Purpose
CEM415 is a capstone course that is an alternative to independent undergraduate research (CEM419). It has some of the same research flavor but in a more structured laboratory environment. The focus of the course is synthetic inorganic chemistry. Of course, any synthesis must be tied to advanced spectroscopic methods for sample characterizations. These methods will include NMR, electronic absorption and emission spectroscopy and FT-IR. Student credit hours for the course are allocated entirely to laboratory time. Additional instruction will provide the background material for the spectroscopy and clarify synthetic procedures needed for the lab. These lectures will be provided as needed at times to be determined.

Course Schedule
Three sections of this course will be taught this semester:
Section 1: Tue, Thu 8:00 – 11:50 am
Section 2: Mon, Wed 12:40 – 4:30 pm
Section 3: Tue, Thu 12:40 – 4:30 pm

Office Hours
I will make regular visits to the labs to monitor your progress. You should feel free to ask me any questions you have regarding the course while I am in the laboratory. If you wish to schedule additional time outside of the normal lab sessions, please make arrangements with me in the lab or contact me by email. Office hours with your TAs can be set up by email or during class periods.

Grading
Your course grade will be weighted as follows:
- Laboratory Performance
  (Technique, Completion of Experiments, Safety, Housekeeping) 50%
- Module Reports 30%
- Laboratory Notebooks 20%
  (10% prelab, 10% postlab)

Honors Options
If you wish to receive credit for an Honors Option, you must email the instructor during the first week of class to discuss the assignment.

Module Reports
At the end of each module, you must give your products (in appropriately labeled vials) to your TA. Your report should contain: i) Your notebook pages; ii) A write up of your experimental procedure, according to the given template; iii) Copies of all the recorded and analyzed spectra; iv) Your answers to the questions at the end of the modules.

Due Dates: Reports must be submitted to your TA at the beginning of the next lab session after the module has been completed. A grade point (1.0) will be deducted for each period that a report is late.
Policy Regarding Academic Dishonesty

Academic dishonesty of any kind will not be tolerated in this course. Please see the following website for information regarding Michigan State University’s policy on academic dishonesty:

https://www.msu.edu/~ombud/academic-integrity/index.html

Supplemental Texts

- Online E-textbook “Introduction to Organic Chemistry” by Prof. William Reusch. This is the current text from CEM 351 and 352.

Notebooks

You will be required to purchase a laboratory notebook with duplicate pages. All notes related to the laboratory should be recorded in your laboratory notebook. This includes the prelab, all experimental details, (e.g., volumes used, amounts weighted out, etc.) drawings or photographs of experimental setups, and all observations must be recorded while experiments are performed. An example of proper notebook format will be provided in the first lecture.

The TAs will grade prelabs within 15 minutes of the beginning of class. You will not receive credit for the prelab if you arrive after this period. If your prelab is incomplete, you will not be permitted to perform the laboratory. If you plan to do experiments in two different modules, prepare prelabs for each on separate notebook pages. At the end of the laboratory period, remove the pages from your lab notebook, attach copies of relevant spectra, and give them to a TA.

Attendance Policy

Attendance is mandatory. If you will be absent for observance of a religious holiday, participation in a field trip, rehearsal, or performance, or an athletic competition, you must notify your instructor 2 weeks before the scheduled event. The missed period must be completed during another section of the course within one week of the absence.

If you are 30 minutes late and/or you have not completed your prelab, you will be charged with an unexcused absence.

1. Unexcused absence will result in a maximum course grade of 2.0.
2. Unexcused absences will result in a grade of 0.0

Safety

Lab safety is largely a matter of using good common sense. Some experiments will require the use of vacuum lines and compressed gasses in addition to the organic solvents and chemicals typical of a synthetic lab. Approved eye protection must be worn at all times. You will be denied admission to the lab if you do not have goggles. Closed toe shoes must be worn in the laboratory. In addition, gloves and a lab coat are useful for protecting your hands and clothes. We will provide special instructions during lectures to ensure safe use of specialized equipment. If you have any questions about how to perform an experiment safely, ask your lab instructor first.

Laboratory Equipment

You will receive a drawer containing supplies for the course. At the end of the second class session, you will be provided with this drawer and a checklist. You must notify the TAs of any missing supplies and he/she will assist you in replacing them at no cost.

At the end of the course, you must check out with your TA. You will be responsible for any replacement costs for any missing items. Glassware must be clean when returned at the checkout. Students who fail to do so will have one grade point (1.0) deducted from their final course grade.