Senior Research (CHEMISTRY LABORATORY IVA-CTW) Dr. Ray

Chemistry 4160 (CRN 54100)

Summer 2014

Prerequisites:	Chem 4000 and Chem 4110 with grades of C or higher, or equivalent
Instructor:	**Dr. Gigi B. Ray, 212 Courtland North, Tel. (404) 413-5540, gbray@gsu.edu**
Class:	**Tuesdays and Thursdays 9:00 am – 11:45 am, 311 Petit Science Center (3-credit hr)** **Also meet individually with instructor weekly to discuss writing/presentations, mostly on Tuesday/Thursday afternoons.**
Office Hours:	**Tuesdays and Thursdays 1:00 – 4:00 pm in 212 Courtland North.**
Text:	Class notes will be posted on Desire2Learn: **CHEMISTRY LABORATORY IVA-CTW Section 004 Summer Semester 2014 CO**
Course Objectives:	Chemistry Laboratory IVA. Concurrent enrollment in Chem 4160 and 4170 is not allowed. ***Independent research on special topic related to chemistry. Capstone project that integrates different aspects of chemistry (biological, organic, physical, analytical).*** Become proficient in the use of: SciFinder Scholar, Web of Science, Medline (Pub Med), ChemBioDraw Ultra, Accelyrs Visualizer, PDB (Protein Data Bank), and EndNote. Do Molecular Modeling project using Accelrys Visualizer for protein structure analysis. Develop oral presentation skills (using PowerPoint). Develop critical thinking and writing skills, including rewriting and improving reports (final Chem 4160 Report submitted to department). Careers component: write resumes & cover letters, and explore jobs & internships.
Policies:	**1) Students will select a research topic of interest to them (from list), write two short reports and do two preliminary oral presentations using PowerPoint on *different aspects* of this topic/theme.** **Students will give a cumulative 20min Oral Presentation (*three subtopics*), & submit final 8-12 page Chem4160 Report in ACS Journal style** **2) Students are required to schedule 20-min appointments with instructor or TA, every week outside of class to discuss paper / presentation content & organization, and how to improve written work & oral presentations. Times: Tuesday/Thursday 1 – 4pm.** **3) Students are required to complete Responsible Conduct of Research online Physical Science module, and submit completion report. Go to:** http://ursa.research.gsu.edu/ursa/responsible-conduct-in-research/ - ***physical science module*** **4) Students are required to attend 1 seminar/event outside of class, during the semester. Submit a synopsis describing content & presentation style.** **5) Attendance, timely arrival and participation in all class meetings required.** One excused absence is allowed, but it is the student's responsibility to makeup missed work. Students must pay attention to speaker (instructor, guest speaker, or classmate), **do not browse the internet or do own work during class.**

Policies:	**6) *Submit hardcopy printouts of all assignments* during class meeting. Late submissions only accepted in person during office hours (points deducted)** **7) Cell phones, iPods, iPhones, blue tooth and other electronic devices must be OFF during all classes.** **8) Monday July 7th is last day to withdraw from the class and receive "W".** You are responsible for withdrawing before the deadline if you need to do so. The University requires that faculty members must, on a date after the mid-point of the course to be set by the Provost (or his designee): 1. Give a WF to all those students who are on their rolls but no longer taking the class 2. Report the last day the student attended or turned in an assignment.
Grading:	***Total points: 200*** *(see grading rubric)* **15 points:** Resume (8pts), Cover Letter (4pts), Job Adds (3pts) **5 points each:** Web of Science assignment, SciFinder Scholar assignment, ChemBioUltra Draw assignment, NMR Spectra assignment, EndNote reference list, oral presentation #1, presentation #2, project Outline/Articles, Seminar Summary, PPT #1, PPT #2 **10 points each:** Report #1, Report #2, Final PowerPoint **15 points each:** Class attendance/participation, Responsible Conduct in Research **25 points each:** Final Semester Report, Final Oral Presentation, Molecular Modeling Project Report
Grading Scale:	**A+ 97% A 90% A- 87% B+ 84% B 80% B- 76% C+ 71% C 65%** **C- 59% D 50% F <50%**

TENTATIVE CLASS SCHEDULE (Subject to change)

