

## Abstract

This research project aims to study the effect of repeatability and eccentricity test on the uncertainty estimation for electronic balance and mass calibration. The system used to assist the weighing at same position and at the center of the balance pan will be developed. This developed system will utilise the digital microscope and the image analysing program in order to identify the same position and the center of the balance pan so that the measurement can be repeated. The electronic balance and mass calibration will be performed by using this system and the uncertainty value will be evaluated. The comparison will be made between the uncertainty value obtained from calibrating with and without the developed system. The results will show that the uncertainty of electronic balance and mass calibration will be minimized by using the developed system. Moreover, this system can be applied to the existing balance without requiring the expensive balance come with the centermatic system.

Key Words – repeatability, eccentricity, calibration, uncertainty, electronic balance, mass