EE-100 Engineering Laboratory Module2: CAD

Dr. –Ing. Ahmad Kamal Nasir

Office Hours: Room 9-345A

Monday (1000-1100)

Wednesday (1500-1600)

CAD Module

Learning Objective 1: Create and interpret mechanical drawings
Learning Objective 2: Recall and demonstrate workshop/industrial safety practices.

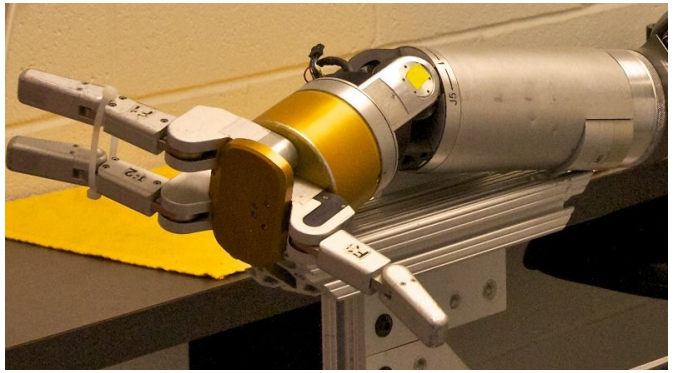
- Week 1
  - Introduction to the course and its contents
  - Design methodology for scientists and engineers
  - Introduction to Engineering Drawing
  - Engineering Drawings
    - Standards, Types, Projections
  - Workshop / Industrial Safety Practices
  - **Lab Tasks:** Sketch orthographic projections of solid objects
  - **Lab Visit:** Overview of workshop facilities
- Week 2
  - Computer Aided Modeling
    - Intro to PTC Creo and its features
    - 2D sketching
    - Basics of 3D object modeling
  - **Lab Tasks**: 3D part modeling.
- Week 3
  - Advanced features of PTC Creo Parametric 2.0:
  - Lab Tasks**:** 3D part modeling
- Week 4
  - Assembly
  - **Lab Task:** Assembly task
- Week 5
  - **Lab Task 9:** Create parts and assembly drawings for a robotic hand (gripper)

Problem Statement

In Engineering, **a robotic arm gripper is required** for effectively handling work in laboratory and home applications and industrial setups.

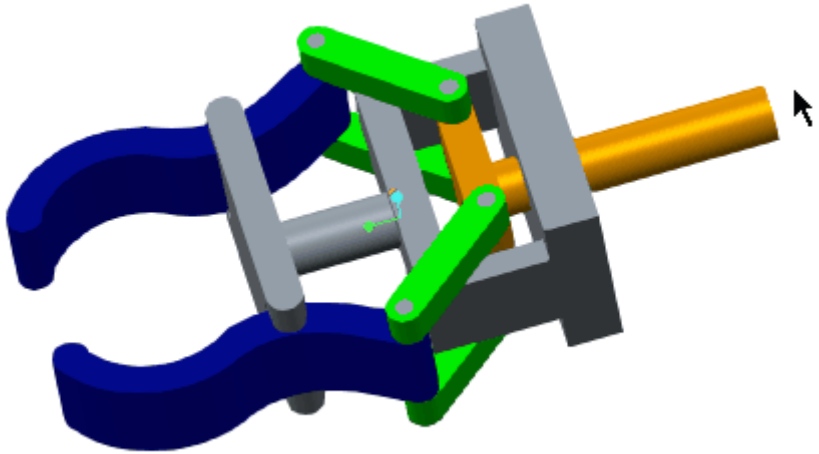
Usages:

