

Grading Sheet for Project Report

Group # _____

Grading Policy: The median grade should be between 75 and 85.

1.	Abstract (~200-300 words) <ul style="list-style-type: none"> - Background (why we need to develop these devices?) - Objective (what kind of devices do you develop?) - Methods (how do you achieve the objective?) - Main results and conclusions 	5	
2	Introduction <ul style="list-style-type: none"> - Discuss the nature of problem investigated and where your device can be used for. - Discuss the relevant literature with ~ 10 papers. - Brief description of your device – methods and results (one paragraph) 	10	
3	Synthesis (Design) <ul style="list-style-type: none"> - Describe your originality (creativity) of your linkage design (and locking design) compared with other designs published. - Graphical linkage synthesis <ul style="list-style-type: none"> o Two position or three position synthesis? o CAD figures <ul style="list-style-type: none"> ▪ On the linkages ▪ On the whole device (if you have) o Pictures of your prototypes and components 	8	
4	Fabrication and assembly (Manufacturing) <ul style="list-style-type: none"> - Selection of materials with sound justification <ul style="list-style-type: none"> o Part materials, motors, and sensors. - Describe the procedure of manufacturing. - Describe the procedure of assembly of components, motors, sensors, etc. 	7	
5	Control of sensors and actuators <ul style="list-style-type: none"> - Describe the algorithm with a flowchart and a circuit diagram 	5	
6	Analysis <ul style="list-style-type: none"> - Classification of the designed linkage <ul style="list-style-type: none"> o DOF o Crank-slider, crank-crank, etc. o Grashof condition - Position analysis for transformation (with graphs¹ from MATLAB results) - Force analysis with a Free Body Diagram (with graphs from MATLAB results) <ul style="list-style-type: none"> o Required input torque to lift the weight of the device <ul style="list-style-type: none"> ▪ Justification of the selection of motors ▪ Design and analysis of external gearboxes if added 	15	

¹ When you plot graphs, do not forget the **dimension** on the x- and y- axes.

	<ul style="list-style-type: none"> ○ Check the safety factors of the assembled components with the force analysis. - Climbing speed analysis <ul style="list-style-type: none"> ○ For different radial spring forces. 		
7	Experiment (with figures) <ul style="list-style-type: none"> - Demonstration of load carrying capacity <ul style="list-style-type: none"> ○ Measure the rolling speed and compare it with the analysis. - Demonstration of locking capacity without power source. <ul style="list-style-type: none"> ○ Show it with the analysis. 	10	
8	(Further) Discussion <ul style="list-style-type: none"> - Discuss agreement or disagreement between your analyses and experiments. - Discuss the intellectual merit of your work. - Discuss theoretical and practical implication (broader impact) of your work. 	5	
9	Conclusion <ul style="list-style-type: none"> - Brief summary of objectives and methods - Short narrative key findings with a bulleted list - Generalized ideas <ul style="list-style-type: none"> ○ Conclusion must be drawn from results and discussion. 	5	
10	References ~ 10 papers <ul style="list-style-type: none"> - Use the IEEE format 	2	
11	Appendix <ul style="list-style-type: none"> - Contribution of each team members (with pictures of each member) <ul style="list-style-type: none"> ○ Use IEEE format on the author pictures. - Gantt chart - Budget table and justification. (Is your spending under the budget?) - Raspberry PI programming code - Others 	3	
12	Peer evaluation	5	
13	Gameday performance	20	
	Total	100	

Comments: _____