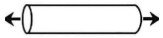
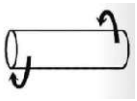
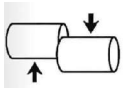
In this class, understanding and identifying critical elements within machine components is essential for ensuring the reliability and safety of your designs. The following checklist and worksheet is designed to guide you through the process of pinpointing these critical elements systematically.

1. **Draw the free body diagram** of the machine component.
2. **Solve for all reactions**.
3. **Determine, and sketch, the internal loads** for each segment of the machine component.
    - Axial
    - Bending
    - Transverse shear
    - Torsion
4. **Identify the location(s) where the internal load(s) is/are extreme.** The location(s) identified are the machine component's critical cross-section(s).
5. **Determine the stress distribution** at the critical cross-section for each internal load.
6. **Identify critical element(s)** on each critical cross-section.
7. **Represent the state of stress** for each critical element on a stress element.

In this box,

- Draw the critical cross-section
- Identify and label the potential locations for the critical element(s) (e.g. top, bottom, left, right, and center)

Potential location of critical element						
Internal load	Axial 					
	Torsion 					
	Transverse shear 					
	Bending 					
Stress element