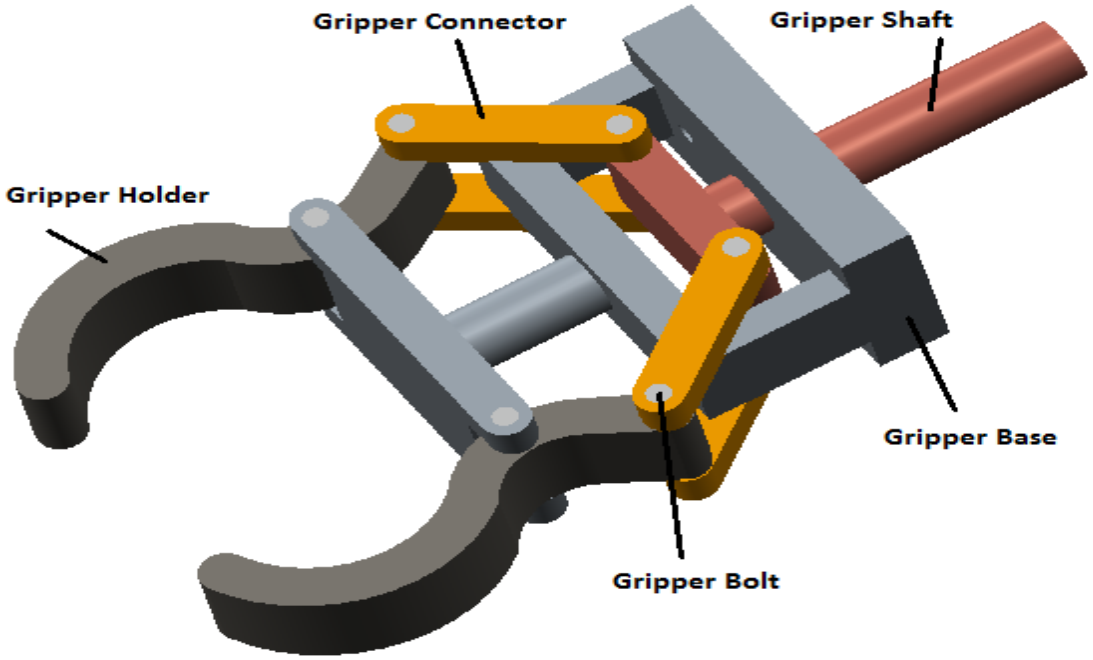
- Pick and place
- Welding metals
- Grasping Objects
- Serving food in restaurants



