

**Project 2.2.3 Turbine Engine Design Rubric**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Elements | Weight | 5 Points | 4 Points | 3 Points | 2 Points | 1-0 Points | Total |
| Engine design constraints |  | All design constraints are met. Altitude, speed and engine size within reason for a turbojet plane. | One design constraint not met. Altitude, speed and engine size within reason for a turbojet plane. | Two design constraints not met. Altitude, speed and engine size within reason for a turbojet plane. | Three design constraints not met. Altitude, speed and engine size within reason for a turbojet plane. | Many design constraints not met. Altitude, speed and engine size within reason for a turbojet plane. |  |
| **Maximum fuel efficiency** |  | Fuel efficiency as measured by TSFC exceeds:\_\_\_\_\_\_\_\_. | Fuel efficiency as measured by TSFC exceeds: \_\_\_\_\_\_\_. | Fuel efficiency as measured by TSFC exceeds:\_\_\_\_\_\_\_\_\_. | Fuel efficiency as measured by TSFC exceeds:\_\_\_\_\_\_\_\_. | Fuel efficiency as measured by TSFC exceeds:\_\_\_\_\_\_\_\_. |  |
| **Simulation quantity** |  | Ten simulations ran. | Eight simulations ran. | Six simulations ran. | Four simulations choices ran. | Less than four simulations ran. |  |
| **Simulation results** |  | Numerical data with units from each simulation recorded in data tables (steps 1-5) in engineering notebook. | Numerical data with units from 80% of the simulations recorded in data tables (steps 1-5) in engineering notebook. | Numerical data with units from 60% of the simulations recorded in data tables (steps 1-5) in engineering notebook. | Numerical data with units from 40% of the simulations recorded in data tables (steps 1-5) in engineering notebook. | Numerical data with units from > 40% of the simulations recorded in data tables (steps 1-5). |  |
| **Material selection** |  | All materials selected (step 6) listed in engineering notebook. | 80% of materials selected (step 6) listed in engineering notebook. | 60% of materials selected (step 6) listed in engineering notebook. | 40% of materials selected (step 6) listed in engineering notebook. | Less than 40% of the materials selected (step 6) listed in engineering notebook. |  |
| **Average weight, thrust to weight ratio and exceeded temperatures** |  | Average weight, thrust to weight ratio, all exceeded temperatures (step 7) recorded in engineering notebook. | 80% of average weight, thrust to weight ratio, all exceeded temperatures (step 7) recorded in engineering notebook. | 60% of Average weight, thrust to weight ratio, all exceeded temperatures (step 7) recorded in engineering notebook. | 40% of Average weight, thrust to weight ratio, all exceeded temperature (step 7) recorded in engineering notebook. | Less than 40% of Some average weight, thrust to weight ratio, all exceeded temperature (step 7) recorded in engineering notebook. |  |
| **TSFC (Thrust Specific Fuel Consumption)** |  | TSFC recorded for each simulation in engineering notebook | TSFC recorded for 80% of the simulations in engineering notebook | TSFC recorded for 60% of the simulations in engineering notebook | TSFC recorded for 40% of the simulations in engineering notebook | TSFC recorded for some simulations in engineering notebook |  |

**Written Report**

Student: Refer to the report template for guidance.

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| Elements | Weight | 4 Points | 3 Points | 0 - 2 Points | Total |
| Title Page |  | All components required for the title page have been listed. | One components required for the title page has been listed. | Several components required for the title page has been listed. |  |
| Abstract |  | The abstract completely and concisely summarizes the project or report in one paragraph. | The abstract summarizes the project or report | The abstract does not clearly summarize the report. Information is difficult to understand. |  |
| Content |  | Summarize all details about your final proposed engine design. | Summarize most details about your final proposed engine design. | Summarize some details about your final proposed engine design. |  |
| Technical Documentation |  | Screen capture of final design from EngineSim showing the Engine Performance Output. | Screen capture of final design from EngineSim insufficient. | Screen capture of final design from EngineSim absent of incorrect. |  |
| Conclusion |  | A paragraph describing items such as: what you learned from this project  what part of it was easiest and why  what part was hardest and what you did to overcome this difficulty |  |  |  |

**Portfolio Rubric**

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| Elements | Weight | 4 Points | 3 Points | 0 - 2 Points | Total |
| Portfolio |  | Updated portfolio index, screen shot of final design and a paragraph describing:   1. what you learned from this project 2. what part of it was easiest and why 3. what part was hardest and what you did to overcome this difficulty | One components missing from requirements. | More than one components from requirements. |  |

**Notebook Rubric**

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| Criteria | All pages numbered in order. | All entries are made in permanent blue or black ink. | No missing pages. | All information must be clear and intelligible. | All Information is sequential. | All drawings and pictures labeled. | All inserted items taped or glued. | Excess space has a line through it. | All mistakes crossed out. No erasures. | Every page signed and dated. | Total |
| Criteria met = 1 |  |  |  |  |  |  |  |  |  |  |  |