EML2322L – MAE Design and Manufacturing Laboratory

Design Report 1 (Concept Generation) Grading Rubric *[35 points total]*

The following should typically take 1-2 hours per group, depending on the quality of work submitted. ***ALL comments should be made using red text and the Adobe "Fill and Sign Tool".*** *Please bill full-time for the time you spend grading the reports.*

GRADING INSTRUCTIONS

1. *Read / review the* ***Design Project description****, this* ***Grading Rubric,*** *the relevant sections of the* ***DR1 Grading Guidelines****, and the* ***DR1 Checklist*** *thoroughly before beginning. Review the* ***Concept Generation Examples*** *on the course website as well so you can catch students who copy.*
2. *Use the* ***Fill and Sign Tool*** *within* ***Adobe Acrobat Reader DC*** *for marking up the* ***Grade Sheet*** *and* ***Checklist.***
3. *Download* ***DR1 Grade Sheet*** *and write member names in alphabetic order at the top using red ink.*
4. *Fill in the* ***Background Research Assessment*** *scores using the Grades menu on* ***Canvas****. Note these scores should be out of 10 points, so if the Canvas grade is 97%, give them a 9.7/10 on the Grade Sheet.*
5. *Grade the report using red ink using the* ***Speed Grader Tool*** *on Canvas.* ***Write meaningful comments on each page.*** *Mark grammatical mistakes you find while grading so students understand why they received the noted deduction(s), but don't fixate on them (remember the 80/20 rule for grading).* ***Place suggested point deductions on the Grade Sheet, not on their Canvas report submission.***
6. *Denote your suggested point deductions with the* ***Fill and Sign Tool*** *in the left-hand margins of the Grade Sheet so I can normalize the scores. Positive point values in black (e.g. "2 pts") denote points the group (or student) is awarded for doing something completely correct. Negative point values in red (e.g. "-1 pt") denote maximum points deducted if that part of the assignment is incorrect, lacking detail, or messy. Use the detailed point breakdowns on the grading sheet and the following partial credit rubric to determine point scores:*

100%	*complete, correct, and neat (doesn't have to be PERFECT, but very good)*
75%	*pretty good, but one or two MINOR issues, and or a little messy*
50%	*incomplete, and/or not done very well, or quite messy, or MAJOR issue(s)*
0 - 25%	*not done at all, or very low effort / quality for collegiate-level work*

   If something is ***very close*** *to correct/perfect, just make a comment on the report/grade sheet, but issue no point deduction.* ***Ask me or a senior TA any questions about which you are unsure.***
7. *Fill out the* ***DR1 Grade Sheet*** *by summarizing the reason(s) for each deduction received using red ink.* ***Ask me or a senior TA any questions about which you are unsure.***
8. *Type your suggested grade at the top right of the first page of the grade sheet with red ink (e.g. 32.5 / 35). NOTE: Do not enter grades into the grade box in the right-hand panel. Once normalized, I will enter the grade.*
9. *Save the completed grade sheet with the filename* ***Group_#letter_DR1_Grade_Sheet.pdf*** *and upload as a comment to the group's DR1 Canvas submission (e.g. For Group 1A: "Group_1A_DR1_Grade_Sheet.pdf").* ***This DR1 Grading Rubric is for your benefit only and should not be given to the students.***
10. *Mark the status of your grading on the* ***DR Grading Status Sheet*** *as well as any concerns regarding potential copying, collaboration, etc. (this is a secure document the students cannot access).*
11. *Try your best to complete the group's DR1 within 72 hours so we can return it in time for students to understand how we grade this material and if necessary, modify the effort invested into DR2 over the following few weeks.*

(GRADING RUBRIC FOR THIS SECTION CONTINUED ON NEXT PAGE)

[-5 pts max] Report Assembly

These are deductions incurred for not following the report assembly instructions. ***Although the points add up to 10, we cap the max deduction here at -5 pts so we don't place excessive weight on format / grammar / spelling.***

[5 pts] Problem Statement

This section should be self-explanatory based on the grade sheet.

[10 pts] Background Information

Since this knowledge is now assessed the second week via the Background Research Quizzes, we simply grade the quizzes and record the scores in the appropriate locations.

[20 pts] Conceptual Design Generation

Below are a few notes from the DRT regarding what we're looking for in this section:

Written description should clearly explain how each part of the of the design works while referencing each sketch by figure number; it should also justify each design choice and material selection based on background research or physical testing. Finally, it should include max. robot velocity estimation taken off the provided robot speed plots.

Side, top, and front ortho. projections and iso. view should be drawn full page and show clear and substantial detail of the frame, control box, motors, wheels, hubs, mounting brackets, and each mechanism.

Detailed views of mechanisms should include two ortho. and one iso. view of each; however multiple views of the same mechanism may be placed on the same page if the views are large and clear

Sketches should be drawn true scale (i.e. show accurate scaling of components), show substantial detail of the entire design and clearly communicate the ideas using real components and materials found in the lab or cited from other sources. Sketches should be labeled with member's name and sequential figure numbers. Leaders should be included to clearly label components and material selections

Sketches should be neatly hand draw, not traced. Students can use rulers and compasses, but they are not required to do so.

Dimensions should be correct, explicit (i.e. actual dims., not a dim. legend), true scale, and not violating size constraint. Sketches should include dims. of overall robot size, wheels, control box (9.5x11.5x5.5"), object manipulators, mechanism(s), objects being manipulated or released into, etcetera.

[+3 pts] If a student has unusually well-prepared drawings, add up to 3 bonus points for encouragement to keep up the good work