



Government Degree College, Seethanagaram

Accredited by NAAC with "B" Grade, ISO 9001:2015 Certified College

Affiliated to Aadi Kavi Nannayya University
Opp K.G.N.M .Trust, Purushottapatnam Road, Seethanagaram



DEPARTMENT OF CHEMISTRY

CERTIFICATE COURSE

ON

**“BASIC & ADVANCED LABORATORY
TECHNIQUES”**



20-10-2022 to 26-11-2022

Submitted by

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Aim, Objectives & Out Comes

- ❖ A certificate program is a specialized education designed to develop or strengthen specific career skills.
- ❖ A certificate program is considered continuing education in some cases because it builds on your knowledge of a particular career or industry.

Objectives:

- ❖ It serves to improve the skills of the students.
- ❖ Laboratory practice and safety.
- ❖ The major objective of studying chemistry is to apply conceptual knowledge in practical work.
- ❖ To develop an understanding of the range and uses of analytical methods in chemistry.
- ❖ To develop an understanding of the broad role of the chemist in measurement and problem solving for analytical tasks.
- ❖ To provide an understanding of chemical methods employed for elemental and compound analysis.
- ❖ You can demonstrate that you are a trained professional in your field and hold important hard skills to potential employers.

Out Comes:

- ❖ They will identify problems and generate hypotheses, develop and implement experimental methods to test their hypotheses, and analyze and interpret the resulting data.
- ❖ Explain the fundamentals of analytical chemistry and steps of a characteristic analysis.
- ❖ Compare qualitative and quantitative analyses.
- ❖ Expresses the terms such as standard solution, titration, back titration, equivalence point, end point, primary and secondary standard

Eligibility Criteria & Examination Pattern

Eligibility criteria:

- Only the existing final year B.Sc., students are eligible for the course.
- Registration is mandatory for the admission into the course.
- The course will be completed in 30hours.

Examination Pattern:

- 80% of attendance is compulsory for every student to write the examination.
- Total marks of the Course is 100 marks
- Theory 50 marks & Practical 50 marks
- 40% is the minimum qualifying mark to pass in the examination.
- Exam would be held after completion of 30 hours.
- Duration of exam is 2 hours
- The students who are passed in the exam would only the awarded the certificate. The will not be any repletion of exam.
- Entire syllabus contains four modules.
- Study material and model question paper would be given to every student.
- Grade points given as below.

Marks	Grade
91-100	O
81-90	A
71-80	B
61-70	C
51-60	D
40-50	E
Below 40	F

Syllabus

Module-I: Terms, Symbols & Laboratory Protocols

- i) Matter Classification
- ii) A. Common Laboratory Apparatus-Uses
 - B. Laboratory Discipline
 - C. Laboratory Precautions
 - D. Safety precautions and first aid

Module-II: Analytical Analysis

- A. Determination of Melting point & Boiling point
- B. Inorganic Qualitative Analysis
- C. Quantitative Analysis

Module-III: Preparation of Standard Solution

- A. Definition of Standard solutions
- B. Concentration Methods
- C. Calculation of Equivalent mass
- D. Chemical Balance
- E. Worksheet

Module-IV: Analysis & Separation Methods

- A. Introduction
- B. Classical Separation Methods
 - i) Precipitation
 - ii) Solvent Extraction
 - iii) Crystallization
 - iv) Distillation
- C) Modern Separation Methods-
 - Chromatography
 - i) Thin Layer Chromatography
 - ii) Column Chromatography

Blue Print

Theory: 50M & Practical: 50

Module No.	Module Name	Essay questions 10M	Short questions 5M
I	Terms, Symbols & Laboratory Protocols	01	02
II	Analytical Analysis	01	02
III	Preparation of Standard Solution	02	01
IV	Analysis & Separation Methods	02	01
	Total Questions	06	06

Department Of Chemistry
Certificate course
Model Question Paper

Time: 2 hours

Max Marks: 50

Section-A

I. Answer any THREE of the following questions. 3x10=30M

1) Explain the different common apparatus used in laboratory.

Or

Discuss the determination of melting point?

2) Explain the any four methods of expressing concentration.

Or

Explain the principle and working of analytical balance.

3) Write note on precipitation and solvent extraction.

Or

Write the principle, working & applications of column chromatography

Section-B

II. Answer any FOUR of the following questions. 4x5=20M

1) Laboratory Precautions

2) Practical Book

3) Indicators

4) Brown Ring Test

5) Calculate the equivalent masses of $\text{H}_2\text{C}_2\text{O}_4$ and NaOH .

6) Applications thin layer chromatography

