WELCOME TO CHEMISTRY 3493-Spring 2019 -Web: Moodle link to the class website

**When/where: 1:30-4:30PM Monday, 12:30 -4:20 PM Wednesday, rooms 102 (meet), 104,108,257 Choppin Hall**

Professor: Kresimir Rupnik, Ph. D. Office: Chemistry Department, 201A Choppin Hall, E-mail: chrupn@lsu.edu or rupnik@intelliom.com PHONE: office 578-2945 or cell 205-1353

**OFFICE HOURS:** e-mail before (or call), so that you will have the time reserved for you. Bring all the relevant material and/or the work you completed. You can talk to me 1:1 also during the lab work.

ASSIGNED MATERIAL, MANUALS, SOFTWARE, LECTURE NOTES and RECOMMANDED TEXT: There is one textbooks traditionally used in this class: mandatory material from Garland, Nibler, Shoemaker “Experiments in Physical Chemistry” 8th or 9th edition (ISBN0-978-1-259-51147-9) (even earlier could work, ask). You will be assigned experimental/theoretical investigations as well as the associated work with instrumentation building and modeling. There will be hardcopies, web-posted instructions, lectures and discussions at the beginning of each assignment. There are instruction notes for instrumentation, computer modeling (Gaussian, LSU available) and visualization and data acquisition applications (including Mathematica (available from LSU), Mathlab (recommended), molecular modeling software and LabView (available from LSU)). During the work you will have access to the instrument –linked computers but ***BRING YOUR OWN LAPTOPS.***

COURSE DESCRIPTION and OBJECTIVES:

-First objective is to give you some **hands-on insight into a set of experimental as well as theoretical scientific investigations** that demonstrate basic physico-chemical processes and principles. Some of them are linked to the concepts you have already encountered, however, the focus is on novel contemporary molecular level research. You will learn how you can and should rigorously evaluate the scope of the validity and interpretability of results of your investigations by using contemporary approach to scientific methods. You will learn about the importance of precision and accuracy in the discussion and reporting simple observations, and about building conclusions based on such observations.

-The second objective is **to improve your problem-solving skills and skills in building instrumentation, data acquisition, computational modeling, as well as to improve your visualization and communication skills** needed to report and understand results of your work. You will think about and solve the problems related to the needed experimental design. You will also find yourself asking new questions, testing new limits and uncertainties in instrumentations, thinking about new models, experiments and even theories.

-As the third objective you will be given a chance to apply all your scientific-problem solving skills in an **unsupervised project**. In all experiments you will have also a chance to take a different novel look at assigned tasks. This course is a part of the effort to coherently introduce scientific research into all aspects of your undergraduate study. Your leadership is required here.

**You will find that the focus of the evaluation of your work (grading) in this class is (1) on how much work you have invested in learning and application of problem solving skills and instrumental methods in the lab and your ability to obtain data, (2) on the application of various different steps of applied scientific methods in preparation and reporting your work, and (3) on how well you communicated your work to the others. CxC: The scientific work is intimately related to the excellent communication skills. We received the formal recognition of this course as the Communication Intensive by the Communication across the Curriculum Program for writing and visualization. You will receive specific instructions related to those requirements.**

**EVALUATION: LETTER GRADES:** GRADES: A+ 100 – 97, A 96-93, A- 90-92, B+ 89 – 87, B 86-83, B- 82-80, C+ 79 – 77, C 76-73, C- 72-70, D 69 – 60, F below 59. Bonus questions

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| **PRE-CLASS** **IN-LAB****NOTEBOOK** | **Pre-lab submissions and preparations, in-lab work, post-lab quiz and a midterm exam, group participation and problem solution. Lab-notebook as well as spoken presentations and informal discussions. Your attendance is mandatory! Documentation required for any missed class period. If you miss more than 3, your grade could go down. Lab and /or log books with all measured data MUST be available at any time. You prepare your experiments after consultations!** | **25%**  |
| **REPORTS:****1-Notebook****2-LabWork****3-Report-completeness****4-Report-results****5-Autentication&**feedback | **6 COMPLETED REPORTS (3 focused) – See tentative grading rubrics. The reports must visually show and verbally communicate all steps of your work clearly and coherently. Reports consist of a written part in the form of a scientific paper including description of all procedures in the framework of the scientific method, as discussed in the class. You will also submit: quantitative data, your graphs and presentations done in software applications, with all your modeling and visualization work. You will participate in evaluations of some reports and will receive written recommendations by your peers, TAs and me for the needed written revision before the final submission. After receiving grade you have 1 week for minor corrections. Requirements will increase during the semester. Your reports, visual and oral presentations are aimed at the audience of scientists and you will learn how to do your work as a professional.** | **60%** |
| **FINAL WORK** | **FINAL EXAM and last and unsupervised project in lab (see requirements)**  | **15%** |

**Note: you will have to show that you did the work in the lab, you wrote reports with your data and instruments and that you understand your work. Some work may be taped using CxC or other cameras.**

**Expectations**

LSU’s general policy states that for each credit hour, you (the student) should plan to spend at least two hours working on course related activities outside of class. For a three credit hours course, you should expect to spend a **minimum of six** hours outside of class each week working on assignments for this course. For more information see: http://catalog.lsu.edu/content.php?catoid=12&navoid=822.

**LSU student code of conduct**

The LSU student code of conduct explains student rights, excused absences, and what is expected of student behavior. Students are expected to understand this code as described here: http://students.lsu.edu/saa/students/code. Any violations of the LSU student code will be duly reported to the Dean of Students. IMPORTANT: Due to the new rules, any form of aggressive or violent behavior will be reported.

**Disabilites**

Each course syllabus should contain a statement reflecting compliance with The Americans with Disabilities Act and the Rehabilitation Act of 1973, as amended, Section 504. This link contains 4 example statements: http://students.lsu.edu/disability/information-faculty-staff/sample-syllabus-statements

**Your name: ………………………………………………………………………date:………**