

## KAT 243/2 - Analytical Practical I

**Course Objective :** To gain some familiarity with the techniques of some analytical analysis.

Experiment	Content	Number of laboratory hours	Expected outcome – upon completion of these experiments, the student should be able to:
1. UV-Visible Spectroscopy	Precision Spectrophotometry - Analysis of Chromium(III)	3	<ul style="list-style-type: none"><li>Understand the principles of precision spectrophotometry.</li><li>Operate a UV/Visible Spectrophotometer.</li></ul>
2. UV-Visible Spectrophotometry	Determination of Ephedrine in Drugs	3	<ul style="list-style-type: none"><li>To perform determination of ephedrine.</li></ul>
3. Infrared Spectrophotometry (IR)	Qualitative applications of IR	3	<ul style="list-style-type: none"><li>Understand the principles of infrared spectrophotometry.</li><li>Operate an IR Spectrophotometer.</li><li>Perform various methods of sample preparations.</li></ul>
4. Atomic Absorption Spectroscopy	Determination of Ca in a water sample	3	<ul style="list-style-type: none"><li>Understand the principles atomic absorption spectrophotometry</li><li>Perform determination of calcium using a standard calibration technique and method of standard additions.</li></ul>
5. Atomic Absorption Spectroscopy	Determination of Cu in wastewater	3	<ul style="list-style-type: none"><li>Operate an AAS Spectrometer.</li><li>Perform determination of copper by using a direct method and solvent extraction.</li></ul>
6. Flame Photometry	Quantitative Determination of Alkali and Alkaline Earth Metals	3	<ul style="list-style-type: none"><li>Understand the principles of atomic emission spectrometry.</li></ul>
7. Fluorescence Spectroscopy	Characterization of Quinine and Its Determination	3	<ul style="list-style-type: none"><li>Understand the principles of molecular emission spectrometry.</li><li>To determine the influence of various factors which influence fluorescence intensity</li></ul>
8. Gas Chromatography	Qualitative and Quantitative Applications of GC	3	<ul style="list-style-type: none"><li>Understand the principles of gas chromatography.</li><li>Operate a gas chromatography.</li></ul>

<b>Experiment</b>	<b>Content</b>	<b>Number of laboratory hours</b>	<b>Expected outcome – upon completion of these experiments, the student should be able to:</b>
9. High Performance Liquid Chromatography (HPLC)	Determination of Caffeine in Beverages	3	<ul style="list-style-type: none"> <li>• Understand the principles of HPLC.</li> <li>• Operate a HPLC instrument.</li> </ul>
10. Polarography	Determination of Heavy Metals	3	<ul style="list-style-type: none"> <li>• Understand the principles of polarography.</li> </ul>
<b>TOTAL</b>		<b>30</b>	