# NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

## DEPARTMENT OF CHEMISTRY

| COURSE PLAN – PART I | | | |
|---|---|---|---|
| **Name of the programme and specialization** | **B. Tech. (CSE) (1st year)** | | |
| **Course Title** | **Chemistry (Lab)** | | |
| **Course Code** | **CHIR12** | **No. of Credits** | **2** |
| **Course Code of Pre-requisite subject(s)** | **Nil** | | |
| **Session** | **Jan 2021** | **Section (if, applicable)** | **B** |
| **Name of Faculty** | **Dr. Ganesh Chandra Nandi** | **Department** | **Chemistry** |
| **Official Email** | **nandi@nitt.edu** | **Telephone No.** | **+91-7034458790 (M)** |
| **Name of Course Coordinator(s)** (if, applicable) | **Dr. Ganesh Chandra Nandi** | | |
| **Official E-mail** | **nandi@nitt.edu** | **Telephone No.** | **+91-7034458790 (M)** |
| **Course Type (**please tick appropriately**)** | ☑ **Core course** | ☐ **Elective course** | |

**Syllabus (approved in BoS)**

**Practicals:**

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 of experiments using Advanced Spectroscopic Techniques

**Reference and Text Books**

1. S. Rattan, *Theory and Practicals of Engineering Chemistry* Kataria, S. K., & Sons, New Delhi, 2013.
2. Practical Manual Provided by the Chemistry Department of NIT Tiruchirappalli.

**COURSE OBJECTIVES**

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.

**MAPPING OF COs with POs**

| **Course Outcomes** | **Programme Outcomes (PO)** (Enter Numbers only) |
|---|---|
| Students will learn about the: | |
| 1. Analysis of Water Samples | |
| 2. Analysis of the Purity of Metal Samples | |
| 3. Different methods of Titrimetric Chemical Analysis | |
| 4. Chemical Purity Determination of Common Chemicals | |
| 5. Analysis of Polymers | |

**COURSE PLAN – PART II**

**COURSE OVERVIEW**

This is a two credit course offered to I year B.Tech. CSE Students. This course is a Practical Chemistry (2 credit) course. Three Practical classes (3 h per week) will be conducted per week. This course provides a thorough understanding of the subject through hand on practice and demonstrations.

**COURSE TEACHING AND LEARNING ACTIVITIES** ( Add more rows)

| **S.No.** | **Week/Contact Hours** | **Topic** | **Mode of Delivery** |
|---|---|---|---|
| 1 | III week of April | Estimation of carbonate, non-carbonate and total hardness in the given water sample. | Virtual lab |
| 2 | IV week of April | Estimation of dissolved oxygen in the given water sample. | Virtual lab |

| | | | |
|---|---|---|---|
| 3 | I week of May | Determination of molecular weight of the polymer by Viscometer | Virtual lab |
| 4 | II week of May | Corrosion rate by polarization technique | Virtual lab |
| 5 | III week of May | Percentage purity of bleaching powder | Virtual lab |
| 6 | IV week of May | Conductometric titration | Virtual lab |
| 7 | I week of June | Potentiometric titration | Virtual lab |
| 8 | II week of June | Determination of the percentage of Fe in the given steel sample. | Virtual lab |
| 9 | III week of June | Estimation of $Fe^{3+}$ by spectrophotometer. | Virtual lab |
| 10 | IV week of June | Demonstration of experiments using Advanced Spectroscopic Techniques | Virtual lab |

**COURSE ASSESSMENT METHODS (**shall range from 4 to 6**)**

| S.No. | Mode of Assessment | Week/Date | Duration | % Weightage |
|---|---|---|---|---|
| **Practicals** | | | | |
| 1 | Test-I | II week of May | 15 minutes | 10 |
| 2 | Test-2 | I week of June | 15 minutes | 10 |
| 3 | Regular Laboratory Experiments | Throughout the Semester | Throughout the Semester | 60 |
| CPA | Compensation Assessment* | IV week of June | 30 minutes | 10 |
| 4 | Final Assessment * | II week of July | 10 minutes (viva) | 20 |
| **Total (100 Marks)** | | | | |

**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**)**
**Passing Marks:** 35% or (Class average/2) whichever is greater.

**MODE OF CORRESPONDENCE (email/ phone etc)**

E-mail: nandi@nitt.edu / Phone: +91-7034458790

**COMPENSATION ASSESSMENT POLICY**

For those students who missed Test I and Test II due to genuine reasons, Compensation assessment will be conducted during IV week of June.

**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**

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

**FOR APPROVAL**

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