

Lab Assignment #7: Blend & Sweep Features, + Pugh

ME170

Instructor: Mike Philpott (email: mphilpot@illinois.edu)

Date Due: Two weeks from Start Day of Lab (i.e. turn in deadline – 11pm night before next lab in the week after Spring Break)

Part I. Complete Tasks 4 thru 16 of Exercise 10 (pg 234-245)

You completed tasks 1 thru 3 in Lab 6. The goal of this exercise is to become familiar with creating engineering features.

Task 13

- To set the model display to "Wireframe", navigate to the "View Ribbon", click the "Display Style" button, and select "Wireframe" from the drop-down menu.
- Be sure to select the correct rib tool. The book calls for a "Profile Rib", which is quite different from a "Trajectory Rib".
- After creating the datum plane, click "Sketch View".
- Carefully select the correct additional references. If your references are incorrect, your rib will be incorrect.

Task 15

- You may set the display style back to "Shading" or your personal preference.
- Use the given orientation of the planes to select the correct surface. This surface is effectively the 'bottom' surface'.

Part II. Complete Exercise 12 (Tasks 1-4) (pg 286-292)

The goal of this exercise is to work with blend and sweep features.

Task 1

- When sketching the rectangle, note that a "center rectangle" is specified. The "center rectangle" tool can be selected by clicking the little down arrow next to the "rectangle" tool.
- While sketching the rectangle, note the location of the cross-hairs. The location of these cross-hairs will be the location of the start point. In previous semesters, students had difficulty properly locating the start point on the rectangle. In numerous instances, the rectangle had to be deleted and redrawn until the start point was located correctly.

Task 2 & 3

- Select the edges in the order and locations shown. Note the curve edges shown in task 2. Be sure to select the correct edge location.

Task 4

- The "Sketch 1" feature may already be hidden. This is OK. If you do not need to actively hide the sketch, then there is no change to the visibility status of the model and you will not be able to click "Save Status".

Part III. Term Design Project: Concept Selection Matrix

Working in your teams, create a Pugh Concept Selection matrix for your project. By now you will have decided on a product and created an initial PDS. Choose 10 or so of the most important PDS criteria to list down the left hand side of the PDS. You should then each create a sketch proposing a detailed concept design that best meets the objectives of the product and then, as a team, use the Pugh Concept selection matrix to choose one of these for CAD modeling (i.e. the next phase of the project). Write a brief assessment of your matrix, and the reasoning behind the decision you made, along with a brief description of the concept you selected.

Part IV. Submission Requirements

1. Create a zip file named "<netid>_lab7.zip" with the following files. Submit it for grading through the my.mechse website. Be sure to include the latest version of each part.

netid_4455-009.prt.#	(from Part I)
netid_4455-004.prt.#	(from Part II)
netid_4455-005.prt.#	(from Part II)
netid_4455-007.prt.#	(from Part II)

2. Submit your Pugh Selection matrix along with the sketches for grading through the my.mechse website. One member of the team should submit a file with the following file name format:

Team#_ConceptSelection.zip