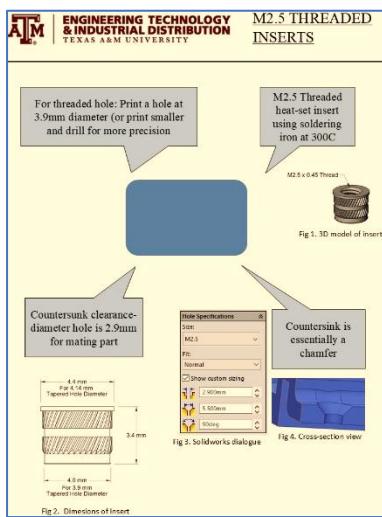


Demonstration Pre-proposal

This memo is for introducing an initiative I would like to assemble in the manufacturing program space in ETID. It is desired to create tangible demonstration pieces for engineered 3D parts. I am seeking support in this form:

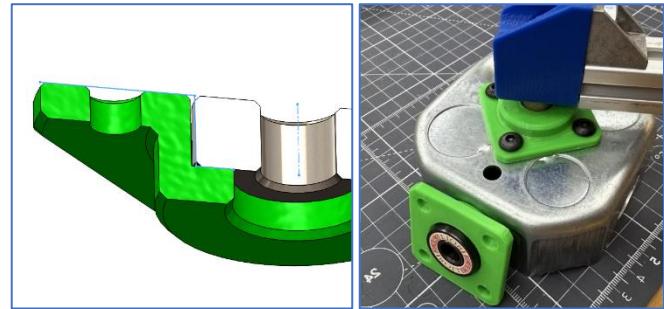
- Budget for materials - ETID
- faculty to choose an MMET location
- Support to notify students of the resource

In 2016 I set up a “feature teacher” bookshelf unit in the Product Innovation Cellar (PIC) for educational design demonstrations. Focusing on 3D printing, I designed and built tangible parts together with instructions for students. Each part demonstrated design decisions for successful features in 3D Models. I printed and laminated worksheets for model parts, as shown below.



I added a few parts since 2016 but the space is full. Now, (2025) I have a refined design rule-set for 3D printing for manufacturability. I created several improved models for students which can be accessed and used as:

- examples for CAD modeling
- parts for student design assemblies
- documentation with academic quality



The “feature teacher” shelf has stood and proven useful for students but it has *limited visibility because it sits on an old recycled wooden shelf*. I would like to repeat this effort with some changes, and I am requesting a budget between \$100 and \$10,000 for 2025 fall. Based on the budget I will plan:

- A display case, or recycled table
- Portability of the display
- Fabricated materials to be consistent and professional
- 8 square feet of floor space

In early 2025 I met with Dr. Kuttolamadom who offered space in his laboratory and 3D printing machines to be used for my TAMU work. I will verify with Dr. K the time and space available to produce parts in his lab space. With the minimum budget of \$100 I can purchase printing filament and local metal parts, and fabricate a useful set of demonstrations. With a greater budget I can plan a more elegant display.

Images of example parts:

Each example below has been modeled and documented and has been made accessible for students already. A physical demonstration will help them understand the utility of each example, but more importantly awareness that these exist. The desired parts like beams and metal utility boxes can be selected in a planning stage.

Request:

Seeking DH approval and a target budget. Then I can write a proposal including a visualization of the demonstration.



(above) four-bar-linkage



(above) bonding with steel



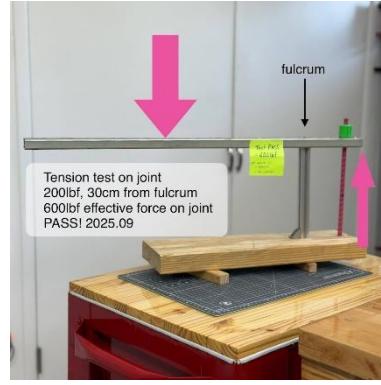
(above) attachment for aluminum



(above) battery adapter



(above) integration of bearing



(above) printed joint for loading



(above) joining feature

(below) functional parts based on parametric models



(below) functional parts for integrating with COTS components

