

## ENGINEERING PHYSICS AND CHEMISTRY LABORATORY

<b>I Semester: CSE / IT / ECE / EEE</b>								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P		C	CIA	SEE
AHS104	Foundation	-	-	3	2	30	70	100
<b>Contact Classes: Nil</b>	<b>Tutorial Classes: Nil</b>	<b>Practical Classes: 45</b>			<b>Total Classes: 45</b>			
<p><b>OBJECTIVES:</b>  <b>The course should enable the students to:</b>                      I. Upgrade practical knowledge in optics.                      II. Enlighten the real time application of electromagnetic theory.                      III. To appreciate the need and importance of engineering chemistry for industrial and domestic use.                      IV. To impart knowledge of chemical technology and its applications.</p> <p><b>COURSE LEARNING OUTCOMES (CLOs):</b>  <b>The students should enable to:</b>                      1. Examine the behavior of LED by studying its V-I characteristics                      2. Examine the magnetic field produced in a coil to verify the Tangent's law.                      3. Verify L-I characteristics of a solar cell.                      4. Evaluate time constant of a RC circuit.                      5. Determine the numerical aperture of an optical fiber.                      6. Evaluate the energy gap of a semiconductor diode.                      7. Preparation of aspirin and thiokol rubber.                      8. Conductometric titration of strong acid Vs strong base.                      9. Potentiometric titration of strong acid Vs strong base.                      10. Determination of viscosity and surface tension of liquids.                      11. Estimation of hardness of water by EDTA method.                      12. Determination of <math>p^H</math> of solutions by <math>p^H</math> meter.                      13. Examine threshold frequency by using LCR circuit.                      14. Adsorption of acetic acid on charcoal</p>								
<b>LIST OF EXPERIMENTS</b>								
<b>Week-1</b>	<b>INTRODUCTION TO PHYSICS AND CHEMISTRY LABORATORY</b>							
Do's and Don'ts in physics and chemistry laboratory. Precautions to be taken in laboratory.								
<b>Week-2</b>	<b>LIGHT EMITTING DIODE</b>							
Studying V-I characteristics of LED								
<b>Week-3</b>	<b>STEWART GEE'S APPARATUS</b>							
Magnetic field along the axis of current carrying coil-Stewart and Gee's method.								
<b>Week-4</b>	<b>STUDY OF CHARACTERISTICS OF SOLAR CELL</b>							

Studying L-I characteristics of Solar cell	
<b>Week-5</b>	<b>TIME CONSTANT OF RC CIRCUIT</b>
Evaluate time constant of a RC circuit.	
<b>Week-6</b>	<b>OPTICAL FIBER</b>
Evaluation of numerical aperture of a given optical fiber.	
<b>Week-7</b>	<b>ENERGY GAP OF A SEMICONDUCTOR DIODE</b>
Determination of energy gap of a semiconductor diode.	
<b>Week-8</b>	<b>PREPARATIONS OF ORGANIC COMPOUNDS</b>
Preparation of aspirin and thiokol rubber	
<b>Week-9</b>	<b>CONDUCTOMETRIC TITRATIONS</b>
Conductometric titration of strong acid Vs strong base	
<b>Week-10</b>	<b>POTENTIOMETRIC TITRATIONS</b>
Potentiometric titration of strong acid Vs strong base	
<b>Week-11</b>	<b>PHYSICAL PROPERTIES</b>
Determination of viscosity and surface tension of liquids	
<b>Week-12</b>	<b>VOLUMETRIC ANALYSIS</b>
Estimation of hardness of water by EDTA method	
<b>Week-13</b>	<b>PHYSICAL PROPERTIES</b>
Determination of $p^H$ of solutions by $p^H$ meter	
<b>Text Books:</b>	
<ol style="list-style-type: none"> <li>1. C. L. Arora, "Practical Physics", S. Chand &amp; Co., New Delhi, 3<sup>rd</sup> Edition, 2012.</li> <li>2. Vogel's, "Quantitative Chemical Analysis", Prentice Hall, 6<sup>th</sup> Edition, 2000.</li> </ol>	
<b>Reference Books:</b>	
<ol style="list-style-type: none"> <li>1. C.F. Coombs, "Basic Electronic Instrument Handbook", McGraw-Hill Book Co., 1972.</li> <li>2. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya Publications.</li> </ol>	
<b>Web References :</b>	
<ol style="list-style-type: none"> <li>1. <a href="http://www.iare.ac.in">http://www.iare.ac.in</a></li> <li>2. <a href="http://physics.nist.gov/">http://physics.nist.gov/</a></li> <li>3. <a href="https://en.wikipedia.org/wiki/Chemistry">https://en.wikipedia.org/wiki/Chemistry</a></li> </ol>	