I. COURSE DESCRIPTION
Course: CHEMISTRY 575 (3 credit hours)
Semester: Spring 2016
Instructor: Punit Kohli
Email: pkohli@chem.siu.edu
Office: Neckers 327
Lecture time: MWF 3 pm – 3.50 pm
Lecture Location: Engineering 208

***Everything on this sheet is subject to change without notice ***

Note to students: Eating, drinking, sleeping (or snoring), talking or any activity during lecture or lab that distracts or disturbs other students will not be tolerated. If you have something to say, then please say it loud and share with the whole class. These rules will be taken very seriously.

Usually, this course requires a work load of at least 15-20 hours/week. If you think that this is excessive or you have other commitments, then please consult with me immediately.

II. GRADING AND COURSE CONTENT. The main objective of this course is to introduce you to characterization (including fundamentals, instrumentation, and their applications) of advanced materials. No one book or paper will be used but instead topics and materials will be taken from a range of sources including text books, classical journal papers, monographs etc. This is to remind the students to use proper references and citations for your homework, presentations, and Wikipedia page (this will be a major assignment for you for this course). Do not, under any circumstances use internet web pages (in any form), for your references as they may change or are deleted without notice. This will cause your paper, presentation or proposal incomplete. Doing so may result in zero for that particular assignment, presentation, or Wikipedia page. Finally, there will not be any make ups for assignments, Wikipedia page, or presentation. So, please do not come to me regarding any request about make-ups.

NOTE: (1) Plagiarism, representing the work of another as one’s own work. (2) Preparing work for another that is to be used as that person’s own work. (3) Cheating by any method or means. (4) Knowingly and willfully falsifying or manufacturing scientific or educational data and representing the same to be the result of scientific or scholarly experiment or research. (5) Knowingly furnishing false information to a university official relative to academic matters. (6) Soliciting, aiding, abetting, concealing, or attempting acts of academic dishonesty. Any of these will result in Fail for your class, and you will be reported to Department Chair and Dean of college of science. DO NOT COPY AND/OR PASTE ANY CONTENT FROM THE WEB/JOURNAL PAPERS/BOOKS FOR YOUR PROPOSAL/PAPERS. Instructors can use web/book/papers for instructions uses only they cannot be used for your ideas or your proposal/papers.

Following topics will be covered in the class (may not be in this order). The content covered during the course will depend on pace of the class:

• Introduction: Fundamentals on matter-wave interaction;
• Optical Spectroscopy and Microscopy: IR, UV-Vis, Fluorescence, Raman, Ellipsometry;
• Electron Microscopy: SEM and TEM;
• X-ray Spectroscopy and Microscopy: Powder Diffraction, Absorption, and Fluorescence;
• Thermal Analysis: DSC, TGA, DMA, Thermal Conductivity;
• Magnetic Spectroscopy and Imaging: NMR and MRI (if time permits)

Presentation Format (two for each student/group) (a total of 20% of your grade):
Two 40 minutes presentations will be given by each student (or a group of students) followed by a 10 minutes questions and answer session;

The topic of the talk will cover a characterization technique or tool that is/will not be covered in the class. Please provide background, appropriate rationale/importance and applications of the method, and future work of your talk. Before you choose a topic, please consult with me about your topic;

Every student listening and participating in the presentation: will give his/her own opinion about the presentations; will comment on what is good and/or bad in this technique/tool; what should be done to improve it; and each student will also write a one-page critic on presentations which will be given to the presenters for their comments.

**Tentative dates for presentations:** will be provided in the class after consultation with the students

**Wikipedia page (~ 40% of your grade):** You will publish a Wikipedia page as a part of your course. Since the web site is ~40% of your grade (including a seminar on your Wikipedia page in the last week of class), the quality of your Wikipedia page will significantly impact your final grade. A very detail Wikipedia page will be written by you (and perhaps along with your partner(s)) on a characterization tool. **A topic needs to be picked very fast (latest by February 1) after consultations with me.** You will also need to get familiar with Wikipedia software, upload and login procedures. You will be responsible for the upload and availability of your Wikipedia articles to general public.

