**EME 150A Course Project Grading Rubric**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | | |  | | | **Score** |
| **Cover Page**  Contains your name, title of the project, and a picture of your bicycle. | **3 pts**  All elements are included with no errors. | | | **1 pts**  Not all elements of this criterion are included OR there are errors. | | |  |
| **Abstract** | **5 pts**  All elements are included with no errors.  **(4-6 sentences)** | | | **3 pts**  Less than 4 sentences | | |  |
| **Introduction and Background**  Clearly states  1. description of your bicycle  2. the assigned task and objective  3. the loading and fatigue failure scenarios you are going to consider | **10 pts**  All elements are included with no errors. | | | **7 pts**  Not all elements of this criterion are included OR there are errors. | | |  |
| **Methodology or Approach**  Must include:   1. Assumptions 2. Tables that include the parameters, critical cross section values (areas and perimeter), and material characteristics of the bicycle | **10 pts**  All elements of this criterion are included with no errors and no missing information. | **8 pts**  All elements of this criterion are included but with minor errors OR minor amounts of missing information. | | **6 pts**  All elements of this criterion are included but with significant errors OR significant amounts of missing information. | | **4 pts**  Not all elements of this criterion are included OR there are significant errors AND there are significant amounts of missing information. |  |
| **Load Envelopes (3)**  1. Loading Scenario  2. Loading Scenario  3. Fatigue and Failure Scenario  (Include detailed engineering drawings of the parts involved) | **10 pts**  All elements of this criterion are included with no errors and no missing information. | **8 pts**  All elements of this criterion are included but with minor errors OR minor amounts of missing information. | | **6 pts**  All elements of this criterion are included but with significant errors OR significant amounts of missing information. | | **4 pts**  Not all elements of this criterion are included OR there are significant errors AND there are significant amounts of missing information. |  |
| **Analysis of Critical Components**  The analysis for the scenarios must include:   1. Free Body Diagrams. 2. Equations and concepts from at least three chapters of the book.   The three required chapters must be Chapter 3 (load and stress analysis), Chapter 5 (failures resulting from static loading, the factor of safety), and Chapter 6 (fatigue failure resulting from variable loading).   1. Calculations (using different theories) | **30 pts**  All elements of this criterion are included with **no errors and no missing information**. | **24-27 pts**  All elements of this criterion are included but with minor errors OR minor amounts of missing information.  One error -3 pts  Two errors -5 pts | | **18-23 pts**  All elements of this criterion are included but with significant errors OR significant amounts of missing information. | | **15 pts**  Not all elements of this criterion are included OR there are significant errors AND there are significant amounts of missing information. |  |
| **Suggested Design Modifications**  Discuss:   1. Replacing and modifying parts to improve safety 2. Riding conditions (loading conditions, surfaces, weather, etc.) 3. Maintenance schedule (number of cycles and years in operation) | **10 pts**  All elements of this criterion are included with no errors and no missing information. | **8 pts**  All elements of this criterion are included but with minor errors OR minor amounts of missing information. | | **6 pts**  All elements of this criterion are included but with significant errors OR significant amounts of missing information. | | **4 pts**  Not all elements of this criterion are included OR there are significant errors AND there are significant amounts of missing information. |  |
| **Conclusions and Recommendations**   1. Summarize the main findings from the 3 scenarios. 2. Reiterate the results and list recommendations. 3. Discuss whether the results make sense and how you could improve the results | **10 pts**  The conclusion is complete and accurate. | | **8 pts**  The conclusion is almost complete  (Missed one point or one inaccuracy). | | **5 pts**  The conclusion is not quite complete and does not cover the all of the points in the criterion. | |  |
| **References**  Provides bibliographical information for any material that is not original and which is cited in the report. | **5 pts**  Adequate references are provided. | | | **2.5 pts**  Adequate references are only partially provided. | | |  |
| **Attach this rubric** | **2 pts**  All elements are included with no errors. | | | **N/A** | | |  |
| **Overall Writing** | **5 pts**  The writing is clear.  There are no spelling or grammar mistakes. | | **3 pts**  The writing is clear. There are a few spelling and grammar mistakes. | | **1 pt**  The writing is not clear.  There are many spelling and grammar mistakes. | |  |
| If any sections are not present, then the scores for these sections are zero. **TOTAL SCORE: \_\_\_\_\_\_\_\_\_\_\_\_\_**  Note: If you are missing a scenario, you will be deducted 33% for each missing scenario  in the both the load envelopes and analysis of critical components sections.  **The project is due on Friday, June 3 at 11:59pm. A late penalty of 25% per day will be**  **applied for every 24 hour period.** | | | | | | | |