Syllabus-Fall 2016  
CHEM 4176  Special Research Driven Course Section

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Required Materials:

ABSOLUTELY REQUIRED NO EXCEPTIONS:

Goggles (Anzi87.1 ONLY) and Lab Coat  
Lab Manual: Laboratory Guide by BLUEDOOR  
Photocopies or hand written notes will not be accepted.  
ALL WORK MUST BE IN PEN ONLY. WORK DONE IN PENCIL WILL NOT BE ACCEPTED OR GRADED

Grading:
Lab Reports: 30%  
Participation: 40%  
Final Report + Presentation: 30%

Suggested materials:
Lab Coat, Scientific calculator, and Sharpie

Safety guidelines:
You will be exposed to hazardous chemicals. Personal Protective Equipment, (PPE) is necessary to protect your body. You will not be admitted in the lab if any of the following safety guidelines are not met. If you violate safety guidelines you will be asked to leave the lab and a grade of ZERO for the day’s lab work will be issued.

1. Shoes that cover the entire foot are required at all times.
2. Goggles or appropriate safety glasses are required at all times.
3. Long sleeves and long pants are mandatory.
4. No musical devices may be used in the chemistry labs at any time.
5. Use of the cell phones is NOT permitted and must be on silence and placed in YOUR BAG before you enter the lab.

Objectives:
This course is intended to introduce sophomores to basic General Chemistry and Biochemistry concepts through authentic research on genes and proteins associated with the human circadian rhythm. The skills, concepts and techniques will not only help students apply those basic principles learned in Gen Chem I &II, but will also allow students to actively participate in cutting edge research and learn to conduct science the way experts do. The lab modules will not necessarily run in synchronicity with what is being covered in CHEM 1305 (the lecture portion of Gen Chem I). Some of the
material will be presented in the context of the research topic, thus emphasizing the principles of chemistry in real world applications.

**Reports:**
Students individually have to work on their own project, write a report explaining one of the critical circadian processes and explain the experimental processes. They are expected to explain their project providing logical reasons derived from published literature. The report will be due on the last lab period.

**Lab Attendance:** Weekly target needs to be achieved period. Students will meet individually or as a group to discuss their results, progress and doubts once a week. Future directions for the upcoming week will be determined during that meeting.

**Cleaning Up after experiment:**
There are no bonus points for cleaning but, (2 points) will be deducted from each member of the group even if one of the members do not clean up after themselves.

**Participation:**
Students are expected to attend lab period and come prepared to participate in research..

**Final Report/Presentation:**
Submit final report. The reports will be judged based on their overall originality and the research done to develop the project. The students are also expected to give a final presentation about their project. For rubric for presentation, please see appendix. This is the rubric that will be used to score presentations. The instructors score sheet will add up to a total of 100 points. The student’s evaluations will add up to a total of 100 points. The average of the students’ evaluations will be added to the instructors score to add up to a total of 200 points.

The Final Report is worth 30% of the written and oral presentation. Breakdown percentages will be:

- 50% Written Part (Individual)
- 50% Oral Presentation Part (Individual)
Safety and Cleaning Issues:
It is your responsibility to maintain your bench space clean, put chemicals away, wash your glassware, and collaborate with your team members. NOT doing so will result in points being deducted from your grade.

Student Conduct:

Class Environment
Cell phones must be turned off. Use of cells phones will result in dismissal of class for that day. Each student is responsible for notice of and compliance with the provisions of the Regents Rules and Regulations, which are available for inspection electronically at http://www.utsystem.edu/bor/rules/homepage.htm. Use of laptops and tablets is allowed only when specifically requested by the instructor. No liquids or food are allowed in the classroom.

Academic Dishonesty
It is the official policy of the University that all suspected cases or acts of alleged scholastic dishonesty must be referred to the Dean of Students for investigation and appropriate disposition. It is contrary to University policy for a faculty member to assign a disciplinary grade such as an "F" or zero to an assignment, test, examination, or other course work as a sanction for admitted or suspected scholastic dishonesty in lieu of normally charging the student through the Dean of Students. Similarly, students are prohibited from proposing and/or entering into an arrangement with a faculty member to receive a grade of "F" or any reduced grade in lieu of being charged with scholastic dishonesty. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, and the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Plagiarism
"Plagiarism" means the appropriation of another person's ideas, processes, results, or words without giving appropriate credit. This includes intentionally, knowingly or carelessly, presenting the work of another as one's own; failing to credit sources used in a work product; attempting to receive credit for work performed by another; failing to cite the World Wide Web, databases and other electronic resources. Written work will be checked for plagiarism.

Students with Disabilities Policy
If you have or suspect a disability and need an accommodation you should contact Center for Accommodations and Support (CASS) at 747-5148 or at dss@utep.edu or go to Room 106 Union East Building.

Students with Pregnancies:
If you are pregnant or you become pregnant, it is recommended that you drop the course. If you chose not to drop, then lab coat and long sleeves, long pants and gloves, for every lab are mandatory.
Learning Objectives:

1) Refresher on lab safety rules, research ethics and maintaining lab records
2) Refresher on cleaning, weighing samples, pipetting and sterilization techniques
3) Proficiency in stoichiometric calculations
4) Proficiency in central dogma, amino acids, protein chemistry & circadian rhythm
5) Concept of acid, base, buffers and pH
6) Conduct stoichiometric calculations for making stock solutions and buffers
7) Proficiency in Beer-Lambert’s law and UV-visible spectroscopy
8) Determining protein concentration through spectroscopy and standard curve
9) Demonstrate proficiency in handling different types of centrifugation
10) Demonstrate proficiency in running controls for an experiment
11) Introduction to Fast Protein Liquid Chromatography (FPLC)
12) Demonstrate proficiency in protein purification using affinity chromatography
13) Conduct dynamic light scattering and size exclusion chromatography to determine protein aggregation
14) Conduct ion exchange chromatography (if required)
15) Demonstrate proficiency in polyacrylamide gel electrophoresis, staining and destaining
16) Demonstrate proficiency in scientific writing and research data presentation