



DEPARTMENT OF CHEMISTRY

COURSE PLAN – PART I			
Name of the programme and specialization	B. Tech. (Mechanical Engineering (ME) -1 <sup>st</sup> Sem		
Course Title	Chemistry (Lab)		
Course Code	CHIR12	No. of Credits	2
Course Code of Pre-requisite subject(s)	Nil		
Session	July 2021	Section	B
Name of Faculty	Dr. Deepa Oberoi	Department	Chemistry
Official Email	<a href="mailto:doberoi@nitt.edu">doberoi@nitt.edu</a>	Telephone No.	+91-9639336444
Name of Course Coordinator(s) (if, applicable)	Dr. Deepa Oberoi		
Official E-mail	<a href="mailto:doberoi@nitt.edu">doberoi@nitt.edu</a>	Telephone No.	+91-9639336444
Course Type (please tick appropriately)	<input checked="" type="checkbox"/> Core course <input type="checkbox"/> Elective course		
<b>Syllabus (approved in BoS)</b>			
<b>LIST OF EXPERIMENTS</b> <ol style="list-style-type: none"><li>1. Estimation of carbonate, non-carbonate and total hardness in the given water sample.</li><li>2. Estimation of dissolved oxygen in the given water sample.</li><li>3. Determination of the percentage of Fe in the given steel sample.</li><li>4. Estimation of Fe<sup>3+</sup> by spectrophotometer.</li><li>5. Corrosion rate by polarization technique</li><li>6. Conductometric titration</li><li>7. Potentiometric titration</li><li>8. pH-metric titration</li><li>9. Percentage purity of bleaching powder</li><li>10. Determination of molecular weight of the polymer by Viscometry</li><li>11. Study of three component system.</li><li>12. Demonstration experiments using Advanced Spectroscopic Techniques, (UV-Vis, FTIR, Raman)</li></ol>			
<b>Reference Books</b> <ol style="list-style-type: none"><li>1. Laboratory Manual, Department of Chemistry, National Institute of Technology, Tiruchirappalli.</li><li>2. S.K. Bhasin, S. Rani, Laboratory Manual on Engineering Chemistry, Dhanpat Rai Publishing Company, New Delhi, 2011.</li><li>3. Virtual Lab-Online platform for Laboratory experiments</li></ol>			
<b>COURSE OBJECTIVES</b>			



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  $\text{Fe}^{3+}$  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"> <li>The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering.</li> <li>The students will learn how to estimate various components from the corresponding bulk mixture</li> </ul>	1, 4, 9, 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**

( Add more

rows)

S.No	Week/Contact Hours	Topic	Mode of Delivery
1	I week of Jan 2022	Introduction of apparatus, General Instructions and guidelines regarding lab Safety and Conduct, Demonstration of experiments and Theory numerical elaboration	Teams and Virtual Lab
2	III week of Jan 2022		Teams and Virtual Lab
3	III week of Jan 2022 – I week of March	<ol style="list-style-type: none"> <li>1. Conductometric titration.</li> <li>2. Potentiometric titration.</li> <li>3. pH-metric titration.</li> <li>4. Percentage purity of bleaching powder.</li> <li>5. Determination of molecular weight of the polymer by Viscometry.</li> <li>6. Estimation of carbonate, non-carbonate and total hardness in the given water</li> </ol>	Teams and Virtual Lab and other online modes



## NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

		<p>sample.</p> <p>7. Estimation of dissolved oxygen in the given water sample.</p> <p>8. Determination of the percentage of Fe in the given steel sample.</p> <p>9. Estimation of <math>\text{Fe}^{3+}</math> by spectrophotometer.</p> <p>10. Corrosion rate by polarization technique.</p>		
4.	II week of March 2021	Compensatory lab Test	”	
<b>COURSE ASSESSMENT METHODS</b> (shall range from 4 to 6)				
S.No	Mode of Assessment	Week/Date	Duration	% Weightage
<b>Practical</b>				
1	Assessment 1 (based on individual experiments done during online lab sessions)	I week of January to I week of March	3 h/week	40
2	Assessment II (Written/ MCQ Test)	I week of January to I week of March	1 hour	30
3	Final Assessment	II week of March	3 hours	30
				<b>Total (100 Marks)</b>
<b>COURSE EXIT SURVEY</b> (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>				
<b><u>MODE OF CORRESPONDENCE (email/ phone etc)</u></b>				
E-mail: <a href="mailto:doberoi@nitt.edu">doberoi@nitt.edu</a> / Phone: +91-9639336444				
<b><u>COMPENSATION ASSESSMENT POLICY</u></b>				
For those students who missed assessment 1 due to genuine reasons, Compensation assessment will be conducted during III week of April.				
<b><u>ATTENDANCE POLICY</u></b> (A uniform attendance policy as specified below shall be followed)				
<ul style="list-style-type: none"> <li>➤ At least 75% attendance in each course is mandatory.</li> <li>➤ A maximum of 10% shall be allowed under On Duty (OD) category.</li> </ul>				



## NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

- 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  12/01/2022