**Grading of your Wikipedia:** Your Wikipedia page will be graded by each of your class mate. So, if there are five students in the class, you will be graded by four students and the instructor. Each student will write a critique of your Wikipedia article of your presentation. You will then include all the critiques given to you in your Wikipedia page before you upload it. The critiques will consist of 1-2 pages (single spaced, 12 font size, times new roman or Arial or equivalent font). The critiques will provide you a positive criticism of your article.

The student will also give a short presentation of the proposal (25 minutes and 5 minutes of questions and answers) on May 4 – May 8 in the class.

**Important tentative Wikipedia dates:**
- February 8: Title + one paragraph (5-10 lines) of the proposed Wikipedia article
- February 18: Project Summary (one page) stating your proposed problem
- March 21: Wikipedia article due
- April 25 – April 29: Wikipedia article Review Panel. You will review other Wikipedia articles. The grades for each Wikipedia page will be given based on the critiques and grading from all the students and the instructor. The Wikipedia will be given grading as follows:

  “Excellent”: Outstanding/Highest grade (A: 4/4)
  “Very Good”: 3.5/4
  “Good”: 3.0/4
  “Fair”: 2.5/4
  “Poor”: <2.0/4.0

Please be fair to everyone when you critique others presentation and proposal, and give each proposal your honest written critiques. If you are unfair to other students then they can be unfair to you also, and the honest system will break.

**Assignments (40% of your grade):** Some of you will get assignments in the class and others will get assignments in next class. You will be required to submit all of your assignments for that week to me through EMAIL on/before Friday 10 am. **NO CREDIT WILL BE GIVEN IF YOUR ASSIGNMENT IS**
**RECEIVED AFTER FRIDAY 10 am.** Please do not copy or cheat on the assignments – this may cost you “F” in this course. Every Friday during lecture time, each of you will present your assignments given in that week to the whole class. You will demonstrate your solutions to the problems either on the blackboard or using power point presentation. Please bring your assignments to the class in MS Word or MS Powerpoint or pdf format. Please provide references from journal papers, text books, or monographs. Be concise.

PLEASE DO NOT GIVE/PROVIDE ANY REFERENCES IN YOUR TALK/PRESENTATION/PROPOSAL OF A WEBPAGE LINK OR A RELATED WORK THAT IS NOT PEERED REVIEWED. THIS WILL CAUSE YOU A SIGNIFICANT LOSS OF CREDIT FOR THAT PARTICULAR TASK.

**No Final Exam:** There is no final exam for this course. Instead you will publish a Wikipedia scientific article and will give a seminar on your article. The seminar will be ~5% of your grade.

**Final Grade Scheme:** Final grades will be evaluated as follows:
- Class participation: 100 points
- Assignments: 600 points
- Presentation: 300 points
- Presentation critiques (each student will write a critic on presentation): 100 points
- Wikipedia article (written part): 600 points
- Wikipedia article critiques (each student will write a critic on Wikipedia presentation): 100 points
- Final exam: 300 points

*The course will not be graded on a curve or normalized*; however, the following grade scale will be used for grades.

<table>
<thead>
<tr>
<th>GRADE</th>
<th>Final cumulative score (after normalized to 100)</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B</td>
<td>80-89</td>
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<tr>
<td>C</td>
<td>70-79</td>
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<tr>
<td>D</td>
<td>45-69</td>
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<tr>
<td>F</td>
<td>&lt;45</td>
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</tbody>
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This grading policy will be strictly enforced. *Changes in the grading policy are NOT negotiable.* Please note the university policy regarding incompletes (INC) which states: An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all the requirements for the class. In other words, under no circumstances, will an INC be given to a failing student to prevent them from receiving an F.

**No classes on:**
March 14 to march 18 (spring break)

**Cheating/dishonesty policy:** Any form of cheating/dishonesty will result in judicial proceedings in accordance with Southern Illinois University's policy on academic dishonesty. Everyone involved in cheating or dishonesty will be given ZERO for that particular exam/lab. Any instance of cheating will be reported to the Department Chair and the Dean.
Emergency Procedure: Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT, http://www.bert.siu.edu/) program. Emergency response information is available on posters in buildings on campus, available on BERT’s website at www.bert.siu.edu, Department of Safety’s website www.dps.siu.edu (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.