CHE 602 – Chemistry Capstone – Spring 2018
Fridays at 2 PM in Hoyt 369

Professor: Dr. Patrick Lackey
Office: Hoyt 363
Phone: 724-946-7295
E-mail: lackeyp@westminster.edu

Office Hours: Mondays: 10-11:30, Tuesdays, 11 – 12:30 Wednesdays: 2- 3:30, or by appointment. Drop-ins are welcome.

Course description: A discussion-centered course focusing on the development of science as a way of knowing; the role of chemistry in changing scientific paradigms; and the moral and ethical responsibilities of chemists. Students are also expected to articulate their thoughts through various short writing assignments.

You are also expected to attend the Chemistry Seminar Series on Friday at 3:10 and present one seminar this semester.

Student Outcomes:

- The student will understand and be able to demonstrate how chemistry contributes to society and how society influences chemistry.
- The student will be able to communicate (written and oral) as a chemist on a number of different levels.
- The student will present his/her Senior Research.
- The student will have an understanding of current issues and events in chemistry and in science more broadly
- The student will demonstrate her/his knowledge of chemistry or biochemistry through her/his performance on a suite of comprehensive exams.

The first two outcomes will be achieved and assessed through in-class assignments and presentations on a number of important topics related to science and chemistry in modern society. The seminar portion of the class will focus on more rigorous scientific presentation of the student’s research. The fourth goal will be achieved by attendance at outside talks and reflections about the talks. Finally, the ACS DUCK exam will assess the student’s knowledge of chemistry and biochemistry as a whole.

Required reading: All reading (journal articles, essays, book excerpts, etc.) will be posted on D2L or obtainable through the library for the relevant portions of the classes.
**Attendance:** All senior chemistry and biochemistry majors are required to participate in every capstone and seminar meeting unless the instructor approves your absence. Excused absences from seminar must be made up by attending extra outside scientific talks and submitting a reflection paper. Each unexcused absence will result in lowering the course grade by 10%.

**Outside Talks and Reflection Papers:** Students are required to attend two external scientific talks/events that are approved by Dr. Lackey. Potential outside talks include invited on-campus speakers (non-seminar), local ACS section meetings, and scientific seminars at other institutions or professional organization meetings. One of your two external talks must be off campus. A reflection paper must be submitted within one week of attending each outside talk. At least one reflection paper is due by 5:00 pm on March 7th, 2017. The second reflection paper is due by 5:00 pm on May 11th, 2017. You are to upload your reflection papers to the appropriate section on D2L.

**Peer Seminar Evaluation:** To help improve the quality of seminars and to develop constructive criticism skills, students will be paired to evaluate a practice run of another student’s seminar. You will use a grading rubric to help you critically analyze their seminar presentation. This rubric should be discussed with the speaker to help them improve their seminar. A peer seminar evaluation paper and the rubric must be uploaded to D2L within one week of the peer’s presentation. The paper should include an analysis of their practice talk, your suggestions for improvement and a reflection on the overall evaluation process.

**Senior Seminar:** You will present an in depth review of your senior research results and conclusions. If you have not yet taken CHE 600, you will present on the results of your independent study research.

**Diagnostic Undergraduate Chemistry Knowledge (DUCK) Exam:** You will take the standardized ACS exam. This exam is designed to be diagnostic of your retention and mastery of the curriculum and serves as an assessment of the strengths and weaknesses of the chemistry and biochemistry curricula.

**URAC:** URAC is being held all day on Wednesday, April 26th. You are expected to participate in URAC as a requirement of this course.

**Grading Scale:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90–100%</td>
</tr>
<tr>
<td>B+</td>
<td>87–89%</td>
</tr>
<tr>
<td>C+</td>
<td>77–79%</td>
</tr>
<tr>
<td>D+</td>
<td>67–69%</td>
</tr>
<tr>
<td>B</td>
<td>83–86%</td>
</tr>
<tr>
<td>C</td>
<td>73–76%</td>
</tr>
<tr>
<td>D</td>
<td>63–66%</td>
</tr>
<tr>
<td>B−</td>
<td>80–82%</td>
</tr>
<tr>
<td>C−</td>
<td>70–72%</td>
</tr>
<tr>
<td>D−</td>
<td>60–62%</td>
</tr>
<tr>
<td>F</td>
<td>0–59%</td>
</tr>
</tbody>
</table>
**Point distribution:**

- Quizzes/pre-lecture assignments: 15%
- Journal article summaries: 10%
- Projects: 15%
- Seminar Presentation: 15%
- Outside talk reflection (2): 10%
- Peer Seminar Evaluation: 5%
- DUCK Exam: 10%
- Participation and URAC: 10%

**Basic Course Structure:** In the first week of class, we will select four topics relating to the intersection of science and chemistry in the past, present, and/or future. We will spend three weeks on each of the four topics, using the following basic structure:

**Week 1** – Read an overview article on the topic and take a quiz or complete a pre-class assignment on the topic. Class will consist of a lecture based on the overarching concepts of the topic.

**Week 2** – Read assigned journal articles about the topic and submit a written summary of the articles, then discuss the articles in preparation for Week 3’s project.

**Week 3** – Project based on the topic (brief presentation, debate, outreach, etc.).

**Academic Integrity:** Students should refer to the Westminster Course Catalog, which lists violations to the Academic Integrity Policy as including, but not being limited to: plagiarism, cheating, misrepresentation of facts or experimental results, unauthorized use of or intentional intrusion into another’s computer files and/or programs, intentional damage to a computer system, and unauthorized use of library materials and privileges. There are extensive examples of each these behaviors in the catalog, but it is important to remember that copying or significantly replicating online material is plagiarism. **Academic dishonesty will not be tolerated.** The first citation of academic dishonesty will result in a grade of zero for the assignment. The second citation will result in a failing grade for the course. All citations of academic dishonesty will be reported to the Dean of the College, in accordance with the College policy.

**Available Support Services:** Westminster College makes every effort to accommodate and serve students with a variety of support services. Please visit me outside of class if you are not performing at your desired level. The Learning Center is also great place to get additional free tutoring; contact the director, Sally Huey at x 6700 to make an appointment with a well-qualified peer tutor. Students with disabilities who require access to solutions for environmental or curricular barriers should contact Disability Resources by contacting the director, Faith Craig at 724-946-7192.