Project 3.9 Manufacturing a Box Checklists and Rubric

Resources

[3.9.P RU Manufacturing a Box_Checklists and Rubric.docx]

Interim Reviews and Assessment Checklists

Review Content	Needs Revision	Reviewer name, date	Reviewer Comments	Approved
Design Process – Manufacturing Process Flow • All steps of the design process are followed. • Each step of the design process is verified by appropriate documentation and outcomes (i.e. design brief, decision matrix, test report, and/or project recommendations) • The manufacturing process flow provides clear, detailed, easy to read, step-by-step description of the product creation that can be replicated without additional information.				
Engineering Calculations – Mathematical Modeling • Correct materials and/or services (as determined from Cost of Goods table in Project document) are used in calculations. • Calculations are documented step-by-step so that a person unfamiliar with the work can understand the solution process. • Calculations and results are mathematically correct. • Appropriate units and unit conversion factors (when necessary) are documented throughout the				

calculations and in results.				
Technical Sketching • Box drawings have the necessary size and location dimensions present and properly located. • Drawings provide dimensions according to dimensioning guidelines. (See dimensioning guidelines.)				

Peer Review Rubric – The following criteria will be assessed when you review your peer's work.

Criteria	Basic	Proficient	Advanced
Peer Review and Feedback LO: Analyze and evaluate the work of others to provide helpful and effective feedback.	Expends little effort to provide helpful feedback. Provides feedback that is often inaccurate or not specific, or is not actionable. Sometimes shares feedback in a professional manner.	Carefully and thoughtfully assesses a peer's work. Provides effective and accurate feedback that is specific and actionable. Usually provides feedback in a professional manner.	Carefully and thoughtfully assesses a peer's work and asks for clarification from the peer to fully understand thinking and process, when appropriate. Provides effective feedback that is specific and actionable, and refers to a learning objective or goal. Amount of detail of feedback is user friendly – not overwhelming and not too technical, but substantial enough to provide specific guidance for significant improvement. Always provides feedback in a professional manner.

Through Project Performance - The following criteria will be assessed at any time and/or at multiple stages of the design process.

Criteria	Basic	Proficient	Advanced
Engineering Mindset LO: Persevere to solve a problem or achieve a goal. LO: Demonstrate independent	Frequently off task. Requires direct instructions before working on the project. Inflexible and resists making	Often uses time wisely. Often demonstrates self-direction with little direct oversight. Usually demonstrates flexibility and is adaptable to change.	Plans and uses time to best advantage. Always demonstrates independent thinking and self-direction to accomplish a goal. Always demonstrates flexibility and adaptability to change. Can explain the benefits to changing

thinking and self-direction in pursuit of accomplishing a goal. LO: Demonstrate flexibility and adaptability to change.	changes. Gives up easily. Does not consider or rejects effective feedback from peers or teacher without justification.	Usually perseveres to solve a problem, but sometimes requires intervention. Often uses effective feedback from others to inform performance.	direction in the design process. Perseveres to solve problems or achieve the goal until the problem is solved. Critically analyzes feedback and strategically implements feedback that will improve work. Provides appropriate justification when feedback is not implemented.

Project Submittal - The following criteria will be assessed through the project submittals.

Criteria	Basic	Proficient	Advanced
Collaboration Lo: Facilitate an effective team environment to promote successful goal attainment. LO: Contribute individually to overall collaborative efforts.	Team members' strengths are sometimes used. Workload is not shared equally. The student does not always effectively listen to team members nor show respect for varying opinions. The student does not always communicate ideas and opinions nor engage in compromise.	Excellent teamwork. An effective team environment is present. Team members' strengths are well used. Workload is shared equally. The student generally listens to team members, respects varying opinions, communicates ideas and opinions effectively, and engages in compromise. Student contributes an appropriate level of effort and productivity to the overall effort.	Model team. Team members' strengths are fully used. Workload is shared equally. The student consistently listens to all team members, respects varying opinions, communicates ideas and opinions effectively, and engages in compromise.
Data Analysis – Data Collection LO: Using a variety of measuring devices, measure and report quantities accurately and to a precision appropriate for the purpose.	Data collected is inaccurate to assess each quantitative control standard and one size dimension of the product. Measurements and precision are incorrect for the purpose. Data observations are not evident.	Most necessary data is collected to assess each quantitative control standard and one size dimension of the product. Measurements are generally accurate and recorded to an appropriate level of precision for the purpose. Data observations are appropriate but no detail is provided.	All necessary data is collected to assess each quantitative control standard and one size dimension of the product. Measurements are accurate and recorded to an appropriate level of precision for the purpose. Data observations are appropriate and detailed.

Data Analysis - Analysis LO: Use a spreadsheet application to help identify and/or solve a problem.	Analysis of data is not consistently logical nor clear. Minimal appropriate statistical analysis results are evident, but presentation is not clear. Possible errors and suggestions for improvement are vague.	Analysis of data is logical and clear. Appropriate statistical analysis results are evident, but presentation is not clear. Possible errors and suggestions for improvement have been made.	Analysis of data is logical and clear. Appropriate statistical analysis results are clearly presented. Possible errors are explained and relevant suggestions for improvement have been made.
Quality Control Standards LO: Create quality control standards to assess the quality of a part or product.	The specifications include numeric properties that are impossible to accurately measure. It is impossible to determine whether the goal has been met.	The specifications include numeric properties, but they may be difficult to accurately measure. It is difficult to determine whether the goal has been met.	The specifications include quantitative properties that are easy to measure and of appropriate magnitude and precision. It is easy to determine whether the goal has been met. A sufficient number of specifications is included to ensure a quality product.
Tool/Machine Use LO: Construct physical objects using hand tools and shop tools.	Team members require some prompting to use tools and machines safely and as instructed.	Team members use tools and machines safely and as instructed most of the time.	Team members always use tools and machines safely and as instructed.