

CHMD39H3S Bioinorganic Chemistry

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Recommended Text: 'Bioinorganic Chemistry: Inorganic Elements on the Chemistry of Life' - W.Kaim and B. Schewederski, John Wiley and sons, 1996

References: 'Principles of Bioinorganic Chemistry' - S.J. Lippard and J.M. Berg, University science books, 1994.
'Inorganic Chemistry' - Langford, D.F. Shriver and P.W. Atkins, Oxford University Press, 1995.
'The Biological Chemistry of the Elements: The Inorganic Chemistry of Life' - J.J.R. Frausto da Silva and J.R.P. Williams, Oxford University Press, 1991.
'The Natural Selection of the Chemical Elements' - J.J.R Frausto da Silva and J.R.P Williams, Oxford University Press, 1996.

Marking Scheme: 2 Assignments - 5 % each
Mid Term Test 1 on February 14, 2006, during class hours - 20%
Mid Term Test 2 on March 9, 2006 Friday 12:00-2:00PM - 20%
1 term Paper - 15 % or oral presentation
Final Examination - 35%

Office hours: Monday 11:30AM-12:30PM
Tuesday 12:30AM-1:30PM

Course Outline: see next page.

Feb 17 3-5: A 215
Mar 10 3-5 H215

COURSE OUTLINE:

1. Introduction and background.
 - Evolution and Bioinorganic Chemistry.
2. Metalloproteins:
 - a) Metalloenzymes and cofactors (Co, Ni, Fe, Zn, Cu)
 - Regulation of Environmental CO and CO₂ levels by Metalloenzymes.
 - b) Respiratory Proteins (Fe and Cu); hemoglobin and myoglobin, hemocyanin and hemerythrin.
 - c) e⁻ transport proteins; blue copper proteins, Fe-S proteins and cytochromes.
3. Photosynthesis (Mg and Mn).
4. NMR and EPR in Bioinorganic Chemistry.
5. Medicinal Inorganic Chemistry.
6. Current Topics in Environmental Bioinorganic Chemistry:
 - Microbes, minerals and metal isotopes. Building a Bioinorganic Bridge.
 - Bioinorganic properties as Analytical tools to monitor environmental Bioinorganic chemistry.