**Syllabus CHEM 395/455 Spring Semester 2013**

# Metals in Health and Environment

Instructor: Dr. Martina Schmeling; Flanner Hall 408, phone: 508-3124, e-mail: mschmel@luc.edu.

Description: The course will revolve around metals commonly found in the environment and considered as detrimental to both the environmental system and the human health. We will start with reviewing the environmental system in general and how metals are transported and potentially transformed in biochemically active forms in this system. The next section will introduce the parts of the human body system most influenced by metals. Once we are familiar with these two basic systems we will learn about the history, occurrence, and chemistry of selected metals and how they impact the environment and human body.

*Selected Topics:*

Environmental System:

- General Introduction

- Compartments: lithosphere, hydrosphere and atmosphere

- Transport and cycling of material through the environmental compartments

Human Body System:

- General Introduction

- Pulmonary and cardiovascular systems

- Metabolic and visual system

- Transport and processing of material within the described systems

Metals:

- Light metals Al and Be – occurrence, chemistry and toxicity

- Transition metals: Cr, Ni, Ag, Cd, Hg – occurrence, chemistry and toxicity

- Metalloids: As and Bi – occurrence, chemistry and toxicity

Class procedure: Classes are meeting Tuesdays and Thursdays from 8:30-9:45am in Flanner Hall 105. Two in-class exams are scheduled for the semester (February 21 and April 9). The average of the two exams will be counting 40% of the total grade. There will be no make-up exams. A midterm research paper (due on March 21, 2013) on a given topic will count 20% of the grade and the final exam paper on a given topic will also count 40% of the grade. The final exam paper will be due on April 26, 2013. Details regarding all exams will be announced in class. Office hours are scheduled for Monday and Wednesday from 9:30am to 10:30am or by appointment. Course material will be available on-line via blackboard.

Grading: Average of the two in-class exams 40%

Midterm paper (due March 21, 2013) 20%

Final exam paper (due April 26, 2013) 40%

Grading Scale: A: 93% -100% A-: 87- 92%

B+: 83-86% B: 78-82% B-: 74–77%

C+: 69-73% C: 65-68% C-: 61-64%

D+: 56-60% D: 50-55%

F: 0 to 49%