Project guidelines

The projects in this course will have two main deliverables: a 3D print (or animation, interactive content, etc.) – "the product", and a written report on the product. Projects will also be graded on an in-class presentation, and on project proposals, to be discussed at least a week before the presentation.

Product

- The product should do what it is intended to: clearly illustrate what it is supposed to, or work for the intended purpose, or otherwise satisfy the given brief.
- The product should work: a 3D print should be structurally robust, without excessively fragile features. Interactive content should work without crashes.
- The product should be aesthetically pleasing, as far as is possible while working for the intended purpose.

Written report

- The project report will be typed with large margins in a word processing system that handles equations well such as LaTeX (preferred) or Microsoft Word with the equation editor.
- Write your report to be a complete, stand-alone document describing both
  1. the mathematics being illustrated by the product (or other details of the purpose of the product), and
  2. the mathematics you used in the design of the product.

  For 2., you should explain the choices you made in the design, and show your work for any calculations you needed to make.
- The report should be written so that someone with a similar background to your own would be able to read and understand it, and be able to reproduce a very similar product. The report should be clear and correct.
- There is no strict page guideline or limit, but I would expect reports to be around 2-5 pages long. Reports should be clear and as long as necessary to include required information without being too wordy.
- Generally, technical reports are written in the active voice, using the third-person pronoun ("...we will show that...") rather than the passive voice ("...it is shown that...").
- The report should have the following sections.

Introduction Start your report with an Introduction that describes the background behind the product: what it illustrates or is otherwise for. If the background would be unfamiliar to others in the class, you should include a separate Background section to explain in detail what is going on.

DESIGN The body of your report should describe the design, how you made the product, which tools you used (either mathematical, or computational, or the tools you used in Rhino/Python/Grasshopper), and why you made the choices you did.

If you use software packages (other than Rhino/Grasshopper) written by other people, you must cite them, and **fully indicate what parts of the work are yours and which are attributed to others**.

The report should also include a description of problems that came up in making the design, and their solutions, including any calculations you made in solving these problems. It should be well-organized and should be divided into subsections, if needed, to clarify the presentation. It also should include graphs and figures as needed to illuminate your ideas and make your discussion easier to follow. Highly technical material such as algebraic derivation of equations or the source code of programs used may be placed in appendices, otherwise the body of the report should include full mathematical details as needed for a reader who has a suitable mathematical background (i.e., a background like yours).

REFERENCES Include references to books, papers, and other sources consulted, including our textbook and any web pages consulted.

APPENDICES Appendices containing longer, technical calculations, source code, and other material may be included as needed, but these are optional.

Project grading: Your project will be graded as an integrated whole by considering how well it meets the guidelines stated above, including the quality of your in-class presentation and your project proposal.