CHEM 4191, SENIOR RESEARCH PROJECT

Fall Semester, 2014

Chemistry Department, Dr. Treacy Woods, Department Chair

COURSE DESCRIPTION

Students conduct a laboratory research project, write a research report, and give an oral presentation to the class.

COURSE SEQUENCE IN CURRICULUM

This is an upper level chemistry class. It should be taken only by students in their senior year.

PRE-REQUISITE INFORMATION

Completion of thirty semester hours of chemistry courses.

INSTRUCTOR INFORMATION

Name:	Dr. Eric VanCaemelbecke
E-mail:	veric@hbu.edu
Office Phone:	281-649-3479
Office Location:	S210C
Office Hours:	by e-mail appointment
Web Page Address, Web Board, ListServ:	Blackboard

LEARNING RESOURCES

Course Text:	None
Laboratory Text:	None
Supplementary Text:	None is required for the class but the students are encouraged to consult any literature or Web site
Other Required Materials:	None

COURSE OBJECTIVES

Purpose of the course:

The purpose of the class is to give students the opportunity to find answers to chemistry questions by consulting the chemical literature.

Aims for the course:

The course will introduce students to different ways professional scientists approach a chemical problem.

On completion of this course, students should be able to:

1. Participate in literature research activities in a professional environment.
2. Summarize main findings and expose them to the community through a research article or a poster presentation.

RELATION TO DEPARTMENTAL GOALS AND PURPOSES

The chemistry department prepares students to respond to their call to share in the wise stewardship of the matter that makes up all of creation in their chosen career. The chemistry department provides a program for students that gives them:

"A thorough and practical knowledge of the intricate nature of matter;"

"The ability to explore and discover the depths of the beauty of matter;"

"The ability to analyze problems, formulate solutions to problems, and be creative in response to challenges related to the wise use of matter;"

"The ability to respect the matter in creation through preparation for excellent and ethical practice of chemistry in their chosen career."

"The opportunity to complete a major that is comparable in curriculum to those at institutions with chemistry majors certified by the American Chemical Society (ACS.)"

RELATION TO COLLEGE GOALS AND PURPOSES

"…to prepare students for careers and further education in the natural sciences and mathematics in a nurturing Christian environment. The College will also serve the HBU community by providing science and mathematics classes that empower HBU students to meet the goals and requirements of their field of study and enrich their liberal arts education."

RELATION TO THE PURPOSE STATEMENT OF THE UNIVERSITY

University mission and purpose statement from the Houston Baptist University Catalog, 2009-2010: "…to provide a learning experience that instills in students a passion for academic, spiritual, and professional excellence as a result of our central confession, "Jesus Christ is Lord"

"…Committed to providing a responsible and intellectually stimulating environment that:

- fosters spiritual maturity, strength of character, and moral virtue as the foundation for successful living
- develops professional behaviors and personal characteristics for life-long learning and service to God and to the community
- meets the changing needs of the community and society
- remains faithful to the **'Nature of the Institution'** statement"

"…Promotes learning, scholarship, creative endeavor, and service".

ATTENDANCE

Please see the official Attendance Policy in the HBU Classroom Policy on Blackboard. Students missing more than 25% of the class will be given a failing grade.

ACADEMIC ACCOMODATIONS

Students needing learning accommodations should inform the professor immediately and consult the Academic Accommodations section of the HBU Classroom Policy posted on Blackboard.

COURSE REQUIREMENTS & GRADE SCALE

<u>Course requirements:</u>

1. The class requires the student to complete a research project.

2. Students complete a written paper on their literature research.
3. Students present an oral presentation on their literature research.

Grading standards:

1. The grade is made up of three components:
- Written report, 100 points 45%
- Oral presentation, 100 points 45%
- Professionalism and Attitude, 100 points 10%
2. The Grading Scale is: 90-100 A; 80-90 B; 70-79 C; 60-69 D; <60 F

Written Report Requirements:

1. **Abstract**- one paragraph summary of research project.
2. **Introduction**- briefly put the contents of the paper into a context indicating its importance and include the reason why you chose the subject..
3. **Main body**- Well organized with documented references presentation of library findings. The total paper should be 8-12 pages long, word processed. Chemical reactions and mechanisms may be hand drawn on separate pages and labelled as figures and referenced as figures in the paper.
4. **Conclusions**- Summarize significant findings; suggest areas you would like to explore if you were doing laboratory research to advance the knowledge base of this area.
5. **References**- Use the form- Author, Journal, Volume, Year, Pages.
   Prepare references as a number list on sheets of paper separate from the main body and presented at the end of the paper. All information in the main body should be footnoted as needed by using the appropriate number from this list in parenthesis. E.g. "in 2001, Jones (7) discovered that……" refers to reference 7 on the list and is not necessarily the 7th footnote in the paper. The reference list may contain references that are not needed for footnotes but were useful general references. Also, this means that in your paper, the footnotes will probably not be numbered consecutively as 1, 2, 3, …..

