ME 251
LABORATORY EXERCISES
August - November, 2018
ME 251 Laboratory Exercise 1 (WARM UP)

Q. Draw the full-section front view and half-section side view of the object (problem from book "Machine drawing" by Sidheswar, et. al) shown below. Also, draw the top view.
Q. Draw the fullsectioned assembly drawing of the Non-return valve in front view. Number the parts and show the Bill of Material. Part drawings (SOURCE: https://www.slideshare.net/umeshchikhale/assembly-and-details) are shown below.
Q. Draw the fullsectioned assembly drawing of the Feed check valve in front view. Number the parts and show the Bill of Material. Part drawings (SOURCE: https://www.slideshare.net/umeshchikhale/assembly-and-details) and a schematic are shown below.

Part Drawings of the Feed Check Valve
Schematic of the Feed Check Valve
Q. Draw the fullsectioned assembly drawing of the Screw Jack in front view. Also, draw the non-sectioned top view. Number the parts and show the Bill of Material. Part drawings (SOURCE: https://donyango.carbonmade.com/projects/4388020) are shown below.
All Chamfers 4 X 2

Square thread with pitch = 3 mm. Left-handed.
Q. Draw the **fullsectioned** assembly drawings of Universal and Oldham couplings part drawings (SOURCE: [https://clipartxtras.com/download/43ad6857944e75b608ec99c8e0008248dd82a7fa.html](https://clipartxtras.com/download/43ad6857944e75b608ec99c8e0008248dd82a7fa.html), [https://blogpuneet.wordpress.com/2013/10/08/oldhams-coupling/](https://blogpuneet.wordpress.com/2013/10/08/oldhams-coupling/)) of which are shown below. Choose $D$ appropriately.

![Part Drawings of the Universal (top) and Oldham (bottom) couplings](image_url)
ME 251 Laboratory Exercise 7


Part Drawings of Fuel injector system
ME 251 Laboratory Exercise 8

Q. Draw the assembly drawings of the **differential mechanism and speed reducer** part drawings (SOURCE: Machine drawing book by KL Narayana, P Kannaiah, K V Reddy ) of which are shown below.

(Extract dimensions from the internet, or they will be provided)

Part Drawings of the Differential mechanism
Part Drawings of the Speed reducer
ME 251 Laboratory Exercise 9

Q For the speed reducer problem in Exercise 8, try to figure the tolerances on the shaft (part #2), based on the discussions in class.

ME 251 PROJECT  (2-3 Lab sessions)

Q. Draw the assembly drawings of the clock part drawings (SOURCE: http://www.woodenclocks.co.uk/page66.html) of which are shown below. (Dimensions will be provided.)