

P1.3.6 Compound Machine Project Scoring Rubric

Score:

/110 Points Total

Team Documentation [55 points]

Topics	5 points	4 points	2 points	1 point
Professional Appearance / Neatness / Organization	Includes all required sections; includes page numbers and appropriate section headings. Font (11/12pt for standard text) and spacing choices are appropriate and consistent throughout document. Page breaks used appropriately to keep headings/titles in the correct place.	Includes most required sections; includes page numbers and appropriate section headings. Font and spacing choices are appropriate.	Does not include all required sections; section headings could have been better organized. Font and spacing choices not appropriate.	Missing many sections; does not have page numbers or section headings. Lack of care put into layout and organization.
Title Page & Table of Contents	Title page Includes all components required for a complete title page. (Project #, title, & subtitle. team photo with final prototype. Designers, class name & period, date range of project with year.) TOC includes all major sections with corresponding page numbers.	Includes 80% or more of the necessary components for a complete title page and TOC.	Includes 60% or more of the necessary components for a complete title page and TOC.	Includes 50% or more of the necessary components for a complete title page and TOC.
Design Brief	Includes <u>all parts of a design brief</u> organized into one page. Clearly details the design problem, constraints, and deliverables.	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.
Brainstorming Sketches (x2)	Produces two detailed sketches of initial design ideas per person. Includes a descriptive paragraph of each concept explaining integration & mechanisms. Each sketch is titled, and drawn neatly with labels for clear understanding (dimensions & materials).	Produces two detailed sketches and descriptions per person of initial concepts. Sketches are titled.	Produces at least one detailed sketch and description per person of initial concepts. Sketches are titled.	Produces some sketches of initial concepts. Sketches are titled.
Proposed Design Solution	Proposed solution is accurately portrayed as high-quality digital model . Meets the required design constraints. Is properly detailed for effective communication, including title, labels, descriptions, signatures, and dates.	Produces marginally sufficient sketches that meet the required design concepts. Is properly detailed for effective communication, including labels, descriptions, signatures, and dates.	Produces sketches that are difficult to visualize. Lacks details in sketches. Missing some details for effective communication, including labels, descriptions, signatures, and dates.	Produces incomplete sketches. Does not present the concept well. Missing several details for effective communication, including labels, descriptions, signatures, and dates.
Design Modifications	All changes made to the proposed design solution are clearly communicated through sketches/photos and explanations. Sketches/photos include title, labels, signatures, and dates.	Most changes made to the proposed design solution are somewhat clearly communicated through photos and explanations. Modifications include labels, signatures, and dates.	Some changes made are poorly communicated through photos and explanations. Modifications include labels, signatures, and dates.	Very few changes made are communicated through photos and explanations. Modifications missing most labels, signatures, and dates.
Final Design Solution (annotated images, video link) (x2)	Short paragraph clearly gives an overview of final design. Digital model created well that clearly highlights major aspects of the machine. Photos of each portion from multiple views included to provide details of final build. All are properly titled and annotated for effective communication. Organized on page(s) neatly.	Short paragraph clearly gives an overview of final design. Digital model created that highlights major aspects of the machine. Photos of each portion included to provide details of final build. All are properly titled and annotated. Organized on page(s) neatly.	Digital model created that highlights major aspects of the machine. Photos of each portion included. Most are properly titled and annotated.	Digital model created. Photos of each portion included.
Final Design Evaluation - IMA Calculations	IMA calculations for each mechanism shown clearly with annotated sketch, formula & work, and correct answer. Total IMA found correctly with formula & work shown neatly. All organized well on page.	IMA calculations for each mechanism shown with annotated sketch, formula & work, and correct answer. Total IMA found correctly. All organized on page.	IMA calculations for each mechanism shown. Total IMA found.	IMA calculations for each mechanism shown.
Final Design Evaluation - Paragraph	Final evaluation paragraph well written explaining all items clearly & thoughtfully, grounded in engineering principles. No grammar, spelling, punctuation errors.	Final evaluation paragraph written explaining all items clearly grounded in engineering principles. Minor grammar, spelling, punctuation errors.	Final evaluation paragraph included. Minor grammar, spelling, punctuation errors.	Final evaluation paragraph included. Many grammar, spelling, punctuation errors.

Project Management [15 points]

Topics	5 points	4 points	2 points	1 point
Gantt Chart	All members are on task at all times and contribute in a positive manner. Gantt chart is created at the beginning of the project and updated often to reflect actual work done each work day. Tasks are divided equally amongst members and each person completes what is required of them.	Most members are on task at all times and contribute in a positive manner. Gantt chart is created at the beginning of the project. Tasks are divided equally amongst members and each person completes what is required of them.	Most members are on task some times and contribute in a positive manner. Tasks are divided equally amongst members and each person completes what is required of them.	Some members are off task at times and do not contribute in a positive manner. Evident that some members are not contributing and relying on others to complete what is required of them.
Teamwork (x2)	All team members contribute equally to the overall completion of the project. Evidence that in-class time and asynchronous time used productively. Team members demonstrate good team working skills and communication throughout the entire project.	All team members contribute to the overall completion of the project. Evidence that in-class time and asynchronous time used productively. Team members demonstrate good team working skills and communication most of the time.	All team members contribute to the project. In-class time and asynchronous time used somewhat productively.	1-2 team members completed the majority of the project while other team members were unproductive most of the time.

Final Video Presentation [10 points]

Topics	5 points	4 points	2 points	1 point
Content	All required elements of the video included to fully explain your design and integration of parts.	Most required elements of the video included that explain your design.	Missing some key elements of your explanation that make your design difficult to understand.	Missing most required elements, making your design very difficult to understand.
Clarity	Video quality very clear - audio easy to understand and at a good volume, visuals clear and circuit easy to see and follow.	Audio or visual components were mostly clear and easy to follow.	Audio or visual components are somewhat difficult to hear or see.	Audio is difficult to hear and/or mumbled, video quality is very poor, making it difficult to understand.

Solution Performance [15 points]

Topics	5 points	4 points	2 points	1 point
Design Requirements	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.
Quality	Mechanisms are well built and robust, and the materials are appropriate.	Mechanism constructed with materials that are mostly appropriate.	Mechanism not well built but is able to be visualized.	Mechanism is incomplete.
Functionality	Functions correctly and integration of parts clearly demonstrated.	Functions correctly and integration of parts mostly demonstrated.	Malfunctions at times and/or integration of parts not clear.	Does not function as intended.

Individual Deliverables [15 points]

Topics	5 points	4 points	2 points	1 point
Mechanism Calculations (x2)	Annotated sketch of each mechanism drawn neatly. IMA and/or ratio is neatly & accurately calculated, with all data & work shown (including formulas). Total IMA of portion calculated accurately showing formula and work.	Annotated sketch of each mechanism drawn. IMA and/or ratio is neatly & accurately calculated, with all data & work shown (including formulas). Total IMA of portion calculated accurately showing formula and work.	IMA and/or ratio is accurately calculated, with all data & work shown (including formulas). Total IMA of portion calculated accurately showing formula and work.	Mechanical advantage and/or ratio is not calculated.
Project Log	Provides an 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 some details about personal contributions to the project.	Provides a description of tasks completed each day.	Provides a description of tasks completed in the project.

