

ADVANCED BIOVCHEMISTRY II (CHE444)
Winter 2003

TIME AND PLACE: Monday 5:45-9pm, Levan 203

INSTRUCTOR: Dr. Lihua Jin

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OFFICE HOURS: 12:00-1:00 pm (M/T/Th/F), or by appointment

REQUIRED READING:

1. Selected Chapters from "How to Write & Publish a Scientific Paper", 5th ed., Robert A. Day, Oryx Press, 1998. Copies of selected Chapters will be handed out in class.
2. *Lehninger Principles of Biochemistry* 3rd Ed., by David L. Nelson and Michael M. Cox., Worth Publishers, New York, 2000, part of Chapter 12 & 13.

BACKGROUND READING:

Any current biochemistry textbook, such as *Lehninger Principles of Biochemistry* 3rd Ed. as above.

COURSE OBJECTIVES:

This course is designed for MS students (chemistry and biochemistry) who have finished Che442 (Advanced biochemistry I) or with an equivalent background. The goals of this course are for students 1) to develop written and oral skills for communicating scientific work and ideas; 2) to learn to search biochemical literature; 3) to learn to extract important information from scientific primary literature; 3) to get familiar with the current biochemical literature by exploring several areas of research, and 4) to continue to acquire basic biochemistry knowledge through in depth study of chosen topics.

CLASS FORMAT:

Throughout the 10-week quarter, we will be reading and discussing selected chapters from Robert A. Day's "How to Write & Publish a Scientific Paper, 5th ed. We will also be reading and discussing 7 research papers selected from primary literature. Initially you will be given a list of questions for each paper to guide you in extracting key information. Later you will be required to do your own paper summary. Your ability of extracting key information will be tested through open-book quizzes on the papers. You will also pick a topic and research the scientific primary literature to write a paper on the topic and give an oral presentation on your paper. In addition to writing a seminar paper, to practice scientific writing, you will also be writing abstracts for two research papers. Finally, as many of you don't have a full year biochemistry background, we will be devoting some time almost every class to the study of chosen biochemistry topics in

lecture format. Homework on the lecture materials will be given and content mastery will be tested in two closed book quizzes. Detailed class plan and assignments for each class are listed below.

CLASS SCHEDULE:

Class	Topics/Papers	Assignment
Class 1 Jan 6	<ol style="list-style-type: none"> 1. Course Introduction 2. Why a Biochemist Must Read the Primary Literature and Must Write Well (Chapter 1) 3. Structure of Scientific Papers (IMRAD) (Chapter 3) 4. Membrane Transport (Lehninger's, Chapter 12) 	<ol style="list-style-type: none"> 1. Read Day's Chapters 3, 4 & 6 2. Prepare for quiz 1 on Day's Chapters 1&3 3. Read Paper 1 with a list of questions 4. HW 1 on Membrane Transport
Class 2 Jan 13	<ol style="list-style-type: none"> 1. Quiz 1 (closed book) 2. How to prepare the Title and the Abstract (Chapter 4 &6) 3. Discussion of Paper 1 4. Membrane transport (Lehninger's, Chapter 12) 	<ol style="list-style-type: none"> 1. Read Day's Chapters 7 & 8 2. Read Paper 2 with a list of questions 3. Choose a Title & write an abstract for Paper 2 4. HW 2 on Membrane Transport
Class 3 Jan 20	<ol style="list-style-type: none"> 1. How to write an introduction & Materials and Methods (Chapters 7 & 8) 2. Discussion of paper 2 3. Biosignaling (Lehninger's, Chapter 13) 	<ol style="list-style-type: none"> 1. HW 1&2 due 2. Title and Abstract due 3. Read Day's Chapters 9 & 10 4. Read Paper 3 5. HW 3 on Biosignaling 6. Prepare for Quiz 2 (Membrane Transport & Day's Chapter 7-10)
Class 4 Jan 27	<ol style="list-style-type: none"> 1. Quiz 2 (closed book) 2. How to write the Results and the Discussion (Chapter 9 & 10) 3. Discussion of Paper 3 4. Biosignaling (Lehninger's, Chapter 13) 	<ol style="list-style-type: none"> 1. Revise Abstract 1 2. Read Day's Chapters 12-14 3. Read Paper 4 and prepare for Quiz 3 4. Write an Abstract (Abstract 2) for Paper 2 5. HW4 on Biosignaling
Class 5 Feb 4	<ol style="list-style-type: none"> 1. Quiz 3 on Paper 4 (open book) 2. How to cite References, design effective Tables and Graphs (Chapters 12-14) 3. Discussion of paper 4 4. Library Resources and Tools for searching biochemical literature 4. Choosing Seminar Topics 	<ol style="list-style-type: none"> 1. HW3&4 due 2. Revised Abstract due 3. Abstract 2 due 4. Choose a Seminar Topic and search for papers to research on (minimum 4 papers) 5. Read Day's Chapter 25 6. Read Paper 5 and prepare for Quiz 4
Class 6 Feb 11	<ol style="list-style-type: none"> 1. Quiz 4 on Paper 5 (open book) 2. How to write a Review Paper (Chapter 25) 3. Discussion of Paper 5 4. Selected topic of Biochemistry 	<ol style="list-style-type: none"> 1. Read Day's Chapters 29 & 30 2. Seminar Topic and List of Major Papers (with abstract) Due 3. Prepare Outline & 1st draft Seminar Paper 4. Prepare for Quiz 5 (Biosignaling/Day's Chapters 12-14, & 25) 5. Prepare Seminar Paper Outline 6. HW5 on selected topic

