CHEM 457- INORGANIC CHEMISTRY
SPRING 2011
Instructor: Dr. Svilen Bobev
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Class Time: Tuesday and Thursday 11:00 – 12:15 pm, Brown Lab 206
Office Hours: Anytime really, but official office hours will be Mon and Wed, 1 to 2 pm

Text: Shriver and Atkins’ Inorganic Chemistry – 4th or 5th Ed is required (ISBN 1-4292-1820-7). The accompanying solution manual (ISBN 1-4292-5255-3) is highly recommended. This text will probably be loosely followed; there might be some aspects in which I will not follow it at all. Any comprehensive inorganic textbook (advanced level) would be suitable for background reading – Cotton and Wilkinson (Advanced Inorganic Chemistry); Huheey (Inorganic Chemistry: Principles of Structure and Reactivity); etc. Recommended references for symmetry and its applications in chemistry - Carter (Molecular Symmetry and Group Theory) and Cotton (Chemical Applications of Group Theory). There are many others that you might find useful.

Exams: In class, tentatively scheduled
Exam no.1   February 24 (THR)
Exam no.2   April 7 (THR)
Exam no.3   May 3 (TUE)
Final    May 19-25 (tba)

Grading: Each exam will be worth 25% of the grade. Quizzes and graded homework that might be assigned will be counted as part of the grade of the exam covering the same material.

Learning goals: http://www.udel.edu/chem/goals.html

PROTOCOL
• Class attendance is expected.
• Only in the case of ‘excused absences’ as defined by the University handbook, there will be an allowed ‘make-up’ exam or quiz. See me for your excuse, if possible, before missing an exam or as soon as possible afterwards. Unexcused absences will be assigned a grade of zero.
• During quizzes and exams, the University policy of no cheating and honorable work will be applied.
• Any questions about grading must be turned in to me in writing within a week of the date the exams (quizzes or graded homework) are returned.
Planned Topics (Subject to Change)*

1. Atomic structure
   - Bohr-model
   - Schrödinger equation and wave-functions
   - electronic configurations
   - periodic properties

2. Molecular shape and symmetry
   - VSEPR
   - symmetry elements and symmetry operations
   - point groups
   - fundamentals of Group theory
   - groups representations

3. Molecular structure
   - Valence bond and Molecular Orbital theories
   - simple diatomic, triatomic, and polyatomic molecules
   - simple Hückel theory and \( \pi \)-aromaticity
   - main-group cluster compounds

4. Transition metal complexes
   - introduction to coordination compounds
   - Crystal-field and Ligand-field theories
   - vibrational and electronic spectra

5. Extended structures
   - band theory and structure of solids
   - plane groups and space groups
   - crystal packing
   - atomic and ionic radii
   - overview of some basic structures
   - basics of diffraction and crystallography

6. Overview of acids and bases

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*This syllabus and course outline are subject to change at any time at my discretion*