluation, a clear choice is made and defended on a technical basis.	A paragraph description is included based on the results of the matrix evaluation, a choice is made but does not stand up to technical challenge.	A description of the choice from the list of possible solutions is made but is not supported by the decision making matrix.	No choice is made, even though the matrix shows one possibility to be superior, or a choice was not obvious due to misuse or misinterpretation of the matrix.
Design Modifications	**2 ×**	All changes made to the original design solution are clearly communicated through images and explanations. Images include labels, signatures, and dates.	All changes made to the original design solution are communicated through sketches and explanations. Images include labels, signatures, and dates.	All changes made to the original design solution are poorly communicated through sketches and explanations. Sketches include labels, signatures, and dates.	Some changes made to the original design solution are communicated through sketches and explanations. Sketches do not include labels, signatures, and dates.

Final Solution Concept Pictorial	**1 ×**	Solution is accurately portrayed as high-quality electronic model. Meets the required design concepts. Is properly detailed for effective communication, including labels, descriptions, and cost.	Produces marginally sufficient sketches that meet the required design concepts. Is properly detailed for effective communication, including labels, descriptions, and cost	Produces sketches that are difficult to visualize. Lacks details in sketches. Missing some details for effective communication, including labels, descriptions, and cost.	Produces incomplete sketches. Does not present the concept well. Missing several details for effective communication, including labels, descriptions, and cost.
Final Solution Concept Written Communication	**1 ×**	Load tests, member properties, and cost calculations included and well-organized. Final concept is explained and justified thoroughly, using concepts learned to demonstrate effectiveness of design.	Load tests, member properties, and cost calculations included. Final concept is explained and justified, using concepts learned to demonstrate effectiveness of design.	Load tests, member properties, or cost calculations may be missing. Final concept is explained and justified, but lacking demonstration of the effectiveness of design.	Load tests, member properties, or cost calculations may be missing. Final concept is explained but lacking demonstration of the effectiveness of design.
Solution Performance					
Design Requirements	**1 ×**	Fully meets design requirements.	Meets most design requirements and supports the design function.	Meets some requirements but not enough to support the design function.	Does not meet any requirements.
Cost	**2 ×**	Total cost is under $300,000.	Total cost is under $400,000.	Total cost is under $500,000.	Total cost is over $500,000.
Functionality	**2 ×**	Design functions well and represents a realistic, viable solution. Very little to no movement of bridge during simulation.	Design functions and represents a viable solution. Very litte movement of bridge during simulation.	Design functions under the given constraints. Some movement of bridge during simulation.	Design does not function or does not represent a realistic solution.
Individually Scored items					
Design Brief Notes & Conclusion Question	**1 ×**	A section clearly titled in notebook with notes taken about the design problem and constraints. Conclusion question answered thoroughly and correctly with full explanation demonstrating mastery of concepts learned.	A section titled in notebook with notes taken about the design problem. Conclusion question answered correctly.	A section titled in notebook with notes taken about the design brief. Conclusion question answered.	Either notes or conclusion question not completed.
Project Log	**1 x**	Provides a neat and accurate description of tasks completed each day with specific **details** about **personal contributions** to the project. Complete sentences used.	Provides an accurate description of tasks completed each day with specific details about personal contributions to the project.	Provides a description of tasks completed each day.	Provides a description of tasks completed in the project.
Investigation Tables	**1 ×**	Explore tables completed neatly and correctly.	Explore tables mostly completed and correct.	Explore tables 50% complete and correct.	Explore tables mostly incomplete.
Teamwork	**1 ×**	Worked well with other team members and settled differences in a positive manner. Down time used productively and never off-task.	Demonstrated good team working skills the majority of the time. Down time used productively, but off-task occasionally.	Demonstrated good team working skills part of the time. Down time not used productively and off-task often.	Demonstrated few team working skills. Off-task most of the time.