

Prosthetic Engineering Project Rubric

Total: 60 points possible

	Advanced		Proficient		Developing		Incomplete	
Design Plan Engineering Log 8 pts	Design sketch is complete and includes relevant details that will be referenced when describing the solution to the problem.	2	Design sketch is complete and includes details that will be referenced when describing the solution to the problem.	2	Design sketch is <i>impractical</i> and/or design connection to the problem is <i>inadequate</i> or <i>unclear</i> .	1	Design plan is not completed by the student.	0
	Bill of Materials is completed.	2	Sketch is included with list of materials and cost.	1	Sketch is included; list of materials/cost incomplete	1	Missing sketch Missing materials/cost	0
	Documenting the Process: Includes design sketches from beginning to end;	2	Documenting the Process: Includes design sketches from beginning to end;	2	Documenting the Process: Includes multiple designs sketches	1	Documenting the Process: designs sketches are incomplete and unclear;	0
	Describes design changes and solutions to problems encountered, with reasoning based on evidence and/or observation for several changes.	2	Describe some design changes and solutions to problems encountered, and provides reasons for some changes.	1	Describes some design changes and solutions;	1	Design choices and solutions to problems are not shared.	0
Build a Working Model the Prototype 17 pts	<p>Student builds a working model that aligns with the chosen method, criteria, constraints, and intent of the problem.</p> <p>Model is highly original and displays a well thought out and functional design. Looks like hand in both form and size.</p>	12	<p>Student builds a working model that aligns with the chosen method, criteria, constraints, and intent of the problem.</p> <p>Model is simple and functional in design. Shows good use of materials in construction. Looks like hand in both form and size.</p>	9	<p>Student builds a working model that <i>does not align</i> with the chosen method, criteria, constraints, and intent of the problem.</p> <p>Model is simple. Parts do not function well together and needs to be modified during the test to function.</p>	7	Working model is not built.	0

	Prototype functions once attached to wrist, without interference from other hand to work.	5			Prototype functions with manipulation from other hand to contract the "muscles" on the model.	1		
Test 10 pts	Describes prototype testing and includes video of performance.	3	Describes prototype testing and includes video of performance.	3	Limited description of prototype testing and/or missing video of performance	1	Testing is not performed due to either an inability to test based on the quality of the working model, or there is no working model to test.	0
	Completes (all 5 trials) <i>accurate and detailed</i> records are collected in lab book and seen in presentation.	3	Completes (all 5 trials) <i>accurate and detailed</i> records are collected in lab book and seen in presentation.	3	Complete less than 5 trials) <i>accurate and detailed</i> records are collected in lab book.	2		
	Mathematical calculations analysis is completed for the trials.	2	No mathematical calcs are included	0				
	Collects valid data, including ROM measurements and other of own choice. Any issues with data collection are corrected and explained relating to validity of data.	2	Collects valid data, including ROM measurements and other of own choice. Any issues with data collection are corrected	1	Problems are not solved; students continue to gather invalid data.	0		
Evaluate Seen in presentation 7 pts	-analyzes data/calcs to determine the prototype success.	7					Student does <i>not consider data in analysis of the prototype..</i>	
	-picture of prototype,	6						
	-video task performance	5						
	-one challenge described	4						
	-one key component	3						
	-photo of component	3						
	-explanation to justify the component and intended motion using anatomical terms	2						
	1							
					Does not completely address all the points in step 7 as noted in comments			

Redesign Seen in presentation 14 pts	Uses data analysis to determine similarities and differences among between prototypes;	2	Uses data analysis to determine similarities and differences among between prototypes;	2			No analysis or comparisons shared	0
	Describe 2 options that were eliminated.	2	Describe 1 option that was eliminated.	1	No other options are discussed	0		
	Identify the best characteristics of each that can be combined into a new solution to better meet the criteria and constraints.	4			Best characteristics of each are somewhat described that can be combined into a new solution to better meet the criteria constraints.	2		
	Bill of Materials completed.	2	Sketch is included with list of materials and cost.	1	Sketch is included; missing materials and/or cost.	0		
	Prototype performs task without issues	4	Prototype performs tasks with a little problem.	3	Prototype is built but has some significant issues with task.	1		
Share with others 5 pts	Student is very well prepared for presentation, speaks clearly with eye contact.	2	Student is well prepared for presentation, speaks clearly with eye contact.	2	Student is not prepared for and inadequately in project discussion.	1	Student does not participate in project discussion.	0
	Is able to communicate and organize ideas with a high degree of effectiveness	3	Is able to communicate and organize ideas with some effectiveness	2	Is able to communicate and organize ideas with limited effectiveness	1		