



DEPARTMENT OF CHEMISTRY

COURSE PLAN - PART I			
Name of the programme and specialization	B.Tech. I (Civil Engineering)		
Course Title	Chemistry Lab		
Course Code	CHIR12	No. of Credits	2
Course Code of Pre-requisite subject(s)	Nil		
Session	July 2022	Section (if, applicable)	B
Name of Faculty	Dr. Sunandan Sarkar	Department	Chemistry
Official Email	ssarkar@nitt.edu	Telephone No.	9153484492
Name of Course Coordinator(s) (if, applicable)			
Official E-mail		Telephone No.	
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, 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.			
COURSE OBJECTIVES			
To introduce the students about the experiments on (i) estimation of total hardness and (ii) dissolved oxygen in the given sample, (iii) determination of the percentage of Fe in the given			



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steel sample, (iv) estimation of Fe ³⁺ by spectrophotometer, (v) corrosion rate by polarization technique, (vi) conductometric, (vii) potentiometric, (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)
1. The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering.	1, 3, 4
2. The students will learn how to estimate various components from the corresponding bulk mixture.	1, 3, 4

COURSE PLAN – PART II			
COURSE OVERVIEW			
This course is offered to first year B.Tech. (Civil Engineering) students. This is a 2 credit practical course and one practical class will be conducted per week (3 hr duration).			
COURSE TEACHING AND LEARNING ACTIVITIES			(Add more rows)
S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Week-1	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	Experiments
2	Week-2	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	Experiments
3	Week-3	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	Experiments
4	Week-4	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 5. Corrosion rate by polarization technique	Experiments



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5	Week-5	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	Experiments
6	Week-6	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	Experiments
7	Week-7	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	Experiments
8	Week-8	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	Experiments
9	Week-9	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	Experiments
10	Week-10	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	Experiments
11	Week-11	11. Study of three component system. 12. Demonstration experiments using Advanced Spectroscopic Techniques, (UV-Vis, FTIR, Raman)	Demonstration



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12	Week-12	Compensation lab	Experiments	
COURSE ASSESSMENT METHODS (shall range from 4 to 6)				
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Based on individual lab experiments (Exp. 1-5)	Each Week (Monday)	3 hours	25 %
2	Based on individual lab experiments (Exp. 6-10)	Each Week (Monday)	3 hours	25 %
3	Test-1	I week of February	30 minutes	10 %
4	Final Assessment *	III week of February	3 hours	40 %
*mandatory; refer to guidelines on page 4				
COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)				
<p>1. Feedback from students during class committee meetings.</p> <p>2. Anonymous feedback through questionnaire at the end of the semester.</p>				
COURSE POLICY (including compensation assessment to be specified)				
<p><u>MODE OF CORRESPONDENCE (email/ phone etc)</u> <u>ssarkar@nitt.edu; Tel. No.:9153484492</u> <u>COMPENSATION ASSESSMENT POLICY</u> <u>1. This is for those students who missed one/two lab due to genuine reasons.</u> <u>2. Compensation lab will be conducted during the I week of February.</u></p>				
<u>ATTENDANCE POLICY</u> (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. 				
<u>ACADEMIC DISHONESTY & PLAGIARISM</u>				
<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. 				



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- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- 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 programmes.

ADDITIONAL INFORMATION, IF ANY

FOR APPROVAL

S. Sarkar 1/12/2022
Dr. Sunandan Sarkar
Course Faculty _____

CC- Chairperson _____

Dr. R. Senthilkumar

HOD _____



Guidelines

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

B.Tech. Admitted in 2022: 35% or class average/2, which ever is maximum

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