Practical Plan

Name of the college: Government college of Arts Science and commerce Sanquelim Goa.		
Name of Faculty: Ms. Ankita M. Vernekar	**Subject:** Chemistry	
Paper code: CHC–241	**Program: S.Y.B. Sc**	**Division: A**
Academic year: 2024 - 2025	**Semester: III**	**Total Practical's/Labs: 12 (60 hours)**
Credits: 2		

Course Objectives:- **To understand and develop the problem solving skills and hands on experience in plotting graph, using software.**

Expected Course Outcome:

1. **To plot various mathematical functions.**
2. **To solve numerical problems in chemistry.**
3. **To apply computer software's for data analysis.**
4. **To explain the types of orbitals and their shapes.**
5. **To identify order of the reaction by graphical method.**
6. **To solve numericals from the given data.**

Student Learning Outcome:

1. **To plot various mathematical functions.**
2. **To solve numerical problems in chemistry.**
3. **To apply computer software's for data analysis.**
4. **To explain the types of orbitals and their shapes.**
5. **To identify order of the reaction by graphical method.**
6. **To solve numericals from the given data.**

Month	Practicals/Labs Scheduled Date	No. of Practical's/Labs planned	List of Experiments	Reference books
June	28/06/2024-29/06/2024		Practical's not started	-
July	01/07/2024-06/07/2024		Practicals not started	
July	08/07/2024-13/07/2024	1	Numerical problems in logarithmic functions.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1st edition.
July	15/07/2024-20/07/2024	1	Obtain Mean, Median, Standard deviation from the given data.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1st edition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
July	22/07/2024-27/07/2024	1	To solve and plot the integrated rate law equations fora. Zeroth order b. First order c. Second order	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1st edition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
July /August	29/07/2024-03/08/2024	1	To plot a function and its derivative using Henderson-Hasselbalch equation.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1st edition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
August	05/08/2024-10/08/2024	1	To find the critical points in a function using Henderson-Hasselbalch equation and characterize them using a. Graphical method b. Derivative method	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1st edition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.

August	12/08/2024-17/08/2024	1	To find the critical points in a function using Henderson-Hasselbalch equation and characterize them using a. Graphical method b. Derivative method.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1stedition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
August	19/08/2024-24/08/2024	1	Problem solving on differentiation, partial differentiation.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1stedition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
August	26/08/2024-31/08/2024	1	Problem solving on maxima and minima.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1stedition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
September	02/09/2024-07/09/2024	**CHATURTHI BREAK**		
September	09/09/2024-14/09/2024	1	Demonstration of MS excel for calculations and graphical representations for above experiments 1-6.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1stedition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
September	16/09/2024-21/09/2024	1	Plotting atomic orbitals and finding how shapes of orbitals emerge.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1stedition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
September	23/09/2024-28/09/2024	**1**	Graphical representation on Cartesian and spherical polar coordinate.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1stedition.

				2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
September/October	30/09/2024-05/10/2024	1	Demonstration of use of Chemdraw/ Chemsketch for drawing chemical structures.	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1st edition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
October	07/10/2024-12/10/2024		To find the critical points in a radial distribution function for 2s orbital and characterize them using a. Graphical method b. Derivative method	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1st edition. 2) R. G. Mortimer, Mathematics for Physical Chemistry, 4th edition, Academic Press, 2013, USA.
October	14/10/2024-19/10/2024		To find the critical points in a radial distribution function for 2s orbital and characterize them using a. Graphical method b. Derivative method	1) D. A. McQuarrie and J. D. Simon, Physical chemistry a molecular approach, Viva Books Pvt Ltd, 2012, Mumbai 1st edition.
October	21/10/2024-22/10/2024		Exam	

***Assessment Rubrics**

Component	
ISA 1	5
ISA 2	
Practical	40
Project	-
Semester End Exam	20