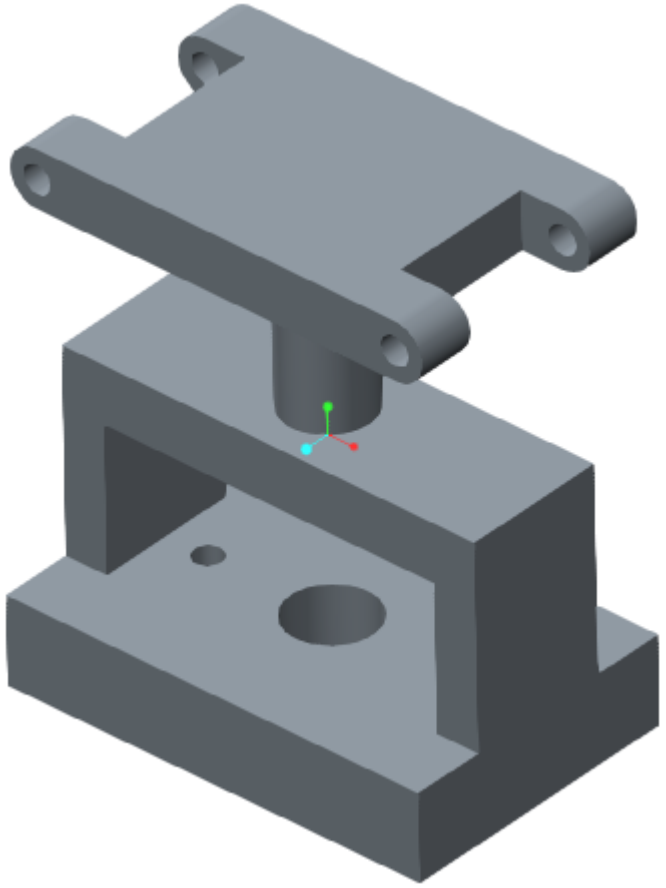
Simplest Solution

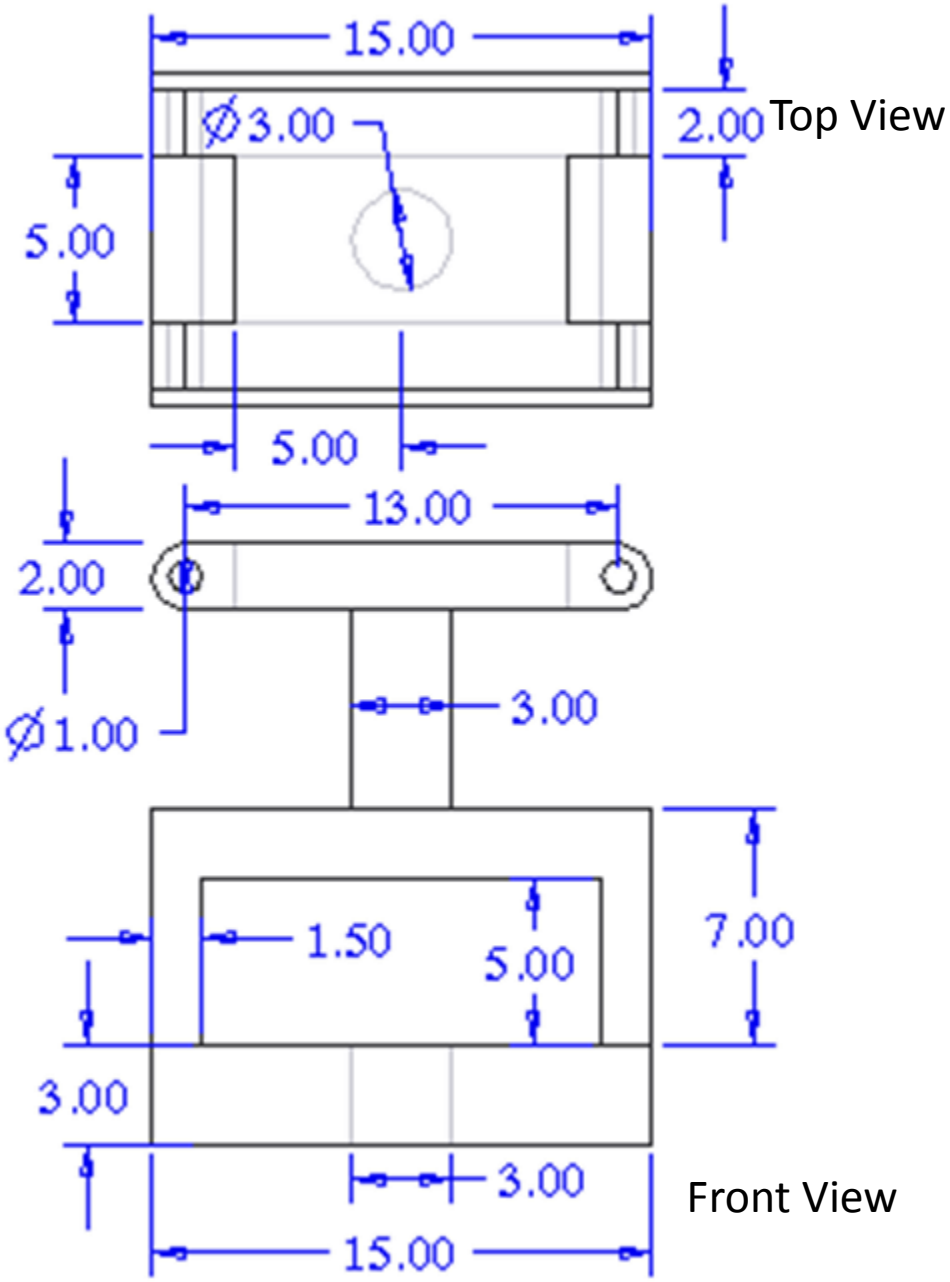
A 2-finger gripper is a perfect fit as it can easily hold the tools and work pieces. Following figure shows the 3D views of the proposed gripper design



