

**Indiana University, Spring 2022**  
**1/10/2022-5/6/2022**

**Course Number and Title**

CHEM-T510 Inorganic Chemistry

**Credit Hours**

3.0

**Professor Name**

Dr. Kagna Ouch Sampson, [kosampso@iu.edu](mailto:kosampso@iu.edu)

**Location**

Online

**Course Description**

Chemistry T-510 Inorganic chemistry is a broad field and could not possibly explore all the potential topics in one semester. In this course, you will be introduced to the fundamental concepts and theories, apply them to understand, and explain the role of inorganic chemistry including descriptive chemistry, bonding in coordination chemistry, organometallic chemistry, special topics in inorganic chemistry and metal ions in a biological inorganic chemistry. In the last weeks of the semester, students will demonstrate their knowledge by analyzing and discussing research papers in these topics and presenting to their colleagues.

**Learning Outcomes**

Alignment of Program Level Objectives (PLOs) to Course Level Objectives (CLOs)

Inorganic Chemistry supports the Principles of Graduate Education. There are some clear connections between the course learning outcomes and graduate principles:

1. PLO: Expertise in Chemistry. Students will:
  - a. Accurately complete individual assignments that investigate exceptions and expansions of inorganic chemistry principles.
  - b. Discuss the theories of inorganic chemistry, specifically how they apply to the behavior of metal ions in biological or material systems.
2. PLO: Effective oral and written scientific communication skills. Students will:
  - a. Communicate the scientific principles of research by researching and creating a (Kaltura) video presentation on their literature research review.
3. PLO: Ability to analyze data critically and to design experiments independently. Students will:
  - a. Find articles using IUCAT (IU's Library database) and share their article in their discussion groups.
  - b. Apply a scientific methodological approach to review their article, and post to their group discussion.

4. PLO: Application of the impact of chemistry on the society. Students will:
  - a. Apply their knowledge inorganic materials by participating in discussions.
  - b. Demonstrate awareness of best practices in research by conducting in a literature review.

### Course Contents

This course has been intentionally divided into four subjects, each covered by a different textbook.

1. Coordination chemistry
2. Main Group chemistry
3. Organometallic chemistry
4. Bioinorganic chemistry

### Learning Materials

#### Required Text

1. Bertini, Gray, Steifel, Valentine, Biological Inorganic Chemistry Structure & Reactivity, University Science Books **2007**
2. Huheey, J. E., Keiter, E.A., Keiter, R.L., Inorganic Chemistry: Principles of Structure and Reactivity, Harper Collins College Publishers **1993**

#### Recommended Inorganic Chemistry Textbooks for Further Reading

3. Shriver and Atkins, Inorganic Chemistry, Fifth Edition, W.H. Freeman and Co., New York, 2010
4. Miessler, G.L., Fischer, P.J. and Tarr, D.A. Inorganic Chemistry, Fifth Edition, Pearson Education, Inc. 2014
5. Rodgers, G.E., Descriptive Inorganic, Coordination, and Solid-State Chemistry, Third Edition, Brooks/Cole, Cengage Learning 2012

### Assessment

Assignment Type	Points	Weight %
3 Exams	100	40% of total grade
Quizzes	10	10% of total grade
Discussions	15	15% of total grade
Assignments	15	15% of total grade
Research Literature Presentation	200	20% Of total grade