



DEPARTMENT OF CHEMISTRY

COURSE PLAN – PART I			
Name of the programme and specialization	B. Tech. (Production Engineering A)		
Course Title	Chemistry Lab		
Course Code	CHIR12	No. of Credits	2
Course Code of Pre-requisite subject(s)	NIL		
Session	July 2023	Section	NIL
Name of Faculty	Abhijna Krishna R	Department	Chemistry
Official Email	<u>404120001@nitt.edu</u>	Telephone No.	+91-9400862633
Name of Course Coordinator(s) (if applicable)	Dr. Ganesh Chandra Nandi and Dr Arivazhakan		
Official E-mail	<u>nandi@nitt.edu</u> , <u>arivazhagan@nitt.edu</u>	Telephone No.	+91-80566 72406 +91-7034458790
Course Type (please tick appropriately)	<input checked="" type="checkbox"/> Core course <input type="checkbox"/> Elective course		

Syllabus (approved in BoS)

LIST OF EXPERIMENTS

1. Estimation of carbonate, non-carbonate and total hardness in the given water sample.
2. Estimation of dissolved oxygen in the given water sample.
3. Determination of the percentage of Fe in the given steel sample.
4. Estimation of Fe^{3+} by spectrophotometer.
5. Corrosion rate by polarization technique
6. Conductometric titration
7. Potentiometric titration
8. pH-metric titration
9. Percentage purity of bleaching powder
10. Determination of molecular weight of the polymer by Viscometry
11. Study of three component system.
12. Demonstration experiments using Advanced Spectroscopic Techniques, (UV-Vis, FTIR,
13. Raman)

Reference Books

1. Laboratory Manual, Department of Chemistry, National Institute of Technology, Tiruchirappalli.
2. S.K. Bhasin, S. Rani, Laboratory Manual on Engineering Chemistry, Dhanpat Rai Publishing Company, New Delhi, 2011.



3. Virtual Lab-Online platform for Laboratory experiments

COURSE OBJECTIVES

To introduce the student's the experiments on (i) estimation of total hardness and (ii) dissolved oxygen in a given water sample, (iii) determination of the percentage of Fe in the given steel sample, (iv) estimation of Fe^{3+} by spectrophotometer, (v) determination of corrosion rate by polarization technique, (vi) conductometric titration, (viii) potentiometric titration, (viii) pH-metric titration, (ix) determination of percentage purity of bleaching powder, (x) determination of molecular weight of the polymer by viscometry.

MAPPING OF COs with POs

Course Outcomes	Programme Outcomes (PO) (Enter Numbers only)
<ul style="list-style-type: none"> The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn how to estimate various components from the corresponding bulk mixture 	1, 2, 12

COURSE PLAN – PART II

COURSE OVERVIEW

This is a 2 credit course offered to I year B.Tech students. One lab session (3 h) will be conducted per week. Students will perform experiments illustrating the principles of chemistry relevant to the study of science and engineering and will learn how to estimate various components from the corresponding bulk mixture.

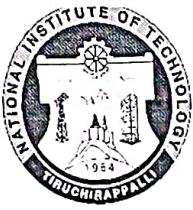
COURSE TEACHING AND LEARNING ACTIVITIES

S. No.	Week/Contact Hours	Topic	Mode of Delivery
1	I week of September 2023	Introduction of apparatus, General Instructions and guidelines regarding lab Safety and Conduct, Demonstration of experiments and Theory numerical elaboration	Experiment
2	II week of September 2023 – III week of November 2023	1. Conductometric titration. 2. Potentiometric titration. 3. pH-metric titration. 4. Percentage purity of bleaching powder. 5. Determination of molecular weight of the polymer by Viscometry. 6. Estimation of carbonate, non-carbonate and total hardness in the given water sample.	Experiment



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		7. Estimation of dissolved oxygen in the given water sample. 8. Determination of the percentage of Fe in the given steel sample. 9. Estimation of Fe ³⁺ by spectrophotometer. 10. Corrosion rate by polarization technique.		
3	IV week of June 2023	Compensatory Lab	Experiment	
COURSE ASSESSMENT METHODS				
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment 1 (Based on individual experiments done during lab sessions)	II week of September 2023 to I week of October 2023	3 h/week	20
2	Assessment 2 (Based on individual experiments done during lab sessions) including compensation lab	II week of October 2023 to III week of November 2023	3 h/week	20
3	Assessment 3 (MCQ)	IV week of November 2023	30 min	20
3	Final Assessment- Assessment 4 (Experiment and Viva)	I week of December 2023	3 hours	40
Total (100)				
COURSE EXIT SURVEY				
1. Feedback from students during class committee meetings. 2. Anonymous feedback through questionnaire at the end of the semester.				
COURSE POLICY				
MODE OF CORRESPONDENCE (email/ phone etc.)				
E-mail: 404120001@nitt.edu / Phone: +91-9400862633				
COMPENSATION ASSESSMENT POLICY				
For those students who missed assessment 1 due to genuine reasons, compensation assessments will be conducted during III week of February				
ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)				
<ul style="list-style-type: none"> ➤ At least 75% attendance in each course is mandatory. ➤ A maximum of 10% shall be allowed under On Duty (OD) category. ➤ Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade. 				
ACADEMIC DISHONESTY & PLAGIARISM				
<ul style="list-style-type: none"> ➤ Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty. ➤ Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark. 				



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- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
The above policy against academic dishonesty shall be applicable for all the programs.

ADDITIONAL INFORMATION

The respective faculty will be available for consultation at times as per the intimation by the faculty.

FOR APPROVAL

Course Faculty [Signature]
13/09/23

CC-Chairperson [Signature]

HOD C.S.P.N.L.

Guidelines

- The number of assessments for any theory course shall range from 4 to 6.
- Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2019	2018	2017	2016	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower	(Class average/2) whichever is	40%

- Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- Necessary care shall be taken to ensure that the course plan is reasonable and is objective.