Chemistry and Life 560 Chem. (2+0)

***Catalogue Description**: An introduction to the role of inorganic chemistry in bio – systems. Environmental pollution especially air pollution. Peaceful applications of nuclear energy particularly in medical fields. Radioactive pollution, damage and methods of protection.*

Course Objectives

This course was designed to offer students a deeper understanding of inorganic chemistry in life. They will be introduced to the essentials of life, air and water, with an overview of pollution in the latter two.

A better understanding of the chemistry of radioactive elements, and how they are involved in pollution, and in peaceful applications in medicine will be covered.

A critical review of the recent research in desalination is a basic skill developing activity in this course.

Learning Outcomes

On completion of this course students will be able to:

- Build upon knowledge of the chemistry of elements in bio-systems.
- Provide a deeper understanding of the chemistry of air and water.
- Critically evaluate aspects of recent research in desalination methods and processes
- Gain a better understanding of the role of radioactive elements in medicine.

Learning Content and Delivery

- Edible chemicals; minerals and metals. *Lectures*
- Metals in organic systems; hemoglobin, enzymes, ..etc. *Lectures*.
- Air and air pollution. *Lectures*
- Water and natural contaminants (*Lectures*), desalination (*critical review*[1])
- Radioactive chemistry and pollution. *Lectures*
- Nuclear energy in medical fields. *Independent reading*[2]

[1]PPT on how to write a critical paper review, [2] Course pack

Marking scheme

- Midterm exam 20%.
- Research paper critical review: 20%: Recent research in desalination.
- Oral discussion 20% : radioactive elements in medicine.
- Final Examination: 40%

Course Calendar

Activity	Date
Midterm exam	Week 11
Critical review document and presentation	Week 18
Oral discussion	Week 18
Final exam	Week 21

Reading list

1. J. Hill and D. Kolb, Chemistry for Changing Times, 10th edition, Pearson.

2. J. Hill, S. Baum and R. Scott-Ennis, Chemistry and Life, 6th edition, Prentice Hall.

3. P. and R. Wilkins, Inorganic Chemistry in Biology, Oxford Science Publications.

Suggested links on:

Writing in Chemistry

http://chemistry.kenyon.edu/getzler/08F-CourseFiles/BriefGuideWritingChemistry.pdf

Writing a critical review

https://student.unsw.edu.au/writing-critical-review

http://wwwdocs.fce.unsw.edu.au/fce/EDU/eduwritingcritreview.pdf

http://twp.duke.edu/uploads/media_items/scientificarticlereview.original.pdf

Desalination

http://www.water.ca.gov/pubs/surfacewater/abcs_of_desalting/abcs_of_desalting.pdf

http://www.sawea.org/pdf/waterarabia2013/Session_A/Desalination_In_Saudi_Arabia_An_Overview1_Dr_Nada.pdf