# CTI One SOLIDWORKS intensive

## Tentative Syllabus

**Instructor Contact Info**

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**Course Description**

This course is designed as a Computer Aided Design introduction revolving around the SOLIDWORKS(2021) software suite. We will briefly go over important design philosophies (DFM, DFA, DFS) and how to integrate them into the product design and prototyping process. The focus over the course of 6 weeks will be a step-by-step, hands on approach to 3D parametric design and modeling, supplemented with prototyping best practices and an outline for approaching final product rollout. This will include high fidelity product rendering and animation (if we have time) in native SOLIDWORKS software and in Blender(Free) or Keyshot10.

**Lecture Schedule**

Thursday 2:30-3:30pm over Zoom (Tentatively)
Zoom meeting information:

https://us04web.zoom.us/j/9841607683?pwd=UlA3aEk1TnV4bjNLQk5CQkw0dDk4UT09
Meeting ID: 984 160 7683
Passcode: 121092

**Assignments**

Each session will be accompanied by an at home assignment that will be due at the next scheduled meeting time. There will be no formal letter grade associated with each assignment but it is expected that you complete the work in preparation for the following week's content.

Assignments will be communicated at the end of each session and collected prior to each class. Please email the SOLIDWORKS part file to me as soon as you finish. Feedback will be provided.

**Tools and Software**

Solidworks 2021
Keyshot 10

The schedule below is tentative and subject to change, I will announce during sessions if we need to spend more/less time on a topic.

| Week | Topic | Description | Assignment |
|---|---|---|---|
| 1 | Introduction to CAD: Solidworks | Introduction to CAD software and how it fits into the product lifecycle.<br>Overview of basic SOLIDWORKS sketch tools, their use cases and understanding of when to apply them.<br>Walk through an example of modeling a physical object. | Problem-1-Section-A.JPG |
| 2 | Walkthrough modeling several objects. Talk about a general approach. | Review last week's model, walk through 2-3 models together.<br><br>Take a look at sketch elements together (linear pattern, mirror, etc).<br>Talk about a general approach to modeling existing objects.<br><br>Explanation of different types of the extrude function. | Problem-2-Section-A.JPGProblem-3-Section-A.JPG<br>Problem-4-Section-A.JPG<br>Problem-5-Section-A.JPG |
| 3 | Modeling and DFM DFA examples | Review last week's model, walk through 2-3 models together.<br><br>DFM/DFA Design consciousness. Front load efforts into the design process such that downstream prototyping/manufacturing is as seamless as possible. (Example of 3D printing, CNC specific design considerations) | |
| 4 | Modeling and Assemblies | Introduction to assemblies - placing parts and constraining them using part mates.<br><br>Explanation of advanced mate types such as collision, gears, etc. | |
| 5 | Assemblies and introduction to | Introduction to advanced modeling | |

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| | drafting and surface modeling | techniques - surfaces<br><br>Circle back and elaborate on rapid prototyping methods<br><br>Introduction to drafting and preparation for sending parts out to machine shops for RFQ | |
| 6 | Tentative | Tentative | |