

## Programme Outline

Day 1	Day 2
<p><b>Theory: Overview of laboratory safety</b></p> <ul style="list-style-type: none"> <li>• Introduction to Workplace Safety and Health Act</li> <li>• Common laboratory hazards</li> <li>• Personal protection and safety facilities</li> <li>• Safety Data Sheet (SDS) of chemicals</li> <li>• Handling and disposal of chemical and physical wastes</li> <li>• Management of hazardous chemicals</li> </ul> <p><b>Theory: Perform the basic calculations necessary for sample and solution preparation</b></p> <ul style="list-style-type: none"> <li>• Basic concepts of mass, volume, concentration, number of moles, dilution and serial dilution</li> <li>• Common laboratory apparatus such as glassware, weighing and measurement devices, mixing and heating equipment</li> <li>• Calculate volume, mass, number of moles and concentration of samples</li> </ul> <p><b>Practical (Laboratory): Preparation of standard solutions/ serial dilution</b></p> <ul style="list-style-type: none"> <li>• Prepare solutions from solid chemical or concentrated stock solutions</li> <li>• Prepare standard solutions and perform serial dilution</li> <li>• Check the absorbance value of standard solutions using UV-Vis spectrophotometry</li> <li>• Plot and interpret the standard calibration graph</li> </ul>	<p><b>Practical (Laboratory): Acid-base titration</b></p> <ul style="list-style-type: none"> <li>• Fundamental concepts of titration</li> <li>• Determine the end-point of the reaction using manual titration</li> <li>• Calculate concentration of unknown solutions based on the volume of titrant</li> <li>• Identify necessary precautions involved in a titration</li> </ul> <p><b>Theory: Concepts of laboratory quality control</b></p> <ul style="list-style-type: none"> <li>• Good laboratory practices, i.e. documentation, standard operation procedures (SOP), equipment calibration, reagent preparation and labelling</li> <li>• Reliability and accuracy in measurements</li> <li>• Introduction of SPC charts</li> <li>• Plot and analyse statistical process control (SPC)</li> </ul>