Instructor: Patricia Ayoubi, Ph.D.  
360A Noble Research Center  
405-744-6199  
patricia.ayoubi@okstate.edu

Office Hours: W 10:00AM-11:30AM (Additional times by appointment and drop-ins are welcome)

Teaching Assistant: Josh Reavis, 360 Noble Research Center  
josh.reavis@okstate.edu  
TBA and by appointment

Lecture: MWF 12:30AM-1:20PM, 348B NRC

Course Materials:  
Course Website (D2L, Desire2Learn)  
http://oc.okstate.edu

Additional Online Resources:

Lehninger textbook:  
http://bcs.whfreeman.com/lehninger  
OR  
http://bcs.whfreeman.com/lehninger5e

Stryer textbook:  
http://www.whfreeman.com/biochem5  
OR  
http://bcs.whfreeman.com/biochem6  
OR  

Informatics (a few of my favorites)  
http://www.rcsb.org/  
http://www.hprd.org  
http://www.hgmd.cf.ac.uk (register or login using ayoubi@okstate.edu and 89ayt12UP42)  
http://www.ensembl.org

Prerequisites: BIOC 3813 (or consent) and senior standing.

Course Objectives: This course is designed for senior undergraduate students pursuing a BS degree in biochemistry. The goals of this course are to provide training in scientific literature review and comprehension, oral presentations, use of specialized internet resources and computer programs and written communications while assessing cumulative abilities. This will be accomplished through a combination of discussions, assigned readings of classic and current peer reviewed research journal articles, group and individual seminar presentations, attendance to research seminars and various writing assignments.
**Attendance:** Due to the nature of this course, attendance is essential. We will record attendance beginning the second Wednesday of class (after the last drop and add date). There will be a deduction of 10 points from your overall class average for each unexcused absence. Excused absences that can be documented will be granted for situations such as: a University-sanctioned event that you are required to attend, legal reasons, family emergency or serious accident/illness. In any case, official documentation (e.g., from your physician, advisor, dean or other official) stating that you could not attend class due to this event or situation is required for excused absences.

**Group seminar presentations:** Students will participate in two different group seminar presentations. Each group (2-3 students) will choose a topic from the list provided or may consult with the instructor about choosing their own topic. The oral presentation will be prepared from a primary peer reviewed research journal article covering some aspect of the selected topic. Groups will present 25 minute seminars (20 minute presentation with 5 minutes for questions) using PowerPoint and participate in a discussion of the topic immediately following the presentation. Each group member must speak and answer questions during the presentation. You will likely need to do additional review of cited research and review articles in order to fully grasp the paper and topic you are presenting. We recommend that you utilize your textbooks and PubMed at http://www.ncbi.nlm.nih.gov to do additional research. Ideally, the seminar will include the following:

- A. Review of the topic and current body of knowledge (making everyone familiar with the topic)
- B. Specify the purpose and focus of the current paper (questions or hypotheses)
- C. Overview of the experimental methods and approaches
- D. Summary of results, data and findings
- E. Conclusions summarizing any conclusions drawn from the major results - you may include broader impacts and implications of research, where future research is heading, what questions remain unanswered, etc

In order to facilitate discussion, students presenting the seminar must distribute the paper to the class at least one week prior to the seminar. Non-presenters are expected to read every paper before coming to class, attend every presentation and contribute to the discussion. For full credit, all PowerPoint documents will be turned in on presentation day.

**Official discussion participants:** Each student should sign up as an “Official discussion participant” for two group seminar presentations (excluding their own group). There will be a sign-up sheet available at the beginning of class period with the list of student presentations. When you sign up as an official discussion participant, you are responsible for asking at least two good questions during the discussion period following the presentation. You are also responsible to make certain that each student presenter (for individual seminar presentations described below) is asked at least two questions. Of course, all students are encouraged to ask questions following any presentation they attend. Half of the points for "Discussion participation" will be earned for each period in which the student serves as an official “Discussion participant”.