Class 7 Feb 18	<ol style="list-style-type: none"> 1. Quiz 5 (closed book) 2. How to present a Paper orally and Prepare a Poster (Chapters 29&30) 2. Selected Topic of Biochemistry 	<ol style="list-style-type: none"> 1. Read Day's Chapters 32-34 2. Prepare 1st draft Seminar Paper 3. Read Paper 6 and prepare for Quiz 6 4 HW6 on selected topic
Class 8 Feb 25	<ol style="list-style-type: none"> 1. Quiz 6 on paper 6 (open book) 2. Use of English/Avoiding Jargon/ How & When to Use Abbreviation (Chapters 32-34) 3. Discussion of Paper 6 (Review) 	<ol style="list-style-type: none"> 1. HW5&6 due 2. Read "Behind the Scenes at Journals" 3. Read Paper 7 4. Electronic submission of 1st draft Seminar Paper by 5pm, Thr Feb 21! Feedback will be given within 2-4 days 5. Prepare for PowerPoint Presentation
Class 9 Mar 4	<ol style="list-style-type: none"> 1. Behind the Scenes at Journals 2. Selected topic of Biochemistry 	<ol style="list-style-type: none"> 1. Hard copy submission of 1st draft Seminar Paper 2. Revise Seminar paper 3. Prepare for PowerPoint Presentation
Class 10 Mar 11	<ol style="list-style-type: none"> 1. Seminar Paper Presentations 	<ol style="list-style-type: none"> 1. Electronic and hard copy submission of final Seminar Paper* 2. Electronic submission of PowerPoint Presentation Slides* <p>*If file is too large, email attachment will not work. Instead please submit file in a disk</p>

COURSE MATERIAL POSTING:

Class PowerPoint presentation slides, homework assignments and answers to homework will be posted on blackboard the day before class. Announcement and materials will also be sent through email. Please make sure your email in blackboard is current.

COURSE EVALUATION:

1. The paper **Title, abstract 1 (1st draft), abstract 1 (final draft), abstract 2** contribute **2%, 5%, 3%, and 5%**, respectively, towards final grade.
2. **Homework** finished and turned in **on time** contributes **6%** to the final course grade.
3. There will be **4 in class open book quizzes** on papers you read before class discussion and **2 closed book quizzes** on basic biochemistry concept and on principles of scientific writing. You are allowed to drop one open book and one closed book quiz. The remaining 3 open book quizzes constitute **15%** of the course grade. The remaining one closed book quiz constitutes **10%** of the course grade.
4. Active class participation is absolutely necessary for this course, particularly during discussion of scientific papers and on scientific writing. Class participation constitutes **14%** of the course grade. To earn **10%** of the **14%**, you need to speak **40 times**, which is equivalent to ~ **4 times** per class period (3 hrs), not a difficult requirement for a small class of 6 students. The quality of your class participation will contribute **2%** and the remaining **2%** will be on your response to your peer's seminar presentation.

5. Your Seminar Paper constitutes **20%** of the course grade. Seminar Paper will be graded based on your understanding of the researched papers as reflected in your writing, clarity of writing, organization of your paper, inclusion of all components, accuracy of references, and all the relevant points discussed concerning scientific writing.

*You are not supposed to copy directly from the research papers. Write your own paragraph and sentences. Direct copy of paragraphs or a group of sentences, if caught, will earn a zero for your seminar paper. Occasional direct copy of a sentence is ok but often editing is required to fit the context.

6. Oral PowerPoint Presentation constitutes **20%** of the course grade. Key points on how to give an effective oral presentation are given at the end of this syllabus. You will be graded on the quality of your PowerPoint slides and your oral presentation. More details will be given in class.