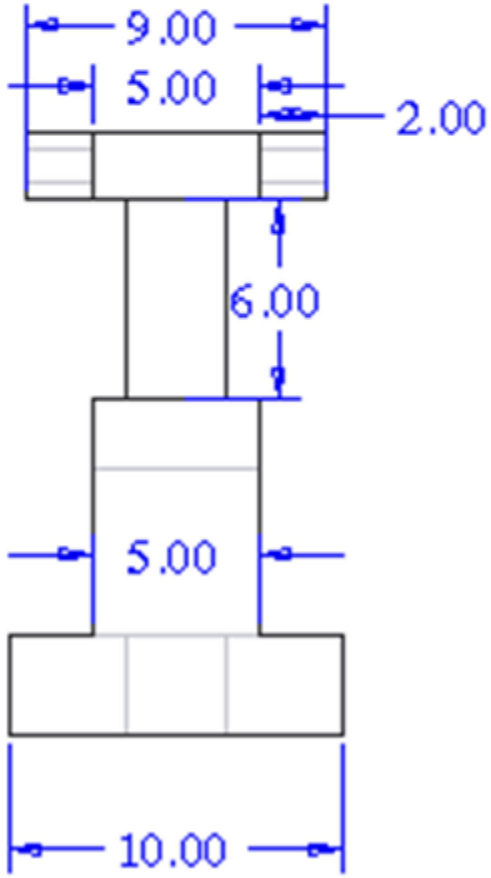


Gripper Base

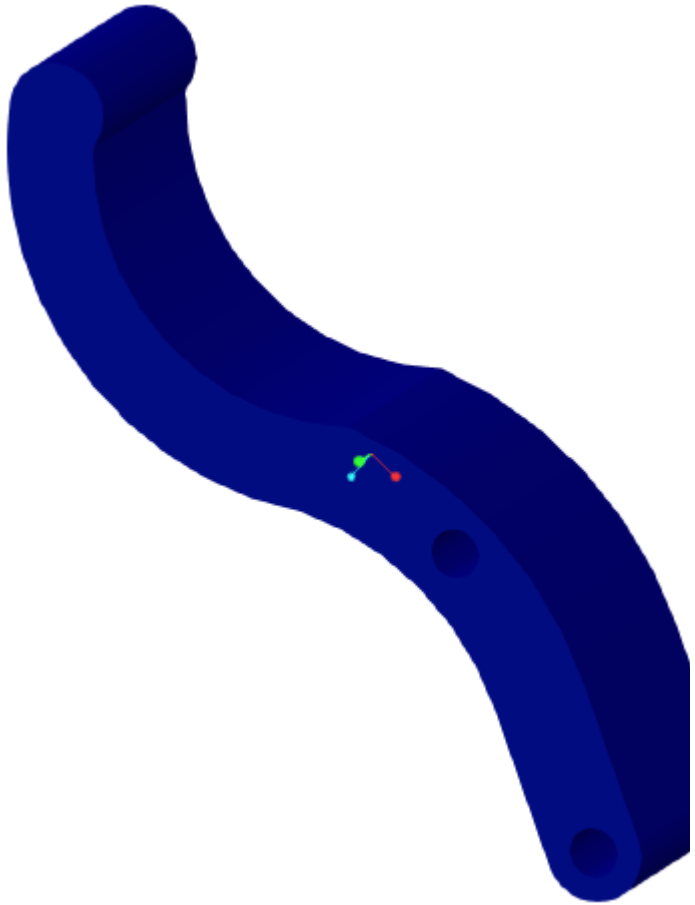




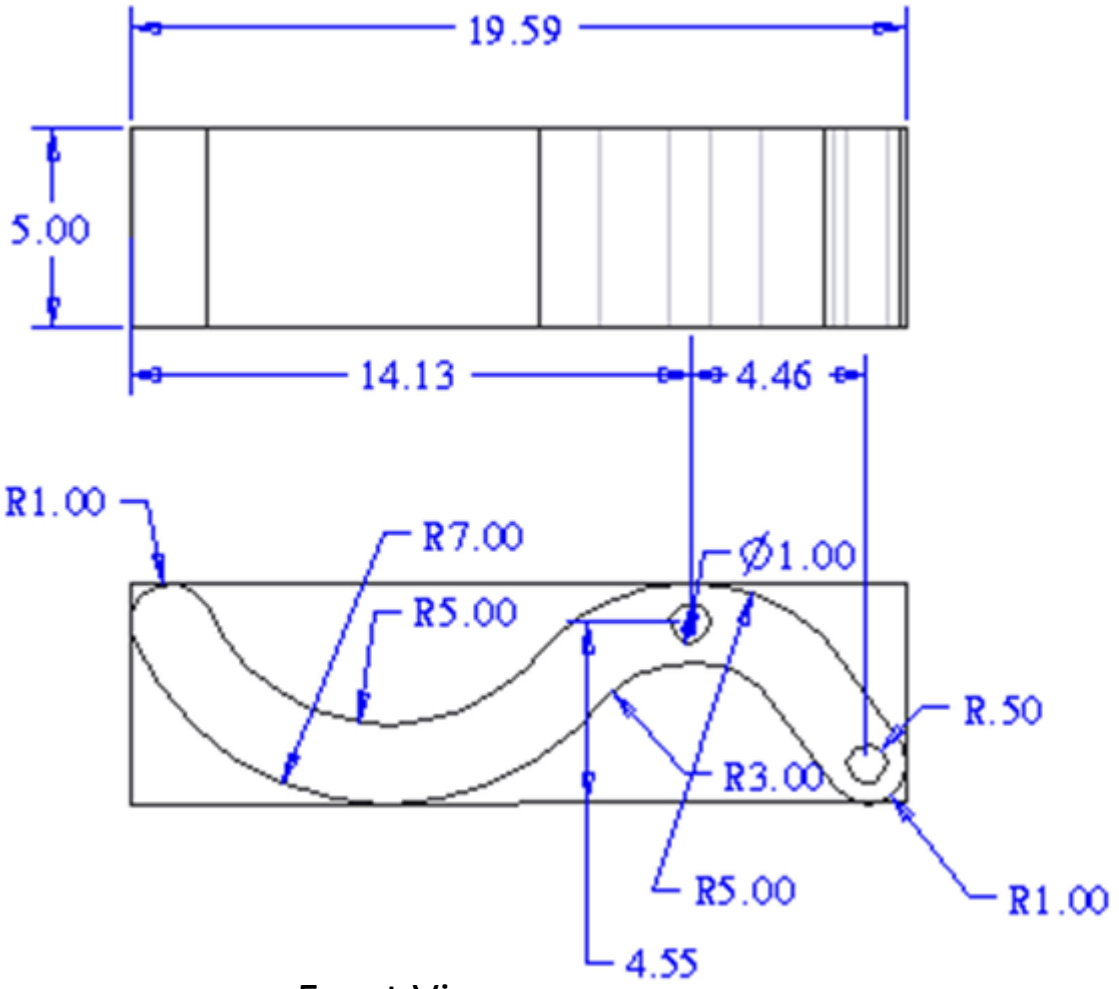