**Computer/internet assignments:** Online and computer based homework exercises will be assigned to orient students to the internet databases, tools and resources needed for the term paper assignment.
Biochemistry seminar attendance and report: You are required to attend two Biochemistry and Molecular Biology department seminars scheduled most Friday afternoons at 4PM in 348B NRC. Attendance to a seminar from a related academic department will be permitted but requires PRE-approval from the instructor. The OSU BMB seminar schedule is TBA and will be posted on D2L when available. Following each seminar, you will submit a written report (2-3 pages, single spaced) communicating what you have learned while documenting the seminar you attended. The reports will be graded on completeness, explanation of the research topic and problem, and review of the major findings and conclusions. Students should include in each report the following elements:

A. Biographical information on the professor (where born, where educated, current appointment and title, etc)
B. Statement of the research problem, hypothesis or science covered.
C. Description of the experimental techniques that were used to study the problem
D. Major experimental data and results.
E. Discussion and conclusions or summary
F. Implications and future directions

Topic abstract with citations: Each student will be required to select and review a protein for which a published three-dimensional structure (covering a minimum of 50% of the protein or subunit) is available and excluding those structures found in the course text books used in BIOC 3713, 3813 and 4113 (this includes Stryer and Lehninger). This will become the topic for an abstract, individual seminar presentation and term paper. Students will first prepare and submit a short (~250-350 words) abstract on their chosen protein topic. The Abstract should summarize the importance of the protein, briefly review the current body of knowledge related to this protein and should include information gathered from a minimum of five recent research articles that have been read (primary, peer-reviewed literature only and no news paper reports/popular press/magazines). At the end of the abstract, please cite the papers you read and used in preparing the abstract. In addition, students will submit abstracts to TurnItIn.com for plagiarism analysis prior to due date. The main body text (excluding the citations) should contain less than 3% similarity.

Students must receive approval of their protein from the instructor prior to preparation of the report. However, do your research before deciding on a protein and if you are unable to find the required information (listed below) then choose a different protein. The instructor and TA will be available to assist students in making selections. Make your choices early as approval of proteins is on a first-come basis and proteins cannot be reviewed by more than one student.

Individual seminar presentation: Each student will be required to present a 20 minute computer aided oral presentation covering the same protein as the submitted term paper. The oral presentation must be prepared using PowerPoint, must contain figures, graphics, videos, animations, tables, etc to communicate information related to the protein (i.e., not just plain text) and must be submitted to the instructor (via email, CD, etc) no later than the day of the presentation. The paper and oral presentation will review the same single protein (or group of proteins) for which a published 3D structure is available (excluding those structures found in our text books).

Non-presenters: You are expected to attend every presentation.

Term Paper: Each student will be required to prepare a written term paper containing a minimum of 10 full length, typed pages of main body text (double spaced, maximum font size of 12 points) not counting the figures, tables and references. Term papers must also include non-text content such as figures, graphics, tables and references in addition to the required 10-pages of text. Identical printed and electronic versions of the completed paper will be required on the due date. Electronic submission might be on CD, by email or other electronic delivery method. In addition, students will submit papers to TurnItIn.com for plagiarism analysis prior to final due date. The main body text (excluding the citations) should contain less than 3% similarity.
The term paper will contain a review of a single protein for which a published three-dimensional structure (covering a minimum of 50% of the protein or subunit) is available and excluding those structures found in our textbooks (this includes Stryer and Lehninger). The protein might include a single member of a protein family or a single component or subunit of a larger protein complex. The review will include a comprehensive discussion of

1. Introduction and topic review (explain why we should care about this protein)
2. The gene localization and organization
3. Gene regulation (both positive and negative, if known)
4. Protein structure (primary, secondary, tertiary and quaternary)
5. Post-translational modifications (if any)
6. Protein function and activity
7. Relationship between structure and function
8. Regulation of protein activity.
9. Summary or Conclusions (include future direction of research, treatment or therapy, etc related to this protein)

Students must receive approval of their protein from the instructor prior to preparation of the report. However, do your research before deciding on a protein and if you are unable to find the required information (listed above) then choose a different protein. The instructor will be available to assist students in making selections. Make your choices early as approval of proteins is on a first-come basis and proteins cannot be reviewed by more than one student.

**Assessment Exam:** During finals week a standardized exam (i.e., the American Chemical Society Exam in Biochemistry, the GRE Biochemistry, Cell and Molecular Biology Subject Test or similar exam) will be administered for a grade to assess your cumulative abilities.

