DEPARTMENT OF CHEMISTRY

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	**I B.Tech. (Production Engineering)**		
Course Title	**Chemistry**		
Course Code	**CHIR12**	**No. of Credits**	**2**
Course Code of Pre-requisite subject(s)	**Nil**		
Session	**July 2019**	**Section (if, applicable)**	**A**
Name of Faculty	**Dr. Suryanarayanan C** **Dr. Nitin Padalwar**	**Department**	**Chemistry**
Email	**nitinbpadalwar@gmail.com** **csn@nitt@nitt.edu**	**Telephone No.**	**+91-9444377376**
Name of Course Coordinator	**Dr. Nitin Padalwar**		
E-mail	**nitinbpadalwar@gmail.com**	**Telephone No.**	**+91-9444377376**
Course Type	☑ **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 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 Fe3+ 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

COURSE OUTCOMES (CO)

- 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.

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	III week of August	Demonstration of experiments	Experiment
2	IV week of August	1. Estimation of carbonate, non-carbonate and total hardness in the given water sample. 2. Estimation of dissolved oxygen in the given water sample.	Experiment

		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	
3	I week of September	”	”
4	II week of September	”	”
5	III week of September	”	”
6	IV week of September	”	”
7	I week of October	”	”
8	II week of October	”	”
9	III week of October	”	”
10	IV week of October	”	”
11	I week of November	”	”
12	II week of November	”	”
13	III week of November	”	”
14	IV week of November	Compensatory lab	”

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assessment 1 (based on individual experiments done during lab session)	IV week of August to IV week of November	3 h/week	60
4	Final Assessment	I week of December	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: **nitinbpadalwar@gmail.com**/ Phone: **+91-9444377376**

COMPENSATION ASSESSMENT POLICY

For those students who missed assessment 1 and 2 due to genuine reasons, compensation assessments will be conducted during IV week of November 2019.

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 programs.

ADDITIONAL INFORMATION

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

FOR APPROVAL

G. Jayanarayanan

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Dr. Nitin B. Padalwar

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____

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