CHEM 661
ADVANCED INORGANIC LABORATORY

Fri, 1:00 – 1:50 pm: Lab Lecture in 1003 Malott
Fri, 2:00 – 5:50 pm: Lab Activities in 3013 Malott Hall

Instructor: Nathan Erickson MS, 1012 Malott Hall, nerickson@ku.edu
GTA: Wade Henke, 6090 Malott Hall, whenke@ku.edu
Office Hours: By appointment

Course Scope: In this course, students will learn the techniques and skills commonly employed by synthetic and physical inorganic chemists.

Lab Work: Seven multistage experiments addressing various aspects of synthetic inorganic chemistry and characterization of inorganic compounds/materials are scheduled. An introductory lecture will be given prior to the start of each experiment. Detailed description of the experiments (i.e., introduction, procedures, preliminary questions, etc.) will be provided at least one week in advance. This information can be accessed on the Blackboard website for the course and must be reviewed before each lab session. Check-in and several other activities will occur on January 19th. You will start actual lab work during this first CHEM 661 session (January 19th). Lab checkout will be on April 27th. A comprehensive lab exam will be administered on April 27th as well. Lab reports will be due one (1) week after completion of each experiment. Following is the expected sequence of labs that will be performed during the course of the semester, this is subject to change if unforeseen circumstances arise.

Experiment I: Positive Oxidation States of Iodine: Preparation of Dipyridineiodine(I) Nitrate

Experiment II: Catalytic Substitution of Carbonyl Ligands in M(CO)6 (M = Mo, W)

Experiment III: 4’-(4-Pyridyl)-2,2’:6’,2’’-terpyridine: Coordination to Iron(II) and Protonation Studies

Experiment IV: Determination of the configuration Equilibrium of a Four-coordinate Nickel(II) Complex by Magnetic Susceptibility Measurements

Experiment V: Synthesis of Paramagnetic Complexes of Copper and Vanadium and Analysis of their EPR Spectra

Experiment VI: Synthesis and Electrochemistry of [(η^5-C5H5)Fe(η^6-C6H5CH3)]^+[PF6]−, a Catalyst for Photo-oxidation of Hydrocarbons with O2.

Experiment VII: Synthesis and Characterization of Two Metal-Metal Bonded Dimolybdenum Complexes

Safety: Appropriate attire must be worn in the lab at all times. This includes approved safety goggles. Continuous failure to wear eye protection will not be tolerated. No shorts or sandals can be worn while in the lab. Failure to comply with safety protocol will result in removal from the lab (until the student is in compliance with all safety regulations) and a
deduction of lab technique points. A short safety lecture will be given at the beginning of the semester.

**Grading:**

Your final grade will be determined by the number of points you accumulate during the semester. A total of 700 points are possible. Each experiment is worth a maximum of 50 points. Reports will be graded and returned one week after being turned in. Grading will be based on the results (including quality of samples, if appropriate), discussion of the results, answers to pre- and post-lab questions, organization, presentation, writing style, overall neatness of laboratory notebooks and reports, as well as quizzes. A detailed handout explaining expectations will be provided. The following grading scheme will be employed:

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<th>Points</th>
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<tr>
<td>Quizzes</td>
<td>100 pts</td>
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<tr>
<td>Lab notebook/Technique</td>
<td>100 pts</td>
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<tr>
<td>Reports/Problem Sets</td>
<td>400 pts</td>
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<tr>
<td>Exam</td>
<td>100 pts</td>
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Traditional A-F grading scheme with +/- options will be used to assign final grades for CHEM 661. A grade of “F” will not count toward graduation. It will not be possible to earn a passing grade unless the reports for all seven experiments are turned in showing a good faith effort to complete the work.

**Late lab report policy:** the first lab report turned in late will receive a deduction of 15% per day. Any following lab reports turned in late will be reviewed but will receive the score of 0.

**Important Note:** Course materials prepared by the instructors, together with the content of all lectures are the property of the instructors. Video and audio recording of lectures without the consent of the instructors is prohibited. On request, the instructor will usually grant permission for students to audio tape lectures, on the condition that these audio tapes are only used as a study aid by the individual making the recording. Unless explicit permission is obtained from the instructors, recordings of lectures, as well as electronic copies of the instructor’s lecture notes, may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course.

**Special Needs:** The Academic Achievement & Access Center (AAAC) coordinates accommodations and services for all KU students who are eligible. If you have a disability for which you wish to request accommodations and have not contacted the AAAC, please do so as soon as possible. Their office is located in 22 Strong Hall; their phone number is 785-864-4064 (V/TTY). Information about their services can be found at [http://disability.ku.edu](http://disability.ku.edu). Please contact Dr. Barybin privately in regard to your needs in this course to ensure timely arrangement of any necessary special accommodations.

**Course Website:** All students enrolled in CHEM 661 have been granted access to the BLACKBOARD site for this course at [http://courseware.ku.edu](http://courseware.ku.edu). Be sure you are able to access this site to view information pertaining to the course including electronic handouts, problem sets, answer keys, announcements, etc. You will be prompted to enter your KU Online ID and Password to access the course materials.

**Concealed Carry:** This course takes place in spaces that will require students to leave belongings such as backpacks and purses away and unattended for the duration of class time. Students who choose to carry a concealed handgun in a purse, backpack, or bag must review and
plan each day accordingly, and are responsible for making alternate arrangements as necessary. The university does not provide appropriate secured storage for concealed handguns. Individuals who violate the KU weapons policy may be asked to leave campus with the weapon and may face disciplinary action under the appropriate university code of conduct.

**Academic Misconduct:** We expect all of you to adhere to high standards of personal and scientific integrity and sincerely hope that we will not have reasons to deal with this issue. After all, any science, including chemistry, is not worth much without honest reporting of findings, and the proper authorship attribution (including any materials harvested from the internet!). The following policy defines acts of academic misconduct involving students in courses offered by CLAS. “Academic integrity requires the honest performance of academic responsibilities by students. Academic responsibilities include, but are not limited to, the preparation of assignments, reports and term papers, the taking of examinations, and a sincere and conscientious effort by students to abide by the policies set forth by instructors. Any subversion or compromise of academic integrity thus constitutes academic misconduct. Examples of misconduct include (among others) falsification, unauthorized assistance with or plagiarism of reports, term papers, research papers or other written documents; giving or receiving unauthorized aid on examinations; disruption of classes; the offering of gratuities or favors in return for grades.” Please see [https://documents.ku.edu/policies/governance/USRR.htm#art2sect6](https://documents.ku.edu/policies/governance/USRR.htm#art2sect6)

Any assignments turned in for credit (e.g., lab reports, quizzes, problem sets, exams, etc.) must represent your own work and we request that you do not blatantly copy answers! Any incidence of academic misconduct will be pursued to the fullest extent in accordance with the University policy, as described in the student handbook (see the website above). At a minimum, this includes receiving zero credit for the work in question for any party involved. Additional penalties may include a grade of F for the entire course, as well as suspension or even expulsion from the University. If you have questions about what constitutes academic misconduct, please see either of the instructors and/or consult the student handbook.