Side View



Gripper Holder



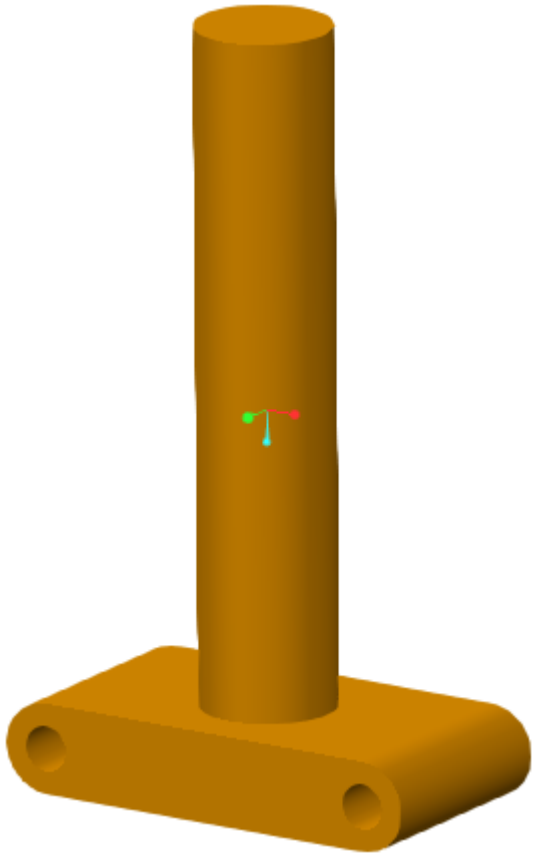
Top View

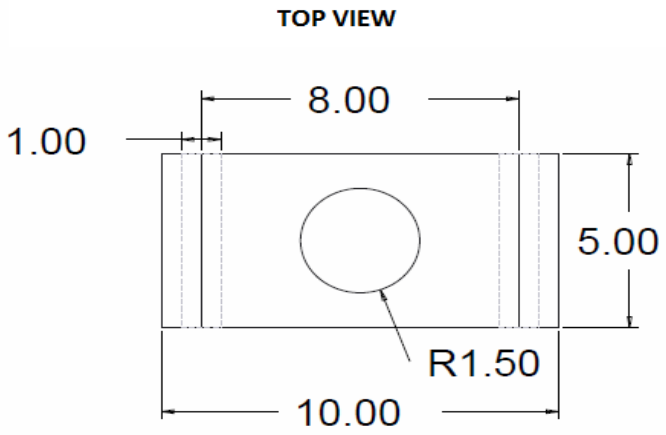


