NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF CHEMISTRY

COURSE PLAN - PART I			
Name of the programme and specialization	B.Tech. I (Production Engineering)		
Course Title	Chemistry Lab		
Course Code	CHIR12	**No. of Credits**	**2**
Course Code of Pre-requisite subject(s)	Nil		
Session	**July 2020**	**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**)**	✓	**Core course**	☐ **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 Fe3+ 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
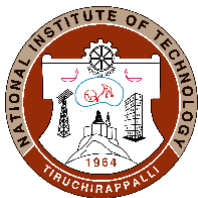
steel sample, (iv) estimation of Fe^{3+} by spectrophotometer, (v) corrosion rate by polarization technique, (vi) conductometric, (vii) potentiometric, (viii) pH-metric titration, (ix) determination of percentage purity of bleaching powder, (x) determination of molecular weight of the polymer by Viscometry.

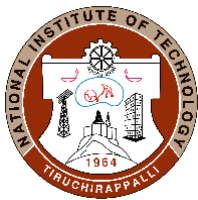| MAPPING OF COs with POs	
Course Outcomes	**Programme Outcomes (PO)** (Enter Numbers only)
1. The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering.	
2. The students will learn how to estimate various components from the corresponding bulk mixture.	

COURSE PLAN – PART II

| COURSE OVERVIEW |
|---|
| This course is offered to first year B.Tech. (Production 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	II week of December	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.	Virtual
2	III week of December	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	Virtual
3	IV week of December	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	Virtual

4	I week of January	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	Virtual
5	II week of January	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	Virtual
6	III week of January	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	Virtual
7	IV week of January	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	Virtual
8	I week of February	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	Virtual
9	II week of February	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	Virtual
10	III week of February	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	Virtual
11	IV week of February	11. Study of three component system. 12. Demonstration experiments using Advanced Spectroscopic Techniques, (UV-Vis, FTIR, Raman)	Virtual
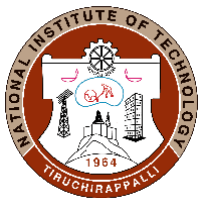
12	I week of March	Compensation lab		Virtual

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Based on individual lab experiments	Each Week	3 hours	75 %
2	Final Assessment *	II week of March	2 hours	25 %

*mandatory; refer to guidelines on page 4

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

1. Feedback from students during class committee meetings.
2. Anonymous feedback through questionnaire at the end of the semester.

COURSE POLICY (including compensation assessment to be specified**)**

MODE OF CORRESPONDENCE (email/ phone etc)
ssarkar@nitt.edu; Tel. No.:9153484492
COMPENSATION ASSESSMENT POLICY
1. This is for those students who missed one/two lab due to genuine reasons.
2. Compensation lab will be conducted during the II/III week of November.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

> 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

> 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.

> ➤ 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

Course Faculty _____ **CC- Chairperson** _____ **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				P.G.
2018	**2017**	**2016**	**2015**	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

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.