

Course (Unit) Title	<b>Physical, Inorganic and Organic Laboratory III</b>
Course (Unit) Code	CHE304G3
Credit Value	03 (120 hours of practical work)
Notional Hours	30 hours of independent learning
Objective/s	<ul style="list-style-type: none"> <li>➤ Develop practical skills in <ul style="list-style-type: none"> <li>• chemical kinetics and surface Chemistry</li> <li>• classical and instrumental analytical techniques</li> <li>• qualitative and quantitative analysis</li> <li>• multi-step organic syntheses</li> </ul> </li> </ul>
Intended Learning Outcomes	<ul style="list-style-type: none"> <li>• Determine the order of the reaction, rate constant, and activation energy</li> <li>• Calculate the partition co-efficient and adsorption co-efficient</li> <li>• Perform simple experiments using different analytical techniques</li> <li>• Identify the simple anions and cations present in a given double salt</li> <li>• Synthesize simple inorganic compounds</li> <li>• Synthesize organic compounds using multi-steps</li> </ul>
Detailed syllabus	<p>Physical Chemistry:</p> <ul style="list-style-type: none"> <li>• Estimation of random errors in calculated physical quantities</li> <li>• Determination of order, rate constant and activation energy of reactions</li> <li>• Determination of partition coefficient and adsorption coefficient</li> <li>• Simple experiments using analytical techniques, such as titration conductometry, potentiometry, colorimetry, polarimetry, and spectrometry.</li> </ul> <p>Inorganic Chemistry:</p> <ul style="list-style-type: none"> <li>• Simple experiments using thin layer chromatography (TLC), paper chromatography, gravimetry and flame photometry.</li> <li>• Elucidation of the formulae of simple inorganic double salts by qualitative analysis.</li> <li>• Synthesis of simple inorganic compounds</li> </ul> <p>Organic synthesis:</p> <ul style="list-style-type: none"> <li>• Multi-step syntheses of organic compounds</li> </ul>
Teaching and Learning Methods / Activities	Laboratory demonstrations and hands on experiments and theory assignments
Evaluation	<p>In course examination</p> <ul style="list-style-type: none"> <li>• Theory 10 %</li> <li>• Practical 20 %</li> </ul>

	<p>End of course examination: Examination I &amp; Examination II 70 %</p> <p>Examination I (Physical Chemistry)</p> <p>Examination II (Inorganic &amp; Organic Chemistry)</p>
<p>Recommended References</p>	<ul style="list-style-type: none"> <li>• Vogel, A. I., Text book of Qualitative Inorganic Analysis, Longman Scientific 2004.</li> <li>• Denney, R. C., Thomas, M. J. K., David J. B., and Mendham J., Text Book of Quantitative Inorganic Analysis, 6th Edition, Longman Scientific 2005.</li> <li>• Yadav, J. B., Advanced Physical Chemistry Laboratory, Krishna Prakashan Media (Pvt) Ltd, 30th Edition, 2015</li> <li>• Vishwanathan, B., and Raghavan, P. S., Practical Physical Chemistry, Viva Books , 1st Edition, 2012</li> <li>• Athawale, V., D., Experimental Physical Chemistry, New Age International Private Limited, 1st Edition, 2001</li> </ul>