DEPARTMENT OF CHEMISTRTY

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 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 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
1st week	Estimation of total hardness of water	7th week	Conductometry
2nd week	Estimation of percentage of Cu in brass	8th week	Colorimetry
3rd week	Estimation of percentage of MnO_2 in Pyrolusite	9th week	Potentiometry
4th week	Estimation of percentage of iron in Hematite	10th week	Refractometry
5th week	Estimation of N_2 in ammonium fertilizer	11th week	Repetition experiment
6th week	**MID- TERM EXAM**	12th 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.

   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**.
   c) After 9 experiments, the written quiz Test-2 will be conducted for **15 marks, Time: 30 Minutes.**
   d) Total weightage for quiz tests is **(15 + 15 = 30) marks.**
   e) **Quiz Test I & Quiz Test II will be the common tests for all the sections** (S7 - S12).
3. Mid-term exam will have a weightage of **25 Marks. ONE procedure writing (in 10 minutes) for 5 marks and ONE volumetric experiment for 20 marks.**
4. End-Term Test will have a weightage of **40 Marks. ONE procedure writing with calculation steps (in 15 minutes) for 10 marks and ONE volumetric titration/ nnstrumental 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

END TERM Evaluation Scheme

Total Marks: 40
c) Procedure writing with calculation steps **: 10 Marks**
d) Experiment volumetric/ instrumental **: 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: 26-12-2018

26/12/2018
Signature of HOD (Chairman - DUGC)

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