UTRGV COURSE SYLLABUS

Course: CHEM 4201.01+02 & 4202.01
Instructor: Prof. Dr. Yuanbing Mao
Term: Fall 2017
Phone: 956-665 2986; E-mail: yuanbing.mao@utrgv.edu
Class meeting time: N/A
Office: SCIE 3.360
Class venue: Not required
Office hours: MW 1:00 pm - 3:00 pm

Textbook and/or Resource Material
In discretion of each individual faculty mentor.

Course Description and Prerequisites
CHEM 4201 is a course adapted to the study of special topics of current chemistry within research labs through research activities. A chemistry major student is required to select a research project through individual consultation with a faculty member (or a team), who develops a one- or two-semester research project for the student and becomes the student's mentor/advisor. A student must have the mentor's approval prior to registration. A special approval form is available at the Department Office and each faculty member and should be completed and submitted to the Department Office to remove the hold. CHEM 4201 is a requirement course of all Chemistry majors.
CHEM 4202 is a course that is a continuation of CHEM 4201 but is not a requirement.

Prerequisites
For CHEM 4201 — Chemistry major with junior/senior standing and consent of mentor.
For CHEM 4202 — CHEM 4201
For both classes — Students are expected to attend Safety training as required for research students and other trainings such as Blood Born Pathogen as required by their mentor/advisor if they have not already done so. This must be documented with UTRGV's Department Environmental Health and Safety Department.

Learning Objectives/Outcomes for the Course
This course is intended to endow students with:
1. Both broad knowledge and skills of critical thinking in the chemical sciences.
2. Preparedness to conduct or participate in chemical research projects and activities.
3. Ability to interpret collected scientific data and communicate learned scientific knowledge from research projects.
4. Readiness to search for employment (including graduate or professional school).

Learning Objectives for Degree Curriculum Requirements
Both CHEM 4201 and CHEM 4202 are not part of the UTRGV core curriculum inventory, but CHEM 4201 is part of the degree plan of Chemistry. The course objectives include further enhance the following four skills: critical thinking skills, empirical/quantitative skills, communication skills, and teamwork skills with the percentages of 30%, 20%, 30% and 20%, respectively. In order to measure the outcomes of these learning objectives, daily demonstration and communication with his/her direct mentor, final reports, and poster preparation and presentation will be used to determine these skills of students as detailed in the following Grading Policies. These evaluation results will serve as proxies for the level of emphasis of these skills in the course.

- To develop critical thinking skills, through which you are able to interpret and analyze data, models, laws, and theories in order to explain, evaluate, and predict outcomes of various chemical scenarios from your research project.
- To develop empirical and quantitative skills, so that you can effectively engage in using formulas, equations, and procedures necessary for your research project to carry out the various calculations and similar types of operations involved in quantitative aspects of chemistry.
- To develop communication skills, so that you are able to communicate your knowledge and understanding of chemistry learned from your research project to both your peers and your instructors, and so that you are able to effectively evaluate chemical information from various sources, including scientific literature and the media, more importantly, your own research results.
- To develop teamwork skills, so that you can effectively engage in and contribute to your mentor’s research group activities focused on the development and construction of knowledge and understanding of chemical
principles, as well as the practice and application of chemical skills and principles, with your mentor and fellow group members.

Course Requirements

1. **ATTENDANCE**: Students are required to run experiments in the mentor’s research lab regularly (while specific schedule should be discussed with his/her mentor) and may be dropped from the course for excessive absences (no show in the lab for more than five consecutive working business days without prior notice to his/her mentor). UTRGV’s attendance policy only excuses students from attending school if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact his/her mentor in advance of the excused absence and arrange to make up missed research work.

2. Under the close guidance of his/her mentor, each student will maintain a research journal, documenting the dates and time spent on laboratory work, literature study and meetings with mentors. The journal will be a bound notebook containing data, pertinent observations and notes. Accurate and complete notes are essential in any type of research. Students are expected to keep this journal up to date, neat and organized. Students are expected to show this notebook to their mentor and have them initial the notebook once a month.

3. A final written report using the ACS style (e.g. Journal of the American Chemical Society) or style suitable for Chemistry that is reviewed by the mentor prior to submission.
   a. The report should be written double spaced with size 12 font and 1 inch margins all around.
   b. Main text, including Introduction, Experimental Methods, Results, Discussion and Conclusion, is expected to be at least 10 pages long. This page length does not include charts, graphs, figures, acknowledgement, and literature references, which should be placed at the end of the final report with proper indexes. More specifically, spectra should be reduced to a single page size and placed at the end.
   c. A Title page and table of contents should be included at the beginning of the report.
   d. You may refer to a general example at the end of this syllabus for contents of the final report.

4. A poster presentation at the end of the semester in a poster presentation session organized by the Instructor of Record.

**Safety**

*Students are expected to attend Safety training as required for research students and other trainings such as Blood Born Pathogen as required by their mentor/advisor if they have not already done so. This must be documented with UTRGV’s Department Environmental Health and Safety Department.*

**Grading Policies**

This is a chemistry research course by working with a mentor within his/her lab. While each mentor has their own style working with students on research, it is important to remember that “it is not the hours you put in, it’s what you put in the hours.”

