

Liverpool John Moores University

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Title: FUNDAMENTALS OF PHYSICAL AND INORGANIC CHEMISTRY
Status: Definitive
Code: **3404FNDSCI** (121969)
Version Start Date: 01-08-2021

Owning School/Faculty: Pharmacy & Biomolecular Sciences
Teaching School/Faculty: Pharmacy & Biomolecular Sciences

Team	Leader
Barry Nicholls	Y
Linda Seton	
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Academic Level: FHEQ3 **Credit Value:** 20 **Total Delivered Hours:** 60
Total Learning Hours: 200 **Private Study:** 140

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	30
Online	10
Practical	12
Workshop	6

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Examination	60	2
Report	Report	Laboratory report	40	

Aims

This module provides students with an introductory understanding of thermodynamics, kinetics and the states of matter. It also serves to introduce concepts associated with simple molecular orbital theory, radioactivity, oxidation-states/redox chemistry and the properties and chemistry of selected main group elements.

Learning Outcomes

After completing the module the student should be able to:

- 1 relate the rates of reaction to rate laws and to calculate the rate constant of a selected reaction
- 2 describe how temperature, concentration and catalysts affect reaction rate
- 3 distinguish between the bulk structure of solids, liquids and gases, and apply the appropriate gas laws to show the relationships between pressure, volume and temperature of gases
- 4 calculate the bond-order of diatomic molecules
- 5 use half equations to underpin full redox reactions
- 6 predict or identify the chemistry of selected main group elements.
- 7 calculate various parameters related to the mole concept

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Examination	1	2	3	4	5	6	7
Laboratory report	1	2	5	6			

Outline Syllabus

Transition-state theory, rate of reactions, rate laws, reaction order and half-life. Collision theory and the Arrhenius equation. Effect of catalysts on rate.

Phases and phase diagrams, Properties of gases and the gas laws.

Spontaneous reactions, free energy, enthalpy and entropy. Chemical equilibrium.

Molecular orbital diagrams of diatomic molecules, bond order/length/strength. Unstable nuclei, alpha, beta and gamma emission. Redox chemistry and half-equations. Chemistry of the elements of a selected main group.

The mole and related calculations.

Learning Activities

Module is delivered by combination of lectures, practicals, workshops and online

learning.

Notes

This module provides an introduction to key concepts of physical and inorganic chemistry at foundation level.