**Grading:** The following table shows the grade distribution for each assignment described above

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Group seminar presentations</td>
<td>200</td>
</tr>
<tr>
<td>Discussion participation</td>
<td>100</td>
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<tr>
<td>Seminar reports</td>
<td>100</td>
</tr>
<tr>
<td>Computer/internet assignments</td>
<td>100</td>
</tr>
<tr>
<td>Topic abstract with citations</td>
<td>100</td>
</tr>
<tr>
<td>Individual seminar presentation</td>
<td>150</td>
</tr>
<tr>
<td>Term Paper</td>
<td>150</td>
</tr>
<tr>
<td>Assessment Exam</td>
<td>100</td>
</tr>
<tr>
<td><strong>Course Total</strong></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
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Final grades will be assigned according to a straight percentage scale. The following percentage scale will serve as a guideline for letter grade assignment:

- 90 – 100% = A
- 80 – 89.9% = B
- 70 – 79.9% = C
- 60 – 69.9% = D
- 0 - 59.9% = F
# BIOC 4113 
SENIOR SEMINAR IN BIOCHEMISTRY 
TENTATIVE SCHEDULE 
SPRING 2010

Patricia Ayoubi, Ph.D  
360A NRC  
patricia.ayoubi@okstate.edu,  744-6199

<table>
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<tr>
<th>Week</th>
<th>Topic</th>
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| Jan 11-15  | Introduction, orientation and discussion on preparing quality talks and reports  
            | First group seminar assignments and selection of topics                |
| Jan 20-29  | Prepare for first Group Seminar Presentation (bring laptop computers)  
            | Internet assignments and work (bring computers)                       |
| Feb 1-Feb 12 | First round of Group Seminar Presentations                             |
| Feb 15-19  | Internet assignments and work (bring computers)                       
            | Second group seminar assignments and selection of topics               |
| Feb 22-Mar 5 | Second round of Group Seminar Presentations                           
            | Protein topic abstract (with citations) due Mar 5th                   |
| Mar 8-26   | Internet assignments presentation/paper preparation (bring computers)  
            | First Biochemistry seminar report due                                 |
| Mar 29-Apr | Term paper due Mar 29                                                
            | 23  
            | Individual seminar presentations, begin                               |
| Apr 26-28  | Final internet assignments, presentation/paper preparation (bring computers)  
            | Review, summary and conclusions                                       
            | Second Biochemistry seminar report due                                |
| Apr 30 or May 7 | Final Exam, assessment exam (standardized exam)                        |

This schedule is an approximation of the topics that will be discussed in class. Changes in the topics or order may occur in response to what you and we find particularly interesting or difficult. If necessary, exam dates may change by ±1-2 days at the instructor’s discretion. Any changes in exam dates will be announced in class and posted on the OSU D2L website.
**Plagiarism and TurnItIn:** All written work (abstract and term paper) will be submitted to TurnItIn.com for a plagiarism analysis. If any part of what you submit is found to be plagiarized the report will automatically receive a zero and be reported for academic dishonesty or misconduct. OSU provides details on the academic dishonesty policy posted at http://www.okstate.edu/ucs/integritystudent.html. You are encouraged to submit and scan your written work to Turnitin.com prior to submitting it for grading. You must self enroll using a class ID (3060675) and password (osubmb). When you submit a document to TurnItIn for analysis, you will receive an originality report. You will need to address any potential plagiarism issues identified by TurnItIn before submission of your final report for a grade.

**Academic dishonesty or misconduct:** Academic dishonesty or misconduct is defined in the Oklahoma State University Policy and Procedures Letter 2-0822. You should become familiar with this document as a matter of self-interest. There is an absolute zero tolerance policy for academic dishonesty or misconduct (without exception). Additional information, policies and support can be found at http://osu.okstate.edu/acadaff/aa/CurrentStudents.htm.

**Disabilities:** If any member of this class feels that he/she has a disability and needs special accommodations of any nature, we will work with you and the Office of Student Disability Services, 315 Student Union or http://sds.okstate.edu to provide reasonable accommodations to ensure that you have a fair opportunity to perform in this class. Please advise Dr. Ayoubi of such disability and the desired accommodations as early as possible to address your needs in a timely manner.

**Oklahoma State University Syllabus Attachment:** We are very concerned about your success as a student at OSU. The information at the following link is provided to answer questions most often asked by students. http://osu.okstate.edu/acadaff/aa/CurrentStudents.htm. A copy of this course syllabus and the OSU Syllabus Attachment are posted on the OSU D2L website for this course for your convenience.

**Drop and Add Dates:**
- Tuesday, January 19: Last day to add a course (nonrestrictive)
- Tuesday, January 19: Last day to drop a course with no grade or fees
- Friday, January 22: Last day to add a course with permission of instructor
- Friday, January 22: Last day to drop a course with automatic grade of W, 50% refund
- Friday, April 9: Last day to drop a course with automatic grade of W
- Friday, April 9: Last day to withdraw from all courses with automatic grades of “W”
- Friday, April 23: Last day to withdraw from all courses with an assigned "W" or "F"

**HAVE A GREAT SEMESTER!!**
Additional information about the course will be given to you later this week and throughout the semester.