Date	Day	Topics	Meeting
Jun 10	**T**	Introduction to Course Search Scientific Literature using SciFinder Scholar & Web of Science Select Chemistry Research Project Topic (related to current issues)	**1**
Jun 10-12	**T- R**	→ meet with Dr. Ray to finalize semester topic (outside class appointment)	
Jun 12	**R**	Search Databases by Structure & Reactions, using SciFinder Scholar Discuss Good Writing Skills and How to Avoid Plagiarism → submit Web of Science assignment → submit 1-page outline of entire semester's Research Project (by noon Fri)	**2**
Jun 17	**T**	Draw Structures and Reaction Mechanisms using ChemBioDraw Ultra → submit 6 – 8 PowerPoint slides #1 (Topic Introduction and Scientists) → submit printouts of 1 review article & 1 research article on semester topic) → submit SciFinder assignment	**3**
Jun 19	**R**	Careers in Chemistry: Job Search, Resumes, Cover Letters, Internships → submit Report #1 (Introduction to entire semester's Topic; 3-4 pages → submit ChemBioDraw Ultra Drawing assignment: (Detailed Mechanism or Synthesis relating to your research topic) → submit Responsible Conduct of Research Report by this date	**4**

TENTATIVE CLASS SCHEDULE (Subject to change)

Date	Day	Topics	Meeting
Jun 24	**T**	Search for NMR/IR Spectra. Discuss Writing in the Sciences. Reference and Database Management using EndNote. → submit 8 – 10 PowerPoint slides #1-Revised (including Synthesis / Mechanism, and Revised Introduction slides) → submit 3 job adds for related positions, with different educational qualifications (BS, MS, PhD or Professional Degree) → submit Cover Letter for one specific internship or job application → submit Technical Resume – hardcopy printout *(or by email)*	**5**
Jun 26	**R**	**1st Oral Presentation (10 min each) – all students** → submit revised Report #1 → submit NMR Spectra assignment (with peaks assigned & labeled)	**6**
Jul 1	**T**	Accelyrs Visualizer Molecular Modeling Activity #1 – Tripeptide → submit 10 – 12 PowerPoint slides (#1 Revised) → submit final Resume and Cover Letter revisions	**7**
Jul 3	**R**	Accelyrs Visualizer Molecular Modeling Activity #2 – Protein Active Sites → submit Report #2 (including Revised Introduction, and Synthesis or Reaction Mechanism, using References formatted in EndNote; 5-7pages) → submit Molecular Modeling Preliminary Exercises	**8**
Jul 7	***M***	***Last day to Withdraw and possibly receive a W***	
Jul 8	**T**	Accelyrs Visualizer Molecular Modeling Activity #3 – Protein Identification Review Endnote usage & Questions → submit 12 – 16 PowerPoint slides #3 (including Introduction, Revised Synthesis/Mechanism, and NMR Spectra Analysis slides) → submit 1st seminar synopsis of those talks attended in June/July	**9**
Jul 10	**R**	Accelyrs Visualizer Molecular Modeling Activity #4 – Structure / Function Relationships. Protein Structure Analysis using Protein Data Bank → submit revised Report #2 → submit properly formatted EndNote Reference List for entire semester	**10**
Jul 11	**F**	**→ submit completed Molecular Modeling Project Report** by this date	at noon
Jul 15	**T**	**2nd Oral Presentation – 20 min each (include Intro, Synthesis & Spectra). Analyze / discuss student presentations.** (6 students) → submit 16 – 20 PowerPoint slides #3 (including all revised slides) → submit printout of 3D protein structure reference article related to your semester topic (including PDB protein structure filenames)	**11**
Jul 17	**R**	**2nd Oral Presentation – 20 min each (include Intro, Synthesis & Spectra). Analyze / discuss student presentations.** (6 students) → submit Final Report #3 (including Intro, Revised Synthesis/Mechanism, NMR Spectra Analysis & Protein Structure (8–12 pages, plus Figures & Refs)	**12**
Jul 22	**T**	**Final (3rd) Student Oral Presentations (20 min each)** → submit 5th seminar synopsis	**13**
Jul 24	**R**	**Final (3rd) Student Oral Presentations (20 min each)** Semester Wrap Up	**14**
Jul 29	**T**	**→ submit Revised Final 4160 Report, in lieu of Final Exam by 1pm**	