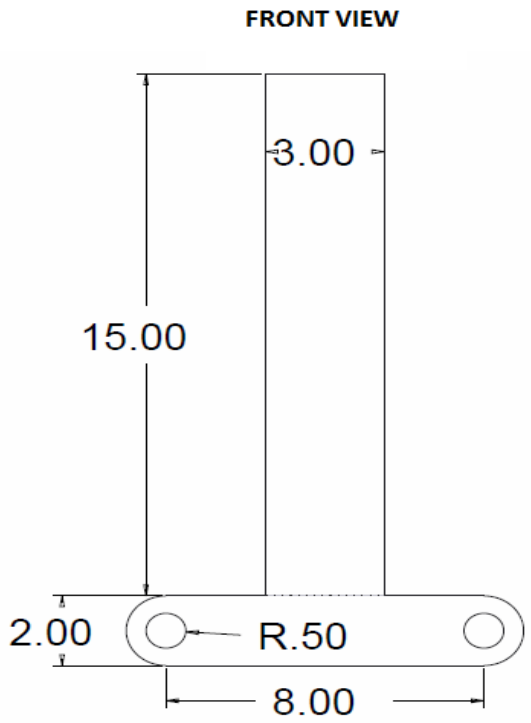
Front View

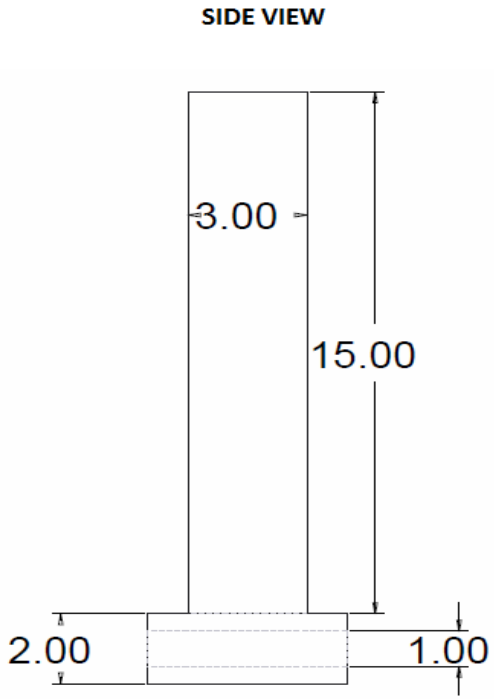
Side View

Gripper Shaft

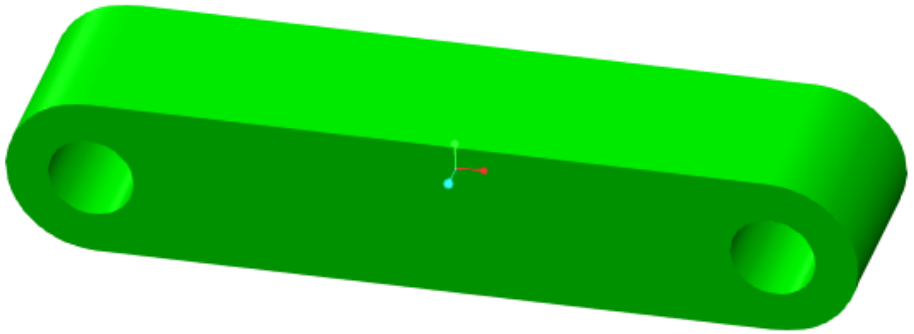




