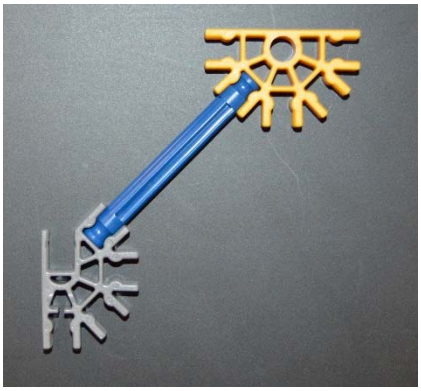
Donald P. Shiley School of Engineering
University of Portland
ME 403/503 – Engineering Design, Product Realization
Fall 2016

1) Is 1/1000 picture = 1 word? Using words only, no sketch etc., describe the K'Nex assembly shown here. You have a 1000 word limit.



2) "Fabrication Modules" 5, 6, 8 should be in SH102. Please try them, take notes about what was good, not good, missing, etc. Module 1 should have the torque wrench – so give that a whirl again.
3) Define the following (concise descriptions and/or sketches, etc.):
    a. "Work in process" (WIP)? Why does Lean strive to minimize WIP? Briefly list/describe three "expenses" associated with WIP.
    b. Takt time
    c. Value stream mapping
    d. Kaizen
4) One of the "rules" of good design is "keep it simple" (KISS). One aspect of that is to use few parts, and use common parts where possible. In light of this, please evaluate Shiley Hall:
    a. How many different light fixtures are used – and how many different types of light bulbs. Count all spaces including hallways, stairs, study rooms, class rooms, labs (if locked, look through windows), shop, display cases, and offices. You may assume all faculty offices have the same type of lighting.
    b. In addition to determine the quantity, sketch of at least 5 different fixtures and describe (or sketch) the type of bulb used in them.
5) Describe at last three costs associated with having more than one type of light fixture and light bulb in Shiley Hall not including direct purchase cost (i.e. one fixture costing more than another).