

<b>BS Chemistry Semester-I</b>					
<b>Programme</b>	<b>BS Chemistry</b>	<b>Course Code</b>	<b>Chem-102</b>	<b>Credit Hour</b>	<b>1</b>
<b>Course Title</b>	<b>Physical Chemistry Lab</b>		<b>Course Type</b>	<b>Major</b>	
<b>Course Introduction</b>					
<p>The course is organized to provide an adequate knowledge about basic concepts in Physical chemistry including thermodynamics, chemical kinetics etc.  Here is a brief description of course outlines.  Preparation of standard molar, molal and percentage solutions.  Standardization of secondary standard acids and bases solutions by volumetric methods.  Determination of surface tension of a liquid.  Determination of parachor value of given liquid.  Determination of viscosity of given liquid.  Determination of rheochor value of given liquid.  Determination of refractive index of given liquid.  Determination of molar refractivity of given liquid.  Determination of percentage composition by refractive index method.</p>					
<b>Learning Outcomes</b>					
<p>On the completion of the course, the students will:</p> <ol style="list-style-type: none"> <li>1. To introduce students about the key concepts of physical chemistry</li> <li>2. To introduce about thermodynamics, chemical kinetics etc.</li> </ol>					
<b>Course Content</b>				<b>Assignments/Readings</b>	
<b>Week 1</b>	Preparation of standard molar, molal and percentage solutions				
	Continued				
<b>Week 2</b>	Standardization of secondary standard acids and bases solutions by volumetric methods.				
	Continued				
<b>Week 3</b>	Continued				
	Determination of surface tension of a liquid.				
<b>Week 4</b>	Continued				
	Continued				
<b>Week 5</b>	Determination of parachor value of given liquid				
	Continued				
<b>Week 6</b>	Continued				
	Determination of viscosity of given liquid				
<b>Week 7</b>	Continued				
	Continued				

<b>Week 8</b>	<b>Mid Term Examinations</b>	
<b>Week 9</b>	Determination of rheochor value of given liquid	
	Continued	
<b>Week 10</b>	Continued	
	Continued	
<b>Week 11</b>	Determination of refractive index of given liquid.	
	Continued	
<b>Week 12</b>	Continued	
	Continued	
<b>Week 13</b>	Determination of molar refractivity of given liquid.	
	Continued	
<b>Week 14</b>	Determination of percentage composition by refractive index method	
	Continued	
<b>Week 15</b>	Continued	
	Continued	
<b>Week 16</b>	<b>Final Term Examinations</b>	
<b>Textbooks and Reading Material</b>		
<ol style="list-style-type: none"> <li>1. Garland, C. W., Nibler, J. W., Shoemaker, D. P., Experiments in Physical Chemistry, 6th ed., WCB McGraw-Hill, 1996.</li> <li>2. Singh, A., Advanced Experimental Physical Chemistry, Campus Books International, 2007.</li> <li>3. Daniels F., Experimental Physical Chemistry, 7<sup>th</sup> ed., McGraw-Hill College, 1970.</li> <li>4. Matthews, G. P., Experimental Physical Chemistry, Oxford University Press, 1986.</li> <li>5. Bhatti, H. N. and Farooqi, Z. H., Experimental Physical Chemistry for Graduate and Postgraduate Students, Revised ed., Caravan Book House, Lahore, 2014.</li> </ol>		
<b>Teaching Learning Strategies</b>		
<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Group Discussion</li> <li>3. Laboratory work</li> <li>4. Seminar/ Workshop</li> </ol>		
<b>Assignments: Types and Number with Calendar</b>		
<ol style="list-style-type: none"> <li>1. Lab activities and practical performance from week 1 to week 16.</li> <li>2. Literature review based assignment relevant to the course will also be given during the course.</li> </ol>		

<b>Assessment</b>			
<b>Sr. No.</b>	<b>Elements</b>	<b>Weightage</b>	<b>Details</b>
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.