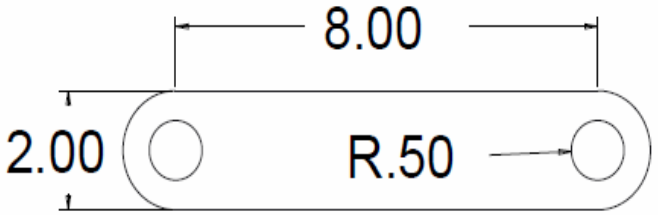




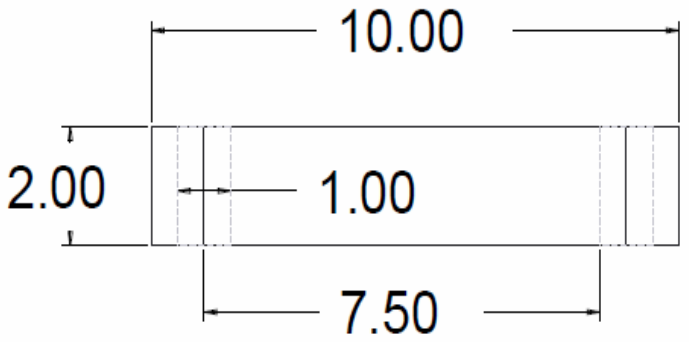
Gripper Connector



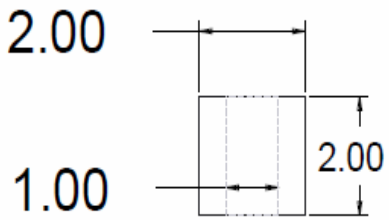
