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Design Project

This page explains the semester-long team design project.

Establishing Design Teams

Just as in industry, you will be assigned to a design team. Teams will typically have 4 or 5 members. Team membership will be announced in Week 3.

Furthermore, you will take a personality temperament indicator [1] to assess your personality style during Week 1 (the exact deadline is in the Weekly Schedule). The results of these tests will be used to form the design teams.

Once the teams have been assigned, you should:

- read the design notes on problem analysis in the Design Roadmap.
- meet as a team and hold a kickoff meeting for your project.

Your **team number** is very important. It consists of your section number followed by the team number within the section. So team 3 in section 1 is team 0103; and team 2 in section 4 is team 0402. Make sure you know your team number.

Project Description

All teams in a given section will do the same project. By section, links to project design briefs are given below:

PROJECTS TO BE ANNOUNCED

Project Deliverables

The deliverables of a project are those "concrete" things that must be presented to a client (in this case, the instructors) to constitute a completed project. This section describes those deliverables.

A complete project includes all the documents listed in the table below.

Templates for the various reports are available in the Project Reporting Templates folder.

Each team will keep all these deliverables in a single Google Shared Folder.

Reports should be written as technical documents targeted at upper management and technical staff, not a sales or marketing tool to convince prospective customers to "buy" your product.

See the page on Grading Team Reports for details of how grading is performed.

The format (including fonts, colours, pagination, headers & footers, etc.) is very important. **The report format must not be changed**. I will apply deductions and penalties for changes to the report format.

The whole project will require several documents, as listed in the table below. You may update, refine, and correct these documents throughout the semester such that the final set of all documents by the end of the semester are as good as you can make them.

At the end of the semester, the Executive Summary, PRS, PAS, PCS, and Appendices will be graded by the instructor.

DELIVERABLE	NAMING SCHEME	APPROX DUE DATE[2]
Team Contract	SSTT Team Contract MEC325 YYYY	Week 4
Kanban Board	SSTT Kanban Board MEC325 YYYY	every week
WDF	SSTT WDF MEC325 YYYY	Weeks 4, 5, 10, and 14
Milestone 1 (PRS)	SSTT PRS MEC325 YYYY	Weeks 5 and 14
Milestone 2 (PAS and PCS)	SSTT PAS MEC325 YYYY and SSTT PCS MEC325 YYYY	Weeks 11 and 14
Executive Summary	SSTT Executive Summary MEC325 YYYY	Week 14
Detailed Design	SSTT DDS MEC325 YYYY	Week 14
Appendices	SSTT Appendices MEC325 YYYY	Weeks 5, 11, and 14
CAD Files	SSTT PPPP.XYZ	Week 14
Online Design Journals	SID Surname MEC325-SS YYYY Design Journal	Weeks 3 and 14

NOTES

- Team number format: SSTT where SS is your section and TT is your team number. For instance, 0804 is Team 4 in Section 8.
- YYYY is the full year; e.g., 2019.
- PPPP is a descriptive part or assembly CAD file name; XYZ is whatever suffix Solidworks adds by default. These names can be as long as necessary, but try to keep them as short as you can.
- SID is your full student number.
- SS is your section number. If your schedule says MEC325-041 then you're in section 04.
- Read about how to use Google Shared Folders.
- Read about Salustri's grading policy and deductions and penalties.
- You are encouraged to use internal links in your Google Docs and PDFs. However, note that links in a Google Doc to other Google Docs will **not** be translated correctly when you convert to PDF within Google Docs itself.

Milestone 1

Milestone 1 covers Problem Analysis.

Deliverables for each step are described in the wiki pages for each step, which you can find in the Design Roadmap.

A complete Milestone 1 includes:

- a properly named and shared PRS document,
- a properly named and shared Appendices document,
- a properly named and uploaded (to the LMS) PDF version of the above-noted documents, and
- completion of the corresponding tab of the WDF.

Milestone 2

Milestone 2 covers System Design and Concept Design.

Deliverables for each step are described in the wiki pages for each step, which you can find in the Design Roadmap.

