

First Year 1st Semester Curriculum Structure for B.Tech. Course

Chemistry (Laboratory) (BSC102)	
Department:	Basic Science and Humanities
Program:	B. Tech.
Course Code:	BSC102
Title of Course:	Chemistry (Laboratory)
Year of Study:	First Year
Semester:	First
Contact Hours:	L-T-P: 0-0-3
Credits:	1.5
Type of course:	Laboratory
Pre-requisites Courses:	<ul style="list-style-type: none"> <input type="checkbox"/> Basic knowledge of Chemistry in Class- XI and XII level. <input type="checkbox"/> Basic concepts of qualitative and quantitative analysis <input type="checkbox"/> Basic knowledge of algebraic calculation and graph plot
Course Outcome (CO):	<p>CO1:Estimate rate constants of reactions from concentration of reactants/products as a function of time</p> <p>CO2:Measure molecular/system properties such as surface tension, viscosity,conductance of solutions, redox potentials, chloride content of water, etc.</p> <p>CO3:Synthesize a small drug molecule and analyze a salt sample</p> <p>CO4:Operate the instruments properly, record and interpret data and also, learn to work effectively in teams to accomplish the assigned responsibilities</p>

List of the Experiments

Choose any 12 experiments from the following list

Expt. No.	Experiment	Link for the experiment

1	Determination of the concentration of strong acid by standardised NaOH solution.	http://chemcollective.org/activities/autograded/124
2	Determination of the alkalinity present in water.	http://vlab.amrita.edu/?sub=2&brch=193&sim=1548&cnt=1
3	Determination of cell constant and conductance of solutions: Conductometric titration	http://vlab.amrita.edu/?sub=2&brch=193&sim=575&cnt=1
4	Determination of the pH of sample solutions by digital pH meter: pH metric titration	http://vlab.amrita.edu/?sub=2&brch=193&sim=575&cnt=1
5	Determination of surface tension	http://vlab.amrita.edu/?sub=2&brch=190&sim=339&cnt=1
6	Determination of viscosity	http://vlab.amrita.edu/?sub=2&brch=190&sim=339&cnt=1
7	Determination of chloride content of water	http://vlabs.iitb.ac.in/vlabs-dev/labs/nitk_labs/Environmental_Engineering_1/labs/determination-of-chloride-nitk/simulation.html
8	Determination of the partition coefficient of a substance between two immiscible liquids	
9	Determination of the rate constant of a reaction	
10	Thin layer chromatography	https://vlab.amrita.edu/?sub=3&brch=63&sim=154&cnt=2
11	Potentiometry - determination of redox potentials and emfs	https://vlab.amrita.edu/index.php?sub=2&brch=190&sim=361&cnt=4
12	Colligative properties using freezing point depression	<p>1. https://vlab.amrita.edu/index.php?sub=2&brch=190&sim=1545&cnt=4</p> <p>2. http://vlabs.iitb.ac.in/vlabs-dev/labs/nitk_labs/Environmental_Engineering_1/experiments/determination-of-chloride-nitk/simulation.html</p>
13	Ion exchange column for removal of hardness of water	
14	Adsorption of acetic acid by charcoal	
15	Saponification/acid value of an oil	
16	Chemical analysis of a salt	
17	Synthesis of a polymer/drug	
18	Chemical oscillations- Iodine clock reaction	
19	Lattice structures and packing of spheres	

20	Use of the capillary viscosimeters to the demonstrate of the isoelectric point as the pH of minimum viscosity for gelatin sols and/or coagulation of the white part of egg	
21	Determination of the hardness of water	http://vlab.amrita.edu/?sub=2&brch=193&sim=1548&cnt=1
22	Determination of dissolved oxygen present in a given water sample	
23	Determination of the Chemical Oxygen Demand	http://vlab.amrita.edu/?sub=2&brch=193&sim=1548&cnt=1

Reference Book: An Advanced Course in Practical Chemistry by NadMahapatra&Ghosal