Senior Design Curriculum Map – Semester 1

TOPIC	Duration
Unit 1 – Project/problem Definition: Clarify Objectives Start to plan and define your project and learn to use your engineering notebook to keep track of the ideas you collect. Deliverable: Generate three project ideas.	2 wks
Unit 2 – Project/problem Definition: Research Pick one of the ideas and solidify it through research. Define metrics for objectives, and identify constraints. Revise your original project definition. Deliverable: Write a one-page project proposal	2 wks
Unit 3 – Conceptual design: Initial Design. Establish functions and requirements (specifications) for your project/problem. Establish design alternatives by finding (different) means for functions. Refine and apply metrics. Deliverable: Prepare to explain and defend your work in a 10 minute one on one meeting.	4 wks
Unit 4 – The design cycle (1): Design and CAD Using the feedback from the presentation, choose, revise, and improve your conceptual design. Set specifications. Model your design in Fusion 360 and analyze your design. Create drawings and a Bill of Materials (BOM). Write a short engineering proposal with a CAD model, BOM, budget, work distribution (for teams), specifications and timeline. Deliverable: Submit a printed form of the engineering proposal.	6 wks
Unit 5– Presentation Deliverable: Give a 10-15-minute presentation of the engineering proposal. Revise the engineering proposal. Submit a printed form of the revised engineering proposal. Submit a materials list in electronic form to start the procurement of materials (preferably from eBay, Amazon or Lowe's)	1 wk.
Semester 1 Finals week	1 wk.

Senior Design Curriculum Map – Semester 2

TOPIC	Duration
Unit 6 – The design cycle (1) – Build Prototype Build your prototype. Deliverable: Upload pictures of the prototype Test your design (test all requirements), record the data and compare the results to the specifications. Deliverable: Upload pictures of the prototype and submit the test report.	9 wks
Unit 7 – The design cycle (1) – Design Review Deliverable: Demonstrate your design and present the test results in a 5-10-minute presentation to the class. *At this point a decision has to be made about redesign based on the test results, does the design meet specifications? With the design triangle in mind (a triangle with the labels money, time and specifications in the corners), decide what changes to make to the design. Keep in mind you cannot have it all, time and money are definitely limited so lowering the specifications might be your only (but not preferable) option.*	1 wk.
Spring Break	
Unit 8– The design cycle (2) **Redesign.** Using the test results and feedback from the presentation, redesign your product. **Rebuild** Test the new design (test all requirements), record the data and compare the results to the (original or new) specifications. **Retest** Write a test plan with measurable criteria, get sign-off and collect data for your engineering report. Deliverable: Upload pictures of the final product and submit the test report and analysis.	6 wks
Unit 9– Presentation and Report Write an engineering report. Deliverable: Present a five-minute show/tell of your final product to the class, upload the final engineering report, turn in your engineering notebook, clean up and bring projects home.	2 wks
Semester 2 Finals week	1 wk.