**Learning Objectives:**

1. List the reasons for balancing of rotating mass
2. Describe conditions to be satisfied to achieve balance in rotating bodies.
3. Solve the mathematical equations acting on the rotating body
4. Examine the analytical results with the simulation results
5. Evaluate how change in mass and position can improve the balance of the rotating body.

**Theory:**

In most of the machineries, rotating components are very common. For any given rotating component, it is required that the centre of gravity coincide with the axis of rotation. However, this may not always the case due to various factors such as manufacturing defects, wear and tear, environmental conditions, addition of parts etc., and causing eccentricity. The eccentricity results in vibrations within the component and may finally cause failure. This eccentricity in the rotating component is considered to be unbalance in force and moment, and needs to be balanced by additional forces and moments leading to minimum vibration.

The balancing of rotating mass in single plane along the length of a shaft is a particular case of unbalance. An experiment is carried out to calculate additional mass required for balancing the unbalanced force and their angular position. The purpose of the experiment is to take an unbalanced system with rotating masses and adjust the radius of the outer mass, calculate the mass and angular position in order to achieve a balanced system.