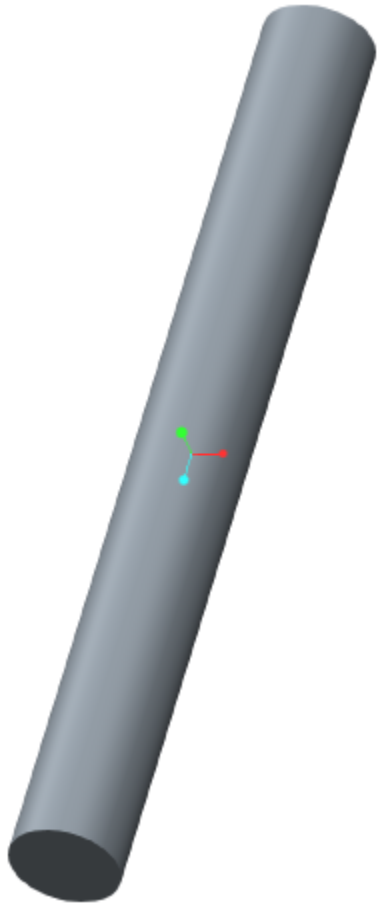
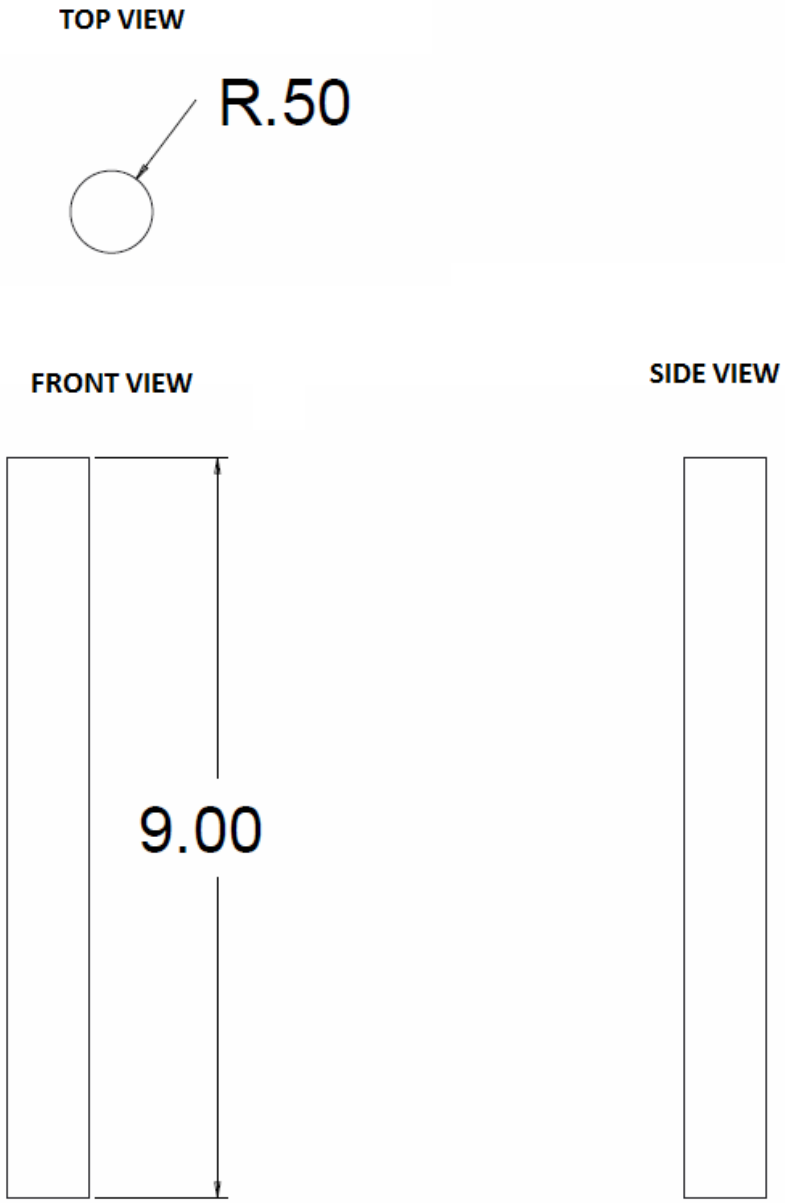
TOP VIEW



FRONT VIEW



SIDE VIEW



Gripper Bolt