Project 2 D2: Critical Design & Prototype Review Rubric

Below is abbreviated version of deliverables –
see Project 2 Description and PVA Guide for explicit expectations

	Points
Total	**20**
Proposed design: CAD rendering, engineering drawings	**4**
Full 3D CAD of your entire robot (walker + dispenser) including all components (assembly, drawings, animation). 3D CAD renderings and animation contain main ideas of the robot's layout and operation, and how elements will be fixed to each other and aligned (including labeling of key components).	
PVA analysis for leg motion, gait, and robot velocity	**5**
Report describes and shows the PVA analysis of the "foot" motion of the leg mechanism. Number of legs, gait pattern, and PVA analysis used to estimate duty factor, robot velocity, required leg crank/motor angular velocities, and gear ratios. Includes images of PVA simulation with foot trace, PVA (x, y) vs. time plots - identifying lift and contact phases as outlined in the PVA Guide example document (at a minimum Figures 9, 10, 7, 8). No analytical derivations - will be in PVA appendix document. Adding gear ratio for dispensing mechanism would be helpful.	
Expense Report (use Excel spreadsheet and show as one page)	**1**
Use Expense Report template to include estimates for all parts purchased, provided, found. Including costs from Project 1.	
Timeline & Division of labor	**1**
Team has well defined plan for next project stage, with articulated division of labor.	
Prototype demo	**4**
Compliance to physical requirements. Completeness of prototype. Degree of functionality. Level of prototype fidelity. At least one leg and dispenser operate with correct phase when motor connected (does not need to walk, can be while held in air).	
Review meeting performance	**1**
Presentation is clear, well-prepared, and all members participate. No one reads directly from the slides. All members participated in presentation and discussion.	
Slides, Appendix, & Figure Formatting	**1**
Slides and appendix include all required sections. Writing in all sections is grammatically correct, subtantive and of sufficient detail. Large font size, thick lines, axis titles, units, and labeling with meaningful caption or label. Hand sketches are easy to read and see all parts, with clear, dark lines and labels. All images are easy to read and not pixelated or blurry or otherwise illegible, handwriting is not small or illegible.	
PVA analysis appendix - see PVA Guide document for details of expectations	**3**
PVA analysis of leg linkage is clear and correct with diagrams indicating detailed vector loops (cf. Fig. 3), the analytical calculations of motion, and output plots (Steps 1 & 3). Upload as separate appendix document (filename format: P2D2_Team##_PVA-appendix.pdf)	
Extra Credit: Walking performance	**up to 1**
Robot can walk, dispense at least one payload, and move consistently forward	

Notes: Aesthetics will not be considered at the prototype phase

Scoring	Weight
Satisfactory: Meets expectations, is well considered, contains no problems	1
Intermediate: Evidence of achievement. Missed minor requirements	0.75
Marginal: Limited evidence of achievement. Missed major requirement	0.5
Deficient: Minimal evidence of achievement. Missed multile minor and major requirements	0.25
Missing: Not demonstrated/observed	0