7. Summary of grading:

Title of Paper 1	2 pts
Abstract 1, 1 st Draft	5 pts
Abstract 1, Final Draft	3 pts
Abstract 2	5 pts
Homework (finished and handed in on time)	6 pts
Open book quizzes (drop one quiz)	15 pts
Closed book quizzes (drop one quiz)	10 pts
Participation in class discussion	14 pts
Seminar paper	20 pts
Oral Presentation	20 pts
<hr/> Total	100 points

POLICY ON MISSED QUIZZES/EXAMS AND LATE ASSIGNMENT

Quizzes: Normally, **no make up open book quizzes** will be given. The missed quiz will be your drop quiz. If you have a legitimate reason to miss more than one quiz and if you let me know ahead of time, we can arrange another quiz date for you. For legitimate reasons, **make up quiz on the closed book quizzes** can be arranged if you let me know ahead of time.

Assignment: Late homework and other assignment will receive half credit if handed in within a week of the due date and no credit if more than a week late.

ACADEMIC INTEGRITY:

For the University's academic integrity policy, please go to <http://condor.depaul.edu/~handbook/code17.html>. Violation of academic integrity is a serious matter. Any student who gives or receives aids on exams will receive a **grade deduction of two levels** in the course, e.g., B to D.

ASSIGNMENT: ABSTRACT (AND TITLE)**Content**

- 1) Outline of the paper with a title
- 2) *Informative*, as opposed to *descriptive*, abstract
- 3) Miniversion of paper
- 4) Brief summary of sections of paper

Objectives

- 1) To extract essential features from a paper (hypotheses tested or major observation reported)
- 2) To state concisely the objectives and scope, the methods, the results, and the conclusions
- 3) To devise a title for a paper

Style

- 1) Scientific English
- 2) Completely self-contained

Organization

- 1) Outline (What are the major points and conclusions?)
- 2) Introductory sentence
- 3) Follow order of sections of paper
- 4) Most in past tense because it describes work being reported

Format

- 1) Absolute, 250-word limit (use word count on word processor)
- 2) Final draft, single spaced
- 3) Single paragraph

SEMINAR PAPER (20 points):**Content**

- 1) Title
- 2) Outline of the paper
- 3) *Informative*, as opposed to *descriptive*, abstract
- 4) Introduction on the issues of the field
- 5) Summary of several papers
- 6) Future direction of the research

Objectives

- 1) To learn how to do literature search
- 2) To learn the important issues of a chosen research area
- 3) To extract essential features from a paper (hypotheses tested or major observation reported)
- 4) To summarize the objectives and scope, the methods, the results, and the conclusions for each paper studied
- 5) Learn to understand a field and begin to ask your own questions for further research.

Style

- 1) Scientific English
- 2) Completely self-contained

Organization

- 1) Title
- 2) Table of content
- 3) Introduction on the chosen research area: what are the issues and what are the current understanding of the issues (no fewer than 10 papers, one of them must be a review paper although you can include more)
- 4) Summarize individual papers separately (3-4 papers): objectives and scope, the methods, the results, and the conclusions for each paper.
- 5) Your own summary of the papers and your own ideas for future research.
- 6) A list of references
- 7) Use past tense for describing work being reported except for your own ideas for future research.

Format

- 1) First draft double-spaced
- 2) Final draft 1.5-spaced with a 1 inch margin for all four sides and a font size of 12.
- 3) Final draft must be no less than 12 pages including title page, all the figures and references

ORAL PRESENTATION (20 points)

Objectives

- 1) Learn to present scientific work
- 2) Learn to give an effective presentation
- 3) Prepare for your future career by learning and practicing good techniques for giving an effective presentation

Tips for an effective presentation

- 1) Preparation and practice is the key!
- 2) Tell a story:
 - a) Do not read your talk!!!
 - b) Get your audience interested from the very beginning
 - c) Give clear outline and goals in the beginning
 - d) Do not rush through
 - e) Trim the story (get rid of nonessential information)
 - f) Skillfully combine your speak with visual aid
 - g) Refer back to your outline from time to time
 - h) Emphasize important points
 - i) Have simple slides (large font size, key words, large figures or pictures, use different colors)
 - j) Slide animation is highly recommended
 - k) Ask the audience questions often and engage the audience as much as you can
 - l) Show your high energy and enthusiasm to your story (it saks the energy of the audience if you are lukewarm to your own story and don't blame them if they fall asleep!)
 - m) Have good posture, make eye contact with the audience, smile, and use humor (appropriate of course) whenever you can. Analogy also works great.
 - n) Be confident. Most likely no one in the room know better than you do on the topic, your professor included!☺
 - o) Throughout the presentation, have a positive attitude
 - p) You are not going to fail this course unless you do two things: show no sign of hard work and get nervous during the presentation.☺

HAVE A GREAT QUARTER!

