

DEPARTMENT OF CHEMISTRY
NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, Surathkal

COURSE PLAN AND EVALUATION PLAN

- 1) **Course Code:** CY 111 2) **Course Title:** Chemistry Lab 3) **L-T-P:** 0-0-3 (2)
4) **Credit:** Two 5) **Pre-requisite:** Nil 6) **Course category:** BSc
7) **Teaching Department:** Chemistry 8) **Course for:** I/II Semester B. Tech.

9) *Objectives of the course:*

- a) To understand the principles of volumetric analysis in chemistry
- b) To have exposure to procedures such as weighing, preparation of standard solution, titration etc.
- c) To know the principle of Instrumental methods of analysis such as colorimetry, conductometry and potentiometry.
- d) To know the techniques of titrations and handling certain instruments like Conductometer, Potentiometer etc.

10) *Skill development of the student expected from the course:*

- a) Development of practical skill in chemistry lab activities.
- b) Achievement of confidence in handling chemicals, glassware and instruments.
- c) Learning of some of the volumetric and instrumental methods of analysis in chemistry.
- d) Training in planning of lab experiments, accurate observation, data collection, reasoning and reporting of results.
- e) Acquisition of skills in measuring, weighing, transferring chemicals, taking readings etc.

11) *Course coverage:*

Schedule	Experiments	Schedule	Experiments
1 st week	Estimation of total hardness of water	7 th week	Conductometry
2 nd week	Estimation of percentage of Cu in brass	8 th week	Colorimetry
3 rd week	Estimation of percentage of MnO ₂ in Pyrolusite	9 th week	Potentiometry
4 th week	Estimation of percentage of iron in Hematite	10 th week	Refractometry
5 th week	Estimation of N ₂ in ammonium fertilizer	11 th week	Repetition experiment
6 th week	MID- TERM EXAM	12 th week	END – TERM EXAM

12) Reference books:

- i) Engineering Chemistry Lab Manual supplied from Dept. of Chemistry, NITK, Surathkal.
- ii) Vogel's Text Book of Quantitative Chemical Analysis, Furnis et al. (ed) Pearson publication.

13) Details of Tutorials, if any: Nil

14) **EVALUATION PLAN:**

- 1.** The course will be evaluated in three components: Continuous evaluation, Mid-term and End-sem tests.

The weightage for the three components is as follows:

Continuous Evaluation : **35 Marks**

Mid – Term Exam : **25 Marks**

End- Term Exam : **40 Marks**

- 2.** Continuous evaluation will include the following

- a) Record book will be checked after each experiment. At the end of semester, record will be **evaluated for 5 marks for neatness and completeness.**

- b) After 4 experiments, the written quiz Test-1 will be conducted for **15 marks, Time: 30 Minutes.**

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- c) After 9 experiments, the written quiz Test-2 will be conducted for **15 marks, Time: 30 Minutes**.
- d) Quiz Test-1 & Quiz Test-2 total weightage is **30 marks**.
- e) **Quiz Test I & Quiz Test II will be with common question paper throughout all sections (S7-S12)**.
- 3.** Mid-Term Exam will have weightage of **25 Marks**. **ONE procedure writing for 5 marks and ONE volumetric titration experiment for 20 marks**.
- 4.** End-Term Test will have weightage of **40 Marks**. **ONE procedure writing with calculation steps for 10 marks and ONE volumetric titration/ Instrumentation experiment for 30 marks**.
- 5.** Scheme of **evaluation** for **MID-TERM EXAM** is as follows:

TOTAL MARKS: 25

- a) Procedure Writing : **5 Marks**
- b) Experiment (Volumetric) : **18 Marks**
- Calculation : **2 Marks**

Standardization Part		Estimation Part	
± 0.1 mL	9 marks	± 0.1 mL	9 marks
± 0.2 mL	8 marks	± 0.2 mL	8 marks
± 0.3 mL	7 marks	± 0.3 mL	7 marks
± 0.4 mL	5marks	± 0.4 mL	5marks
±0.5 mL	3 marks	±0.5 mL	3 marks
Any value	2 marks	Any value	2 marks

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END TERM Evaluation Scheme

Total Marks: 40

- c) Procedure writing with calculation steps : **10 Marks**
d) Experiment Volumetric/ Instrumentation : **30 Marks**

Marks split-up for experiments numbered 1-5:

- i) **Calculations** : **2 Marks**
ii) **Titre values** : **28 Marks**

Standardization Part		Estimation Part	
± 0.1 mL	14 marks	± 0.1 mL	14marks
± 0.2 mL	13 marks	± 0.2 mL	13 marks
± 0.3 mL	11 marks	± 0.3 mL	11 marks
± 0.4 mL	9 marks	± 0.4 mL	9 marks
± 0.5 mL	6 marks	± 0.5 mL	6 marks
± 0.6 mL	3 marks	± 0.6 mL	3 marks
Any value	2 marks	Any value	2 marks

Marks split-up for experiments numbered 6-9:

- i) **Calculations** : **2 Marks**
ii) **Experiment values** : **24 Marks**
iii) **Graph** : **4 Marks**

Conductmetry/Potentiometry		Colorimetry		Refractometry	
± 0.1 mL	24 marks	± 0.4 mg	24 marks	2 % variation	24 marks
± 0.2 mL	21 marks	± 0.8 mg	21 marks	4 % variation	21 marks
± 0.3 mL	18 marks	± 1.2 mg	18 marks	6 % variation	18 marks
± 0.4 mL	14 marks	± 1.6 mg	14 marks	8 % variation	14 marks
± 0.5 mL	10 marks	± 2.0 mg	10 marks	10 % variation	10 marks
± 0.6 mL	06 marks	± 2.4 mg	06 marks	12 % variation	06 marks
Any value	04 marks	Any value	04 marks	Any value	04 marks

Secretary –DUGC
Date: 21-12-2017

Signature of HOD (Chairman - DUGC)
Department of Chemistry