It is graded different from normal course work (both lectures and labs). Based on the four major skills described above as evaluation criteria, the three contributors for overall grade include:

<table>
<thead>
<tr>
<th>No.</th>
<th>Contributors</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Daily performance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Direct input from mentor: attendance, communication, and interaction within the selected mentor’s research group and lab</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>b. Evaluation by the Instructor of Record (Attendance of the scheduled meetings)</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Preparation and presentation of a poster:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Direct input from mentor</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>b. Faculty evaluation on the scheduled poster presentation session</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Final report:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Direct input from mentor</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>b. Evaluation by the Instructor of Record</td>
<td>15</td>
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</tbody>
</table>

In the poster and final report, you will be asked to describe or explain certain phenomena, reactions, structures, or other characteristics of various elements or compounds. Your score will depend on your ability to describe a variety of chemical events in correct and meaningful sentences using proper scientific terms and draw geometrically and
chemically correct structures of certain compounds. If you have deficiency in the language, it will affect your grade. **Use of shorthand in sentences, which is not used in chemistry books or journals, will affect your grade. Illegible writing will not be graded.** The purpose of grading is to reward students for their work. **There is NO additional curve for any grade.** Letter grades are assigned taking into consideration of the university policy and the overall performance of the class. **Please remember that your mentor and instructor of record can NOT make any special consideration regardless of your graduation requirement.**

The FIRM grading scale is as follows:

- 90 and above = A
- 80-89 = B
- 70-79 = C
- 60-69 = D
- 59 and below = F

### Calendar of Activities

Tentative class schedule is included at the end of this syllabus. The UTRGV academic calendar can be found at [https://my.utrgv.edu/home](https://my.utrgv.edu/home) at the bottom of the screen, prior to login. Some important dates for Fall 2017 include:

- **August 28**  First day of classes
- **August 31**  Last day to add a course or register for fall 2017
- **September 4**  Labor Day – NO classes
- **November 15**  Last day to drop a course; will count toward the 6-drop rule
- **November 23 – 26**  Thanksgiving Holiday – NO classes
- **December 6**  Last day of classes
- **December 7**  Study Day – NO class
- **December 8-14**  Fall 2017 Final Exams
- **December 15-16**  Commencement Ceremonies

### UTRGV POLICY STATEMENTS

#### STUDENTS WITH DISABILITIES:

Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact Student Accessibility Services (SAS) as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services.

- **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu.
- **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

#### MANDATORY COURSE EVALUATION PERIOD:

Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account ([http://my.utrgv.edu](http://my.utrgv.edu)); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:

- **Fall 2017 (full semester)**  Nov. 15 – Dec. 6

#### SCHOLASTIC INTEGRITY:

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; 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. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

#### SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE:

In accordance with UT System regulations, your instructor is a "Responsible Employee" for reporting purposes under Title IX regulations and so must report any instance, occurring during a student's time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at [www.utrgv.edu/equity](http://www.utrgv.edu/equity), including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a
learning, working, and living environment that promotes personal integrity, civility, and mutual respect that is free from sexual misconduct and discrimination.

**COURSE DROPS:**
According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

**FAIRNESS POLICY:**
UTRGV is committed to social justice and does not discriminate on the basis of race, color, national origin, age, sex, sexual orientation, religion, or disability. I concur with the commitment and expect to maintain a positive learning environment based upon open communication, mutual respect and non-discrimination. Any suggestions as to how to further such a positive and open environment for this class will be appreciated and given serious consideration.

**Other Course Information**

**Tentative Schedule:**

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 31, 12:30 pm – 1:30 pm</td>
<td>1st meeting with the Instructor of Record</td>
<td>Chemistry faculty lounge</td>
</tr>
<tr>
<td>Oct. 19, 12:30 pm – 1:30 pm</td>
<td>2nd meeting with the Instructor of Record</td>
<td>Chemistry faculty lounge</td>
</tr>
<tr>
<td>Dec. 7, 10:00 am – 12:00 pm</td>
<td>Poster Presentation</td>
<td>Hallway in front of computer lab</td>
</tr>
<tr>
<td>Dec. 8, 5:00 pm</td>
<td>Final Report due (in electronic copy to both mentor and instructor of record)</td>
<td>N/A</td>
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</tbody>
</table>

Note: 1. Majority of your time for this course should be spent in your selected mentor’s lab.
2. Regarding the meetings with the Instructor of Record: the 1st one to introduce the syllabus and the 2nd one to follow up with your progress on your research project and whether you encounter any roadblocks. Attendance is required.

**General Instructions on Poster Presentation and Final Reports:**

**Poster Presentation**

**Content:**
- Abstract
- Introduction
- Materials and Methods
- Results
- Discussion
- Future work
- Acknowledgements
- References
- Figures, tables embedded

**Size:** 24 to 36 inches tall by 36 to 48 inches wide

**Final Report**

- **Title page:** containing

  **Research Project Title**
  **Student’s name:**
  **Report submitted in partial fulfillment for the Chemistry Bachelor Degree**
  **CHEM 4201 or 4202**
  **Faculty Advisor: Dr. ___ ____**
  **Date (Fall/Spring and year)**
• **Table of contents**
• **Abstract:** An half to one page long.
• **Introduction:** Describe the background information on the studies related to the project. Relate your project work with existing information and at the end describe the specific objective of your project.
• **Materials and Methods:** Give the details of only important chemicals and reagents and describe the methods used in the projects.
• **Results:** The description should refer to appropriate table and figures numbers.
• **Discussion:** This section should discuss the results in light of the past work and the significance of your work in the future. *(Results and Discussion may be written together).*
• **Conclusion**
• **Acknowledgements**
• **References:** Suggested format – Author(s) names; Title of the referred article; Journal name *(italicized)*; Volume *(bolded)*; Page numbers; Year of publication. *(slight variation from this format will be acceptable.)*
• **Figures, charts, tables, schematics, etc.**
  **Note:** refer to the Course Requirement described above for further details.