Understanding Materials and Mixtures

Module Information

2022.01, Approved

Summary Information

Module Code	5004APCHEM
Formal Module Title	Understanding Materials and Mixtures
Owning School	Pharmacy & Biomolecular Sciences
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Pharmacy & Biomolecular Sciences

Learning Methods

Learning Method Type	Hours
Lecture	55
Tutorial	5

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

Aims	The course aims at providing an overview of the relationships between solid state structures and material properties. Different classes of materials will be covered to exemplify this concept. Techniques to characterise materials (and their properties) will be introduced. Emphasis will be placed on the synthetic approaches to inorganic, organic and composite materials.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Discuss and explain the concepts of materials in the context of established and emerging technologies.
MLO2	2	Recognise the molecular bases of bulk physical properties of materials.
MLO3	3	Recognise and identify the main classes of materials on the basis of their chemical structure.
MLO4	4	Select and apply suitable techniques for the characterisation/analysis of modern materials.

Module Content

Outline Syllabus	Introduction to Materials Chemistry. Solid state. Structure and defects of materials. Molecular, ionic, covalent, metallic solids. Crystalline and amorphous materials. Classes of Materials. Metals. Semiconductors. Ceramics and glasses. Polymers. Self-assembled materials. Composites. Biomaterials. Dispersed systems. Properties of MaterialsBulk properties of materials and their relevance for technology. Thermal, optical, electronic, mechanical, magnetic properties. Computational approaches for predicting materials properties. Manufacture and Characterisation of MaterialsApplication of microscopy (TEM, SEM), X-ray absorption, tomography, rheology to material characterisation. Industrial production of materials.
Module Overview	With the essential nature of materials in the modern world, it is important to understand the chemistry of how these are produced and what the relationship is between chemicals and the resultant material properties. This module provides you with an overview of the relationships between solid state structures and material properties for a range of classes of materials. You will be introduced to techniques for the characterisation of materials (and their properties) and emphasis will be placed on the synthetic approaches to inorganic, organic and composite materials.
Additional Information	With the essential nature of materials in the modern world, it is important to understand the chemistry of how these are produced and what the relationship is between chemicals and the resultant material properties. This course provides an overview of the relationships between solid state structures and material properties for a range of classes of materials. Techniques for characterisation of materials (and their properties) will be introduced. Emphasis will be placed on the synthetic approaches to inorganic, organic and composite materials.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	60	2	MLO1, MLO2, MLO3
Report	Presentation	40	0	MLO2, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings

Francesca Giuntini	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings