

Gas Chromatography & Atomic absorption spectroscopy Instrument Technician

Class: M.Sc. I

Skill level: 9

Department of Chemistry

1. Title: Gas Chromatography & Atomic absorption spectroscopy Instrument Technician
2. Year of implementation: 2020

Structure of Skill Development Course

Skill level	Theory Hours	Practical Hours	Total Hours	Credits	No. of students in batch
9	20	30	50	03	30

Syllabus

Learning Objectives:

1. To give knowledge about gas chromatography and atomic absorption spectroscopy.
2. To make the students familiar about handling the instrument.
3. To improve the understanding of students regarding application of instruments in analytics.

Theory Syllabus (20 Hrs)

Unit I – Gas Chromatography (10)

Introduction, Principle, Instrumentation, practical demonstration on instruments, calibration and method development, spectroscopy instrumentation as well as data handling, analysis and reporting.

Unit II – Atomic absorption Spectroscopy (10)

Introduction, Principle, Instrumentation, calibration and method development, spectroscopy instrumentation as well as data handling, analysis and reporting.

Practical Syllabus (30 Hrs)**List of Experiments:-----****24 hr**

1. Effect of column temperature on separation of mixture, isomers in gas chromatography.
2. To investigate the effect of the gas flow rate on the retention time.
3. To determine the optimum conditions for the separation of the mixtures e.g. (C₆-C₁₁)_n-alkanes, alcohols etc.
4. To determine the optimum conditions for the separation of the mixtures e.g. aldehydes, ketones
5. Demonstration on replacements of GC column, gas lines.
6. Analysis of lead in soil and water by atomic absorption spectrometry.
7. Determination of calcium concentration in various samples
8. Determination of Mg, Na, and Fe concentration by AAS spectroscopy.

Project/ Field Visits/ Industrial Visit-----06 hr**Learning Outcomes:**

1. The student knows identification, quantification and purification of the individual component in the mixtures.
2. The student knows fundamental concepts & theories of separation techniques in GC.
3. The student knows the strength & limitations of instruments.

Recommended Books:

1. Alka L.gupta, analytical chemistry
2. Skoog, D. A. Holler F.J. and Nieman, T.A.Principle of instrumental analysis , cengage learning india Ed.
3. Willard, H.H., Merritt,L.L., Dean, J.&Settoe,F.A. Instrumental Methods of analysis. 7th Ed. Wadsworth Pblishing Co.Ltd.Belmont,California,USA,1988.
4. H.M. McNair and E. J. Bonelli. "Basic Gas chromatography"Varian
5. Instruments, Palo Alto'CA., March1969, pp.91-92.

BOS Sub Committee:

1. Mr. P. V. Bhise
2. Miss.V.V. Pawar

Expert committee:

1. Dr. S. P. Pawar, *Asst. Prof, RSCS, Kolhapur*
2. Mr.Ajit Ekal, Manager, Insta vision laboratories & services, Satara