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

Instructor: Mikhail Barybin, 1025 Malott Hall, mbarybin@ku.edu
GTA: Nathan Erickson, 1012 Malott, nerickson@ku.edu

Office Hours: Tuesdays, 12:30 – 3:00 pm in Nunemaker Center (Room 101)
or by appointment in 1025 Malott Hall

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.
The first Lab lecture and Check-in will occur on January 20th. You will start actual lab work
during the second CHEM 661 session (January 27th). Lab checkout will be on April 28th.
A comprehensive lab exam will be administered on April 28th as well. Lab reports will
be due one (1) week after completion of each experiment.

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

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

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

Experiment VI: Synthesis and Electrochemistry of [(η⁵-C₅H₅)Fe(η⁶-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 points accumulated during the semester. A total of 1000 points are possible. 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 lab notebooks/reports, quizzes, and the exam. The following grading scheme will be used:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>100 pts</td>
</tr>
<tr>
<td>Lab reports &amp; assignments</td>
<td>600 pts</td>
</tr>
<tr>
<td>Lab notebook/Technique</td>
<td>100 pts</td>
</tr>
<tr>
<td>Exam</td>
<td>200 pts</td>
</tr>
</tbody>
</table>

Traditional A-F grading scheme with +/- options will be employed to assign final grades. A grade of “F” will not count toward graduation. It will not be possible to earn a passing grade unless the reports for all 7 experiments that show a good faith effort are turned in.

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

**Important Note:** Course materials prepared by the instructor, together with the content of all lectures, are the property of the instructor. Video and audio recording of lectures without the consent of the instructor is prohibited. Upon request, the instructor may grant permission to audio tape lectures on the condition that these recordings are only used as a study aid by the individual making the request. Unless explicit permission is obtained from the instructor, recordings of lectures and copies of the 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 KU Office of Student Access Services (SAS), part of the Academic Achievement & Access Center (AAAC), coordinates accommodations and services for all eligible students. If you have a disability for which you wish you request accommodations please contact AAAC. The AAAC office is located in Strong Hall, Room 22; their phone number and email address are (785)864-4064 (V/TTY) and achieve@ku.edu, respectively. Information about their services can be found at http://access.ku.edu. In addition, Dr. Barybin would appreciate if students with special needs notify him privately ASAP to ensure timely arrangement of 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. Be sure you are able to access this site to view information pertaining to the course including electronic handouts, lecture notes, announcements, etc. You will be prompted to enter your KU Online ID and Password to access the course materials.

**Academic Misconduct:** We expect all of you to adhere to high standards of personal and scientific integrity. 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 a uniform approach to acts of academic misconduct involving students in courses offered by the College of Liberal Arts and Sciences. 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,” etc. Please see https://documents.ku.edu/policies/governance/USRR.htm#art2sect6 for more info on this issue.

It is generally acceptable to consult one another while preparing lab reports and to study together for the exam. However, any assignments turned in for credit (e.g., exam, laboratory reports) 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 the student handbook.