



SECOND SEMESTER 2023-2024
Course Handout (Part II)

Date: 09.01.2024

This portion gives specific details regarding the course.

Course Number	CHEM F341
Course Title	Chemical Experimentation II
Instructor-in-charge	Prof. Balaji Gopalan
Team of Instructors	Prof. Balaji Gopalan, Dr. Satya Narayan Guin

- 1. Course Description:** This course is based on the exposure to laboratory experiments in different fields of chemistry. The course is normally available to students of third year onward or higher level.
- 2. Scope and Objective:** The main objective of this course is to educate the students with different aspects of Chemistry Experiments in advanced level. The students will carry out set of experiments that will expose them and make them to learn to various experimental techniques in Inorganic, Physical and Analytical Chemistry. Inorganic chemistry experiments will mainly involve group analysis of cations and anions. Some quantitative inorganic volumetric analysis will also be performed. Analytical chemistry experiments will cover specialized quantitative analysis of different samples. Experiments in physical chemistry will include determination of partition coefficient, phase diagram determination, kinetics etc.
- 3. Text Book(s):**
The procedure for all the experiments will be made available
 - a. Qualitative inorganic analysis by A. I. Vogel.
 - b. Quantitative inorganic analysis by A. I. Vogel.
 - c. Qualitative organic analysis (2nd Indian Edition) by A. I. Vogel. CBS Publishers and Distributors.
- 4. Reference Book:** Reference sources for each experiment will be specified as necessary.
- 5. Course Plan:** The students will perform a number of experiments in Inorganic, Physical and Analytical Chemistry areas with an emphasis on individual planning and execution of the experiments.

Broad Classification	No. of classes
Inorganic Qualitative Analysis	4
Analytical Chemistry Experiments	8
Physical Chemistry Experiments	8

6. Evaluation:

Component	Duration	Weightage (%)	Date& Time	Venue of Lab
LABQUIZ*	-	10	Will be announced (CB)	
Mid-Semester Lab Exam	3 hrs	10	Will be announced	
Laboratory Work, Reports	-	60	Continuous	
Comprehensive LABQUIZ	-	10	Will be announced (CB)	
Comprehensive Lab Exam	3 hrs	10	Will be announced	

CB: Closed book

6 i. LABQUIZ will be conducted in the month of February during lab class hours and will be based on experiments covered till the date of the quiz. **Make-up will not be granted for quiz.**

ii. **The students should assemble at labs by 12.55 PM strictly and should have printed Lab Manuals for the concerned experiment. This is mandatory and no exceptions would be entertained.**

iii. Laboratory Conduct and Record maintenance will be given due importance in the evaluation.

7. Laboratory safety: It is MANDATORY to wear personal protective equipment (PPE) in the laboratory, such as Lab-coat, Covered shoes, and Safety goggles (as applicable).

8. Make-up policy: Make up will be granted for genuine cases only. Make-up will not be granted for quiz.

9. Notice: All notices concerning the course will be displayed on the Chemistry Department Notice Board and CMS.

10. Final grading will be done on the basis of the overall performance of a student in each of the components as listed in item no. 6.

For mid-semester grading, progress made by a student up to that point of time would be evaluated.

STUDENTS WON'T BE ALLOWED TO PERFORM ANY EXPERIMENT WITHOUT PPE.

List of experiments:

1	MgSO ₄ EDTA TITRATION(complexometric titration)
2	Estimation of oxalate and Cu ²⁺ in Potassium bix-oxalato cuprate(II) dihydrate
3	Alum synthesis from Aluminium scrap
4	Preparation of Ni-DMG complex and characterization by UV and gravimetry
5	Estimation of total fatty acid and alkali content in soap
6	Estimation of copper in brass
7	Synthesis of Nylon, determination of thermal degradation by TGA
8	Synthesis and characterization of Ag-nanoparticles and its use as catalyst
9	Adsorption isotherm-Adsorption of acetic acid on charcoal

1 0	Partition Coefficient of Iodine in CCl ₄ /H ₂ O
1 1	Hydrolysis of Ester
1 2	Binary Phase Diagram: Phenol-Water
1 3	Eutectic composition of Naphthalene and p-dichlorobenzene
1 4	Determination of critical micelle concentration (CMC)
1 5	Determination of isoelectric point of gelatin
1 6	Inorganic Analysis-Anions
1 6	Inorganic Analysis-Cations
1 7	Inorganic Analysis-Unknown simple salt

Balaji Gopalan

**Instructor-in-charge
CHEM F341**

