Mars Lander (Egg Drop)

Problem
Design and build a protective casing for an egg that can withstand the impact of hitting the ground when dropped from a height of 2 m.

Materials and Restrictions
You may use 30 straws and 1 m of masking tape.

You will complete the project in class.

Be sure to get a picture of your idea sketches and your final design before testing and upload those files to your Google Drive.

Deadline
Complete the design report below by Friday February 6 2015..

Mars Lander Egg Drop Design Brief

Group Members:

Testing Date: **Submission Date:**

Problem *(restate the problem as given)*

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Materials and/or Restrictions *(list any materials permitted/provided and any restrictions/rules provided)*

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Research *(answer any research questions provided if an online question set is not provided through Moodle, you do not need to restate the questions as all answers will be in complete sentences)*

1. What technologies were employed by NASA to protect the Phoenix Lander on impact?

2. When was the most recent Mars Lander launched?

3. When did it reach its destination?

4. What is the expected duration of the mission?

5. When is the next scheduled mission to Mars?

Ideas *(sketch, in detail, 3 ideas proposed by your group to solve the problem prior to construction, include features etc.)*

Final Design *(use this portion of your report to include a labelled photo of your solution along with rationale)*

Result *(state the outcome of the challenge)*

Evaluation Questions *(answer each question in complete sentences for ALL design challenges)*

1. Did you solve the technological problem/challenge? How?

2. List 2 positive features and 2 negative features/aspects of your final design.

3. What concepts or engineering principles did you learn from this challenge?

4. List the differences between your original idea and your final design. What caused these changes?

5. What improvements (be specific) would you make to your final design to make it (more) successful?

Life Cycle Analysis *(complete a table of this type for all challenges, consider future use of materials to minimize waste)*

Material	Intended Use	Future Use

Daily Log *(keep a record of the daily participation of all group members)*

Date	Work done be group member 1	Work done be group member 2	Work done be group member 3
Date 1			
Date 2			
Date 3			

Assessment and Evaluation

The EXT Design Challenge Rubric will be used to assess each of the given design challenges. It may be modified slightly prior to a specific challenge such as ROV; however, the basic premise will be constant throughout the course. This can be found on the following page.

Notes

This is intended to be a model for future design challenge briefs. In order to properly complete the report for each project you should create your own template/report model. When submitting a report ensure that all parts are answered in complete sentences, ideas are fully recorded (be prepared to show these before constructing your final design), photos are taken of your final design and labelled on the computer and online research questions are completed by the assigned date. If your report is to be submitted electronically it must be uploaded by the assigned date otherwise the system will not accept your submission.

EXT Design Challenge Rubric

	5	4	3	2	1
Problem	Problem restated given as stated by teacher.		Problem given but not as stated.		No problem stated
Research (if online questions were provided, grade will be assigned based on Moodle result)	Extensive research completed. All information is relevant for solution to problem	Research was complete. All information is relevant for solution to problem.	Research was complete. Some information not relevant to solution to problem.	Research completed, but done so with minimal effort.	No research completed.
Design	Final design is explained along with rationale for chosen solution.	Final product is explained; however, no rationale.	Final product is shown, but presented in an disorganized fashion.	Final product was presented, but minimal effort was shown.	No final design was presented.
Report / Life Cycle Analysis	Report is complete with labelled pictures, typed in complete sentences and neatly presented.		Report is complete but not typed OR typed but disorganized.	Report is complete but not typed OR typed but disorganized OR life cycle analysis not complete.	Report is incomplete.
Result	Final product exceeds all requirements.	Final product meets expectations and accomplishes all required tasks.		Final product does not complete required task(s).	No attempt will result in no value.
Evaluation	All evaluation questions are answered with supported material.	All evaluation questions are answer, but same without supporting material.	Missing one of the evaluation questions.	Missing more than one of the evaluation questions.	No evaluation questions were submitted.
Group Self-Assessment and Log	Daily log of each group member's contribution included AND all work is shared.	Daily log of each group member's contribution included BUT work is not shared.	Overall log of each group member's contribution included rather than daily.	Partial log included, work not equally shared.	No log included.
Group Conduct	Worked safely in lab, stayed on task at all times and work area was clean.	Worked safely in lab, stayed on task, but work area not clean.	Worked safely in lab, but not on task all of the time.	Was asked more than once to stay on task or cleanup work area.	Conduct in lab was inappropriate.
Total /40	**Comments**				