Vidya Prasarak Mandal's

B. N. Bandodkar College of Science, (Autonomous) Thane

Department of Chemistry

Syllabus for

Programme: Certificate Course in Instrumentation & Preparation of Standard Solutions.

Course Code: BC011

With effect from academic year

2018 - 2019

PREAMBLE:

The famous adage says "It is not the degree but the skills that takes you so far", understanding the importance of skill development and value enhancement programmes in consonance with degree, to meet the basic demands of industries, Department of Chemistry designed a skill oriented and value added certificate course titled "Certificate Course in Instrumentation and Preparation of Standard Solutions" to achieve a specific level of competency among students.

The knowledge enrichment course provide students an opportunity to enhance their skills and knowledge in selected areas and acquire additional skills which benefits them in the professional world.

The syllabus of course is prepared by chemistry department on their own keeping in view the subject specific academics need, industrial demands and market requirements with the help of the subject experts.

OBJECTIVES:

- To provide a wide spectrum of knowledge, skills in preparing a standard solutions of different concentrations with minimum errors and maximum accuracy.
- To build up a confidence and skills in them in handling any instrument used in various estimations.
- To review the basic principles of the analytical procedure and instruments commonly used in industries such as analytical terms and tools, calibration of glassware, theory of indicators etc.

DESIRED OUTCOME:

- To brand students independent in constructing curves/plots using which evaluation of exact amount or strength of selected component present in unknown sample.
- To impart skills which they require while seeking jobs and to sharpen their knowledge and need to understand concepts and issues at their workplace.

Eligibility: T.Y. B.Sc.

Course: Certificate Course in Instrumentation & Preparation of Standard Solutions

UNIT NO	COURSE CONTENTS	NO. OF LECTURES	NO. OF PRACTICALS in hrs.
I	**Introduction** Accuracy, precision, calibration of glass wares and its importance	2	1
II	**Chemical Calculations** Normality, Molarity, Molality, Formality, ppm, ppb, Millimoles, Milliequivalents, Mole fraction, Weight ratio, Volume ratio and weight to volume ratio.	2	2
III	**Standard solutions** Concept of Primary standard solution and Secondary standard solution.	2	2
IV	**Titrimetric analysis** Types of reactions and construction of titration curves.	2	3
V	**Indicators** Theory of indicators, Preparation of indicators, Types of indicators, Mechanism of indicator action	3	3
VI	**Instrumental techniques**		5
	i. pH-meter	1	3
	ii. Conductometer	1	3
	Iii Potentiometer	1	2.5
	iv. Spectrophotometer	2	2.5
	v. Flame Emission spectrophotometer	1	2
	Total Period = 45	17	28
	Credit	2	

Evaluation Scheme

1. Theory Examination: Suggested Format of Question paper

Duration: 1.0 Hours **Total Marks: 30**

All questions are compulsory

Sr.No	Unit	Marks
Q. 1	Based on Unit I	5
Q. 2	Based on Unit II	5
Q. 3	Based on Unit III	5
Q. 4	Based on Unit IV	5
Q. 5	Based on Unit V	5
Q. 6	Based on Unit VI	5

All the questions are multiple choice questions. Each question carries 1 mark.

1. **Internal Assignments have to be submitted in the hard copy format in the department.**

Total number of assignments: 01 **Total marks: 20**

2. **Practical Examination**

Particular	Practical	Viva	Total
Practical	40	10	50

Total of Internal Assignments **20 Marks**
Total of Theory Examination **30 Marks**
Total of Practical Examination **50 Marks**
Grand Total **100 Marks**

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Duration

Duration in terms of Hours	**45**
Per day	4.5 Hours
No. of days	10
No. of weeks	02
Course will be conducted ONCE per year	SEMESTER-II

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