






(80 pts) Approx. 4 days

The second part of this unit is all about using Autodesk Inventor to simulate mechanical structures and a potential engine mount. When engineers build things, they need to simulate their work before spending the time and money to build a physical prototype. Autodesk Inventor is one tool engineers use to build models of their ideas to simulate if they will work or not. The purpose of this part of the unit is to learn two of the tools that Autodesk Inventor has available for doing this simulation work: the Frame Generator and the Stress Analysis Tool.

1. Watch the presentation *Frame Generator & Stress Analyzer Overview* as well as *Frame Generator Tutorial*. Take a full page of notes on these ideas, paying particularly close attention to the tools used in the Frame Generator. The tutorial video itself is about the use of the frame generator, but not specifically the activity you will work on. So take notes about the tools without worrying too much about the specific example.
2. Use Autodesk Inventor to complete the Frame Generator Tutorial Activity. You will need to start with the downloadable wire frame model available on our website. From there, you'll follow the tutorial built in to Autodesk to generate the full frame.
3. Complete the entire frame generation, including all fillets and joints. Print the screen of your finished frame and add it to your notebook.
4. Next, watch the *Stress Analyzer Tutorial* video. This video is also a good example of how to use the different tools in the stress analyzer, but it will not show exactly how to complete our tutorial activity. Take a page of notes about the tools, but don't worry too much about the exact example shown in the video.
5. Next, use Autodesk Inventor to complete the Stress Analysis Tutorial. Use the downloadable wire model from our website for this tutorial. Add all the needed points of contact, and load them with the specified stresses. When you conduct the stress analysis make some notes in your engineering notebook about what the analysis shows you.

Part 2: Tasks	10 points	8-5 point	4-0 points
 Notes on Frame Generator	+ Take a full page of notes on how to use the Autodesk Frame Generator	- Less than a full page of notes on the Autodesk Frame Generator	- Very brief or no notes.
	25-20 points	19-10 points	9-0 points
 Frame Generator Tutorial Activity	+ You followed the Frame Generator Tutorial Activity to create the entire metal frame + Your completed frame includes all proper joints	- The completed frame is not complete - The completed frame does not have all the right joints	- You did not make the frame - You clearly did not follow the tutorial
	10 points	8-5 point	4-0 points
 Notes on Stress Analyzer	+ Take a full page of notes on how to use the Autodesk Stress Analysis Tool	- Less than a full page of notes on the Autodesk Stress Analysis Tool	- Very brief or no notes.
	25-20 points	19-10 points	9-0 points
 Stress Analyzer Tutorial Activity	+ You followed the Stress Analysis Tutorial Activity to conduct the stress analysis + Your results are printed and taped into your engineering notebook	- The stress analysis is not complete - The analysis is not included in your engineering notebook	- You did not complete the analysis - You clearly did not follow the tutorial
	10 points	8-5 point	4-0 points
 Take the Unit 4 Quiz!	+ You took the quiz by the due date + Your grade is based on number correct	N/A	- You did not take the quiz by the due date.