Oral Presentations Requirements:

1. Present your written report orally. Focus on the interesting organic chemistry.
2. Use transparencies, power point, or a scientific poster. Do not just cut and paste your paper as is onto transparencies, power point slides or pages for a scientific poster. Only put the highlights on them and use sizes of text that are appropriate for oral presentations.
3. The oral presentation should be complete in 20 minutes. Then a question and answer period will follow.
4. The oral presentation will be graded according to an Oral Presentation Rubric, College of Science and Mathematics faculty obtained from Dr. James Taylor which was adapted from *Communication Teacher*, Spring, 2000. This rubric will be shared with CHEM 4292 students prior to Oral Presentations.

Professionalism Grade Criteria:

1. Student has regular class attendance.
2. Student arrives on time for class and any appointments with the professor outside of class.
3. Student comes to class with homework completed, prepared to contribute to the discussion.
4. Written report is neat, well organized, complete and turned in on time.

5. Oral report is well prepared, well executed, and presented on time.

   NOTE: The grading standards not specifically mentioned in this syllabus will adhere to the general policy on grades as stated in Houston Baptist University Bulletin of Information.

The grading scale is as follows:

A = 100 – 90; B = 89.99 – 80; C = 79.99 – 70; D = 69.99 – 60; F = below 60.

PROFICIENCIES:

Technology component:

Internet, website for searching information needed for the project

Designated essay/writing component:

At the end of the quarter, the students must present his(her) work orally (poster or powerpoint presentation) and write a summary of the findings in a short report.

Reading component:

The students read journal articles and other items from the scientific literature.

Oral communication component:

An oral presentation of the literature project is required at the end of the semester.

Mathematics component:

Students will evaluate and critique the mathematical results of other scientists in their reading of journal articles.

Critical thinking component:

Students must evaluate and critique the journal articles they are reading throughout the course as they are discussed in class meetings.

LATE WORK & TEST POLICY

Late work:

If the written report or oral presentation is not ready on the due date, 10 points will be deducted from the score.

Missed tests:

No tests are given to the students.

EVALUATION

Method of student appraisal of faculty:

Students will be given an opportunity to appraise the professor by completing the IDEA Faculty Evaluation Questionnaire, and/or the COSM course evaluation at the end of

the semester. The instructor, the department chairman and dean will review the responses of the students after the completion of the course.

Method of evaluating student response to course:

Students will be given an opportunity to describe their response to the course by completing the IDEA Faculty Evaluation Questionnaire and/or the COSM course Evaluation at the end of the course. The instructor, the department chairman and dean will review the responses of the students after the completion of the course.

LABORATORY DRESS CODE

Students may be asked in advance to wear closed-toed shoes and long pants during certain experimental procedures.

LABORATORY CONDUCT AND SAFETY

IMPORTANT INFORMATION FOR THIS COURSE: IF A STUDENT IS PREGNANT OR NURSING, SHE WILL NOT BE ALLOWED TO ATTEND THE LABORATORY SESSIONS BECAUSE SOME OF THE CHEMICALS, WHICH ARE NORMALLY INNOCUOUS, USED IN THESE LABORATORY EXPERIMENTS, MAY BE HARMFUL TO A DEVELOPING FETUS. IF A STUDENT BECOMES PREGNANT DURING THE COURSE, SHE MUST STOP ATTENDING THE LABORATORY SESSIONS IMMEDIATELY AND SHE IS TO NOTIFY HER PROFESSOR. THE PROFESSOR WILL DISCUSS OPTIONS THAT THE STUDENT WILL HAVE TO ENABLE HER TO COMPLETE THE COURSE REQUIREMENTS.

TOPICAL OUTLINE - ***include table, calendar, or topical outline with dates***

Presentation of Research Projects

The content of this outline and the attached schedule are subject to change at the discretion of the professor.

Student Signature – I have read and understand the syllabus for this class. I understand that the content of this syllabus and the topical outline are subject to change at the discretion of the professor. I have read and understand the HBU Classroom Policy posted on Black Board. **I promise to uphold the Code of Academic Integrity at Houston Baptist University and will not tolerate its violation by others**.