

College: Science and Engineering

Department: Biological Science

Programme: Biochemistry

Course Code: BCH 416

Units: 2

Course Title: Bioinorganic Chemistry

Course Lecturer: Mrs T.D. Olaolu

Semester: Alpha

Time of Lecture:

Location:

Brief Overview

Bioinorganic Chemistry will expose the students to the basic trace elements and metals in biological system. This course also explains in detail metalloproteins and their roles in biological systems.

A. Course Objective/ Goals

Students should be able to:

- Enumerate the basic trace elements in biological systems and explain their roles
- Explain in detail the roles of metals in biological processes
- Define metalloproteins and describe their function in biological systems

B. Method of Lecture Delivery / Teaching: Electronic media and face to face lecture method

C. Course Outline

Module 1- Trace elements in biological systems, incorporation and nitrogen and sulphur

Module 2- Metals in biological processes: Sodium

Module 3- Metals in biological processes: Potassium

Module 4- Metals in biological processes: Magnesium

Module 5- Metals in biological processes: Calcium

Module 6- Metalloproteins containing zinc

Module 7- Metalloproteins containing iron

Module 8- Metalloproteins containing cobalt

Module 9- Metalloproteins containing copper

Module 10- Metalloproteins containing Molybdenum

Module 11/12- Laboratory sessions

Module 13- Revision

D. Tutorials : would be given where and when needed

E. Structure of Programme/ Method of Grading

10 weeks for Lectures.

2 weeks for laboratory sessions

1 week for revision

Continuous assessment of students' performance would be carried out on a weekly basis.

Mid semester exams – 20%

Omega Semester exams – 70%

Laboratory sessions – 10%

F. Ground Rules and Regulation

All classroom and Laboratory rules would be strictly adhered to.

G. Topic for Term Paper/ Assignment

- The role of metals in biological processes

H. Alignment with Goals and Vision of Landmark University

I. The motto of Landmark University (Breaking new grounds) would be further strengthened by exposing the students to classroom lectures and laboratory sessions on Bioinorganic chemistry.

J. Contemporary Issues / Industry Relevance

Metalloproteins could be engineered into food products and commercialized for total health and wellbeing of humans, they could also be relevant in pharmaceutical and biotechnology industries.

K. Recommended Reading:

- Robert Crichton (2001) Inorganic Biochemistry of Iron Metabolism: From Molecular Mechanisms to Clinical Consequences. 2nd edition. John Wiley & Sons Ltd. Canada.
- Murray, R.K., Granner, D.K., Mayes, P. A. and Rodwell, V. W. (2003) twenty-sixth edition. McGraw-Hill companies limited.
- Nelson, D. L. and Cox, M. M. (2004) Lehninger Principles of Biochemistry. 4th edition. Worth Publishers, New York.
- Reginald H. Garrett and Charles M. Grisham (2007) Biochemistry third edition. Thomson Learning, Inc.