

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:** 02 5) **Pre-requisite:** Nil 6) **Course category:** BSc
7) **Teaching Department:** Chemistry 8) **Course for:** I/II Sem 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 principles 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.
- e) Acquisition of skills in measuring, weighing, transferring chemicals and taking readings precisely.

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 and taking readings precisely.

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

13) **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: **25 Marks**

Mid – Term Exam : **25 Marks**

End- Term Exam : **50 Marks**

2. Continuous evaluation will include the following

- a) **After completion of all 10 experiments, written quiz Test will be conducted for 20 marks, Time: 45 Minutes.**
- b) Record book will be checked after each experiment. At the end of semester, record will be **evaluated for 5 marks for neatness and completeness.**
- c) Total continuous evaluation component is **20+5 = 25 Marks**

- d) Quiz Test will be **common** for all 1st year B Tech sections, in a given semester.
3. Mid-term exam will have a weightage of **25 Marks**. ONE procedure writing (only procedure for 10 minutes duration) for 5 marks and ONE experiment for 20 marks (from volumetric part).
 4. End-Term Test will have a weightage of **50 Marks**. ONE procedure with calculation steps (in 15 minutes) from either volumetric titration or instrumental experiment.
 5. Two experiments one from volumetric (only one titration) and another from instrumental part for **20 Marks each. (20 +20 Marks)**.

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5. Scheme of **evaluation** for **MID-TERM EXAM** is as follows:

TOTAL MARKS: 25

- | | |
|--------------------------|-------------------|
| a) Procedure Writing | : 5 Marks |
| b) Volumetric Experiment | : 20 Marks |
| Calculation steps | : 2 Marks |
| Titration | : 18 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

END TERM Evaluation Scheme

Total Marks: 40

- | | |
|---|------------------------|
| c) Procedure writing with calculation steps | : 10 Marks |
| d) Volumetric and instrumental experiment | : 20 Marks each |

Marks split-up for experiments numbered 1-5:

- | | |
|------------------|-------------------|
| i) Calculations | : 2 Marks |
| ii) Titre values | : 18 Marks |

Marks for titration	
± 0.1 mL	18 marks
± 0.2 mL	17 marks
± 0.3 mL	14 marks
± 0.4 mL	10 marks
± 0.5 mL	6 marks
Any value	4 marks

Marks split-up for experiments numbered 6-9:

- i) Calculations : 2 Marks
ii) Graph : 4 Marks
iii) Graph : 14 Marks

Conductmetry/Potentiometry		Colorimetry		Refractometry	
± 0.1 mL	14 marks	± 0.4 mg	14 marks	2 % variation	14 marks
± 0.2 mL	12 marks	± 0.8 mg	12 marks	4 % variation	12 marks
± 0.3 mL	10 marks	± 1.2 mg	10 marks	6 % variation	10 marks
± 0.4 mL	8 marks	± 1.6 mg	8 marks	8 % variation	8 marks
± 0.5 mL	6 marks	± 2.0 mg	6 marks	10 % variation	6 marks
Any value	03 marks	Any value	03 marks	Any value	03 marks

Sd/

Secretary –DUGC
Date: 27-12-2019

Sd/

Signature of HOD (Chairman - DUGC)
Department of Chemistry

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5. Scheme of evaluation for **MID-TERM EXAM** is as follows:

TOTAL MARKS: 25

- a) Procedure Writing : **5 Marks**
 b) Volumetric Experiment : **20 Marks**
 Calculation steps : 2 Marks
 Titration : 18 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

END TERM Evaluation Scheme

Total Marks: 40

- c) Procedure writing with calculation steps : **10 Marks**
 d) Volumetric and instrumental experiment : **40 Marks (20 each)**

Marks split-up for experiments numbered 1-5:

- i) Calculations : **2 Marks**
 ii) Titre values : **18 Marks**

Marks for titration	
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Any value	03 marks	Any value	03 marks	Any value	03 marks

EVALUATION PLAN of CY111: Continuous Evaluation: **25 Marks**, Mid – Term Exam : **25 Marks**,
End- Term Exam : **50 Marks**

6. Continuous evaluation will include the following
 - a) **After completion of all 10 experiments, written quiz Test will be conducted for 20 marks, Time: 45 Minutes.**
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 9. Two experiments one from volumetric (only one titration) and another from instrumental part for **20 Marks each. (20 +20 Marks).**

DEPARTMENT OF CHEMISTRY
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5. Scheme of **evaluation** for **MID-TERM EXAM** is as follows:

TOTAL MARKS: 25 , Procedure Writing : **5 Marks**, Volumetric Experiment: **20 Marks**, Calculation steps : 2 Marks

Titration : 18 Marks

Standardization Part		Estimation Part	
± 0.1 mL	9 marks	± 0.1 mL	9 marks
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±0.5 mL	3 marks	±0.5 mL	3 marks
Any value	2 marks	Any value	2 marks

END TERM Evaluation Scheme Total Marks: 40 m, Procedure writing with calculation step: 10 Marks
Volumetric and instrumental experiment : **20 Marks each**

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± 0.5 mL	6 marks	± 2.0 mg	6 marks	10 % variation	6 marks
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Marks Titration : 18 Marks

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END TERM Evaluation Scheme Total Marks: 40, Procedure writing with calculation ccalculation steps: **10 Marks**, Volumetric and instrumental experiment : **40 marks (20 each)**

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