Ch 102 – Course Information 2017/2018
Tues/Thurs 1:00-2:25pm (Noyes 153)
http://agapie.caltech.edu/#classes

Instructor:
Prof. Theodor Agapie
Office: Noyes 314, E-mail: agapie@caltech.edu

Teaching Assistants:
Nathanael Hirscher (nhirsche@caltech.edu, x3682, Noyes 304)
Jessica Sampson (jsampson@caltech.edu, x3682, Noyes 304)
Shuoyan Xiong (sxiong@caltech.edu, x3682, Noyes 304)

Textbook:
Inorganic Chemistry, Housecroft and Sharpe (third edition or fourth edition). Lectures will cover all material you are responsible for on exams. Weekly reading will be assigned to complement and supplement the lecture material.

Problem Sets:
Weekly problem sets will be available on-line on Friday and will be due on the following Thursday, at the start of class. *Consultation of test materials, problem sets, and solutions from previous years is not allowed*. About 20% of each problem set will consist of a short project to be selected by each student, on a compound or class of compounds from the reading. Two power point slides should be turned in as a solution, including background, synthesis and reactivity, electronic structure, and application of software on an aspect of the molecule (symmetry, electronic structure, vibrational analysis, etc). Each problem set will be graded on a 0-10 scale, in whole point increments. Collaboration is allowed, but the solutions must be written and turned in individually. The problem sets *will not* be graded in detail, so cross-check your worked problems with the solutions that are made available. **Note:** Late problem sets will receive no credit.

Short Presentations:
One or two short (5 minute) student presentations will be given at the beginning of the lecture starting with the fourth lecture. The two slides prepared for the problem set will be used for the presentation. Students are expected to participate with questions and comments. Slides must be sent by email to the TAs in pdf format by 12 pm before the lecture when the set is due.

Exams:
Closed book, take-home. *Consultation of test materials from previous years is not allowed*.

Office Hours:
TAs: Tuesday, 8-9 pm; Wednesday, 1:30-2:30, 8-9 pm (Noyes 317)
Instructor: Flexible, by appointment

Grading:

Problem sets	20%
Presentation and class participation	5%
Midterm	35%
Final	40%

Ch 102 – Introduction to Inorganic Chemistry

Syllabus

1. Molecular symmetry
   Recommended reading: 4.1-4.6, 4.8, **17.7-17.9*** (3rd edition)
   Recommended reading: 3.1-3.6, 3.8, **17.7-17.9*** (4th edition)

2. Crystallographic symmetry
   Recommended reading: **16.7-16.10** (3rd/4th edition)

3. Bonding models: Lewis dot structures, VSEPR, MO Theory
   Recommended reading: 5.1-5.7, **15.2-15.11** (3rd/4th edition)

4. Vibrational spectroscopy
   Recommended reading: 4.7, **14** (3rd edition)
   Recommended reading: 3.7, **14** (4th edition)

5. Lewis acid – base chemistry
   Recommended reading: 6.13-6.16, 7, 9.4-9.9 (3rd/4th edition)

6. Coordination chemistry
   Recommended reading: 20, 21.2-21.4, **13** (3rd edition)
   Recommended reading: 19, 20.2-20.4, **13** (4th edition)

7. Reaction mechanisms
   Recommended reading: **22**, 26 (3rd edition)
   Recommended reading: **21**, 26 (4th edition)

8. Catalysis: Metals in biology
   Recommended reading: **23**, 29 (3rd edition)
   Recommended reading: **22**, 29 (4th edition)

9. Catalysis: Organometallic chemistry
   Recommended reading: **24**, 27.1-27.7 (3rd edition)
   Recommended reading: **24**, 25.1-25.7 (4th edition)

10. Special topics

* **In bold:** Select a compound / topic for short project and presentation from the bold assigned reading. (Ex: allotropes of phosphorous; oxides of sulfur; oxidation states of copper)