

EML2322L – MAE Design and Manufacturing Laboratory  
Concept Generation (DR1) Grade Sheet

Group Number: \_\_\_\_\_ (1) \_\_\_\_\_ (3) \_\_\_\_\_  
(2) \_\_\_\_\_ (4) \_\_\_\_\_  
(5) \_\_\_\_\_

Report Grader: \_\_\_\_\_

***[-3 pts. max] REPORT ASSEMBLY (GROUP ASSESSMENT SCORE)***

1. Report does not have cover page with group members' names in alphabetic order by last name. ***(-1 pt.)***
2. No properly labeled, computer-generated section dividers included (ref. Appendix A template). ***(-1 pt.)***
3. Report not assembled in the sequence noted in the DRT. ***(-1 pt.)***

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Points in black are awarded for completing a requirement.**

**Points in red are deductions for incomplete, incorrect, or poorly prepared work.**

*Any points awarded or deducted must have an associated comment and/or highlight in Canvas.*

\_\_\_\_\_/ **[5 pts] PROBLEM STATEMENT (GROUP ASSESSMENT)**

1. Are problem statement and project schedule printed with good quality? ***(1 pt.)***
2. Are **ALL** design specs highlighted in yellow (including drawings)? ***(1 pt.)***  
***(-0.1 pts. per missing or incorrect item)***
3. Are **ALL** evaluation criteria in blue? ***(1 pt.)***  
***(-0.1 pts. per missing or incorrect item)***
4. Are **ALL** deliverable dates in orange? ***(1 pt.)***  
***(-0.1 pts. per missing or incorrect item)***
5. Is any other important information underlined in red? ***(1 pt.)***  
***(-0.1 pts. per missing or incorrect item)***

\_\_\_\_\_/ **[30 pts.] CONCEPTUAL DESIGN GENERATION (INDIVIDUAL ASSESSMENT)**

- 1) Written description explains how each part works while referencing each sketch by figure number?  
***(1.5 pts) (-0.1 pts. per incorrect or unreferenced sketch; -0.5 pts. max)***  
***(-0.2 pts. per part missing a description)***
- 2) Includes maximum robot velocity estimation. ***(0.5 pt.) (-0.25 pts. for incorrect calculation)***

- 3) Justifies each design choice and material selected based on background research or testing? (10 pts)
- a. Does the written description show evidence that the background information was read and comprehended?
    - i. Selection of motor type and RPM (2 pts.)  
*(-0.5 pts. per missing or incorrect justification)*
    - ii. Mobile platform layout justification (1 pt)
    - iii. Steering method justification (1 pt)
    - iv. Ball and/or bucket manipulation method (2 pts) (1 pt. each)
    - v. Material selection justified for all components (material properties, structural shape, etc.) (4 pts)
  - b. Additional point deductions:
    - i. Written description is incomplete (-1 pt.)
    - ii. Unclear and/or overly wordy (-0.2 pts. issue; -4 pts. max)
    - iii. Does not follow the DRT formatting and placement at the beginning of the proper report section? (-1 pt.)
    - iv. Violates principles which should have been learned in the background research assignment? (-0.5 pts per violation; -2 pts. max)
- 4) Conceptual design drawings (14 pts):
- a. Side, top, & front ortho. views (6 pts (2 pts per view))
  - b. Full isometric view(s) (4 pts)
  - c. Detailed views of manipulator(s), hopper/sorter and/or release mechanism(s) (4 pts)  
*(-1 pt. per missing view)*
  - d. Understanding of mounting for motors, control box, etc. (2 pts)
  - e. Additional point deductions:
    - i. Required views not drawn full page and true scale? (-0.5 pt. per view; -3 pts. max)
    - ii. Required views do not show substantial detail of the entire design and clearly communicate the ideas (-0.5 pts. per missing or unclear detail; -3 pts. max)
    - iii. Required views do not use real components and materials found in lab or cited from other sources? (-0.5 pts. per missing detail; -3 pts. max)
    - iv. Required views are not labeled with member's name and/or sequential figure numbers? (-0.2 pts per incorrect view; -1 pt. max)
    - v. Leaders are not included to clearly label components and material selection? (-0.1 pts. per missing label; -1 pt. max)
- 5) Are explicit dimensions present showing overall size of robot, frame, control box, wheels, motors, manipulated objects, and each mechanism? (2 pts) (-0.1 pts. per item missing required dimensions)
- a. Concept does not satisfy all constraints noted in the project description.  
*(-.5 points per constraint missed; -2 pts. max)*

Member (1):

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Member (2):

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Member (3):

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Member (4):

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Member (5):

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ADDITIONAL COMMENTS

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