



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY : KAKINADA
KAKINADA-533003, Andhra Pradesh, India

R-19 Syllabus for CE - JNTUK

I Year - II Semester		L	T	P	C
		0	0	2	1.5
ENGINEERING CHEMISTRY LAB (BS1211)					

Pre-requisite Course: Students should have basic understanding of Chemistry lab.

Course Description and Objectives: The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.

Course Outcomes:

Upon completion of the course, the student will be able to achieve the following outcomes.

CO	Course Outcomes	POs
1	Analyze the need, design and perform a set of experiments	5
2	Learn and apply basic techniques used in chemistry laboratory for volumetric analysis; redox titrations with different indicators; EDTA titrations	6
3	Enhance the thinking capabilities in the modern trends in Engineering & Technology	5
4	Expose to different methods of chemical analysis and use of some commonly employed instruments. Explain and demonstrate a few instrumental methods of chemical analysis	6
5	Function as a member of a team, communicate effectively and engage in further learning. Also, learn safety rules in the practice of laboratory investigations	6

SYLLABUS:

Introduction to Chemistry laboratory – Molarity, normality, primary, secondary standard solutions, volumetric titrations, quantitative analysis

1. Determination of HCl using standard Na_2CO_3 solution.
2. Determination of alkalinity of a sample containing Na_2CO_3 and NaOH.
3. Determination of Mn (II) using standard oxalic acid solution.



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4. Determination of ferrous iron using standard $K_2Cr_2O_7$ solution.
5. Determination of copper (II) using standard hypo solution.
6. Determination of temporary and permanent hardness of water using standard EDTA solution.
7. Determination of iron (III) by a colorimetric method.
8. Determination of the concentration of acetic acid using sodium hydroxide (pH-metry method).
9. Determination of the concentration of strong acid vs strong base (by conductometric method).
10. Determination of strong acid vs. strong base (by potentiometric method).
11. Determination of Mg^{+2} present in an antacid.
12. Determination of $CaCO_3$ present in an egg shell.
13. Estimation of Vitamin C.
14. Determination of phosphoric content in soft drinks.
15. Adsorption of acetic acid by charcoal.
16. Preparation of nylon-6, 6 and Bakelite (demonstration only).

Of the above experiments at-least 10 assessment experiments should be completed in a semester

REFERENCE BOOKS:

1. A Textbook of Quantitative Analysis, Arthur J. Vogel