ENGN1211 Discovering Engineering S1 2021

ANU College of Engineering and Computer Science, 2021

Milestone 2: Rover Design Specifications and concept/design

Details

Due Date	Prior to Week 5 Group update
Submission	Submitted as PDF through turnitin submission portal. Viewed by tutor during week 5
Format	No specific format required, must be logical, readable, and fit for purpose
Value	1% of course total
Report length	Up to 3 Pages
Participation	Group
Workload	1 hour each (4 hours total)

Description

This small assignment requires the team to demonstrate that they are progressing on the rover project and have developed design specification for the rover based on the goals, materials, and project rules. Design specifications are quantified with the level of accuracy required noted, usually through tolerancing. The process of developing the design specifications as well as the specifications themselves will help you with planning, testing, and delivering in this project.

The team should also develop at least 3 basic concepts for the rover. Concept designs enable engineers to develop a range of solutions that meet the design requirements and then select the best option. This will also be an opportunity to test how your preferred concept will function in the maze. This will be achieved by producing a scale cardboard model of your preferred concept which you will be able to test in the maze during the meeting.

Your team will begin developing design specifications and concepts following you meeting in week 4. You will submit the file detailing your design specifications before your Week 5 meeting and it will be marked by your tutor during the meeting. This milestone is an opportunity to get feedback from your tutor on your concepts, how you could move forward from this point and the way you have communicated your designs. It is also an opportunity to test if your prototype will be able carry the required components and manoeuvre within the maze.

Detail

For this milestone, your team should provide a list of design specifications for the rover that relate to the goals of the project as well as the restrictions and limitations imposed. Your document should present three possible concepts or designs for your rover. You should show your designs in a graphic/visual format (CAD drawings, neat hand drawn diagrams or other) but may also use text to describe your design options.

At a minimum you should be able to list 10 specifications. Wherever possible these should be measurable and if possible have target values with tolerances where appropriate. At this stage, the specifications may be high level. This exercise will give you an opportunity to get some feedback from your tutors which may include how you could iterate on these ideas or go to the next level of design detail. You can present the specifications as you see fit but should consider a table or list.

Your design or concepts should be diverse and should attempt to meet the rover specifications that your team has determined. You may develop more than three concepts or designs but should present only your best three.

You should construct a cardboard model of your preferred option. Within the meeting you will be able to look at how well your model or prototype fits within the maze and discuss any potential shortcomings with your tutor.

Assignment Submission

- you will need to submit one pdf file containing your rover design specifications and concepts using the assignment submission on the course Wattle site.
- name your file according to the following naming convention:

Naming Convention	Example
[University ID]_[given name]_[family name] _[Group]_rover_design_specification_and_concept.pdf	u5608740_Jenny_Simmons_ 1A_ rover_design_specification_and_concept.pdf

Marking Criteria

The Rover Design Requirements will be assessed according to:

- Completeness - have all listed at least 10 items in your design specifications?
- Appropriateness - are the design specifications appropriate, do they relate to the goals and limitations of the rover project?

- Measurable - is an appropriate measure provided that could be used to test if the specification has been met and to what degree?
- Diversity - have you come up with a range of concepts or just a variation on a theme?
- Appropriateness - are the designs realistically likely to meet at least most of the rover goals and specifications? Does the preferred option appropriately match the specifications?
- Readability and layout - is the layout logical and easy to read?

Marking should be lenient (piece is worth 1%) and will be awarded as follows:

Grade	**Description**
0	*Unacceptable*: Team has made little or no effort to complete the milestone
50	*Acceptable with reservations:* Team has made some attempt to complete the milestone, but material is not appropriate and/or not complete, for example specifications are not measurable or concepts are not complete or diverse
100	*Acceptable:* Team has made a good effort to complete the milestone. Small errors and omissions are acceptable