A complete Milestone 2 includes:

- a properly named and shared PAS document,
- a properly named and shared PCS document,
- a properly named and shared Appendices document,
- a properly named and uploaded (to the LMS) PDF version of the above-noted documents, and
- completion of the corresponding tab of the WDF.

Executive Summary

Refer to the reporting guide for general guidelines on writing reports.

A complete Executive Summary includes:

- a summary of design brief,
- a brief review of the existing interventions (the "competition" from your situation scan),
- a summary of your team goals (from your situation scan),
- a review of key requirements of your intervention,
- a full page sketch of your refined final concept, and
- a summary of the highlights of your detailed design.

The executive summary can be no longer than 7 pages (cover page, team declaration page, and five pages of text as outlined above).

Detailed Design Specification

The Detailed Design Specification for the materials required for this component of the project.

References

References in ASME format are expected in the PRS, PAS, PCS, and DDS reports. The templates for each of these reports has a section for References.

Appendix 1

Solidworks Drawings - a *set of working drawings* of your product, sufficient to allow someone to actually assemble it.

- Insert drawings into your report in landscape mode, ensuring correct aspect ratio.
- The first drawing(s) would be assembly drawing(s) and bill of materials (including off-the-shelf as well as custom parts).
- Subsequent pages include detailed drawings of all custom parts.
- Because you are typically limited to A-size sheets, you may put the bill of materials on a separate page, after the assembly drawings but before the parts drawings.
    - NOTE: Your project may be such that it is not possible to draw the whole assembly drawing or all of the detailed parts. In this case, you are expected to do as much as you can. The instructor will assess whether what you have provided is sufficient.
    - NOTE: Off the shelf parts that you found online and that are listed in the bill of materials must include a citation to a reference in your References that provides a URL reference.
- Each drawing **must** have the name of the draftsperson who created it.
- The CAD Drawings in this appendix are NOT "figures" and so are NOT captioned.

Appendix 2 etc.

Whatever other ancillary material you need to demonstrate and justify your design, such as data sheets on components you found on the web or in hard-copy catalogues, or for calculations you wish to include about how you designed your product (e.g. calculating forces, loads, velocities, component sizes, etc.)

Report tips

Update documents frequently
Since all documents will be reviewed at the end of the semester, a team should feel free to continually update their reports until the final deadline per the Weekly Schedule.

Length of the report
Irrelevant. It must be as long as necessary and no longer. Being concise requires effort; make sure you put in that effort.

Writing style
We're engineers. We don't do "style." We want factual, dry, simple, easy to read reports. Like a Vulcan would write. The design is hard enough to understand; you mustn't make the reader's job even harder by using difficult language.

Keep is short and simple, and keep it as precise as possible.

You **can** write "we" if it's obvious from the context who "we" are. Otherwise, use "the team." You can refer to individual team members by their surnames without titles[3]

The report must demonstrate that
you followed the Roadmap correctly and
justified your decisions.

Example: You spend 2 hours working on an idea that ends up being removed from the final design. You must (a) count those hours, and (b) briefly describe (a couple of sentences is enough) that work in an appropriate discussion section of the report.

Unnecessary material is BAD
To include any unnecessary material will be considered an error.

Example: If you're designing a stapler, you don't need to include a whole page about the history of stapling unless there's some specific information that directly informs/justifies decisions you made in your project.

Example: do not explain what the Roadmap process is; we already know.

CAD Files

Along with your final report, each team must submit a full set of Solidworks files of their design.

- In each case, only one person per team needs to upload material.
- The CAD files must be in Solidworks format; PDF versions are unacceptable.
- Solidworks files will be run through Graderworks to check for unacceptable copying of work.
- Do **not** zip or compress the Solidworks files. Zipped files will NOT be graded.

[1]
You will need your CAS (my.ryerson.ca) ID and password to access the PTI.
[2]
See the weekly schedule for precise deadlines.
[3]
Example: *"Salustri did X and Neumann did Y while the rest of the team developed the CAD drawings."*