University of Minnesota
School of Public Health

PubH 8161 Current Literature in Toxicology
Course Syllabus

Fall Semester 2004

Credits: 1
Course Meeting Time/Place: Mondays 4:15-5:15, CCRB 741

Instructor: Lisa Peterson

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I. Course Description
Students will read, discuss, and present current primary literature in toxicology, with an emphasis on modern methods in toxicology and the development of critical thinking skills.

II. Learning Objectives

1. To learn to think critically about experimental design and data interpretation in current approaches to toxicology.

2. To be able to develop strategies to investigate issues in toxicology.

3. To apply toxicology principles learned in other courses to real world research questions.

4. To learn to read and analyze primary literature in toxicology.

5. To learn to make scientific presentations to your peers.

III. Methods of Instruction and Work Expectations

Class Presentations:

Students will make presentations on October 25, November 1 and 8 on different techniques and approaches used in current toxicological studies. These presentations involve explaining the biological or biochemical basis of the techniques, the types of research questions that can be addressed using these techniques, and the advantages and potential pitfalls of using the techniques. These presentations will require the students to do outside research.

With the exception of October 25, students will work in pairs on these presentations. Techniques and assignments are listed below. Students can switch partners and switch techniques if all agree. Students may also substitute another technique that they are particularly interested in with permission from the instructors.
Northern-Tom Higgins

Southern-Sing-Wei Ho

Western-Shalene Thomas

Receptor binding assays-Marissa Lightbourne

Gene arrays: Marissa Lightbourne and Tom Higgins

Toxicology tests-Frog embryo teratogenesis assay and local lymph node assay: Sing-Wei Ho and Shalene Thomas

For the remaining weeks, each student will choose one journal article from the primary literature and lead a discussion of the article in class. As the discussion leader, you must summarize and outline the topic in a manner that gives the class a general understanding of the background, including why you chose this paper, what hypothesis is being tested, what has been established in this particular area of scientific inquiry, and what questions remain controversial. You must then explain and critique the paper. This includes: 1) explaining the purpose of the study; 2) for each figure, explaining the purpose of the experiments, the experimental approach, the results, the conclusions, and potential pitfalls of the experiments; and 3) giving a critique of the paper (for example, were all of the proper controls included in the experiments, do you agree with the author’s interpretation of their data, are there alternate explanations for the results, what other types of experiments should be done). You may need to do additional reading on your own to prepare for your presentation.

While reading the articles and attending the seminars, keep track of what was clear and unclear to you and these issues will be discussed during the class period. If there are
terms that you don’t understand, you should consult toxicology sources prior to the classroom discussions.

You must get approval for your paper choice from Lisa two weeks before your presentation.

You are responsible for providing the complete reference for your paper to the other class members at least one week in advance of your presentation. If you provide Lisa with a link or a hard copy, she will distribute it to the group. You may also want to provide the other members of the class with review articles on the subject of the paper.

Students are welcome to trade dates for their individual presentations.

Participation in Class Discussions: You are expected to contribute to class discussion by providing questions and comments during the presentations. Your questions and comments should demonstrate that you have thoroughly read and thought about the paper.

Structure for Presentation of Journal Articles

Everyone is expected to read the papers and be an active participant in the discussion.

1) Introduction
a) Explain why you chose this paper. Why does it interest you?

b) State what question is being asked – State the hypothesis being tested.

c) Explain why the question is being asked – describe the background leading up to the current study and how the results will advance the field. What aspects of the field have been established? What aspects of the field remain controversial?
d) Explain how the authors are testing their hypothesis. Describe the model system and experimental approach. Address the pros and cons of the approach taken in the publication.

2) For each figure, table or experiment, present the following:

a) The purpose of the experiment.

b) The question being asked and methods used to answer the question.

c) The results

d) The author’s interpretation of the results

e) Your critique of the experiment: discuss appropriate controls, alternate methods, complementary experiments.

3) Discussion

a) General critique

b) List the contributions this paper makes to the field.

c) Discuss whether the research actually answers the questions the authors set out to address.

d) Describe any unanswered questions.

e) Give your opinion about what the next study should be.

IV. Grading

1. Grading Criteria - S/N only

2. Grading Option (if applicable) – Students may change grading options during the initial registration period or during the first two weeks of the term. The grading option may not be changed after the second week of the term.
3. Course Incomplete – An incomplete grade is permitted only in cases of exceptional circumstances and following consultation with the instructor. In such cases an “I” grade will require a specific written agreement between the instructor and the student specifying the time and manner in which the student will complete the course requirements. Extension for completion of the work will not exceed one year.

4. Scholastic Dishonesty – Scholastic dishonesty is a violation of the student conduct code and is defined as “any act that violates the rights of another student in academic work or that involves misrepresentation of your own work. Scholastic dishonesty includes (but is not limited to): cheating on assignments or examinations; plagiarizing, which means misrepresenting as your own work any part of work done by another; submitting the same paper, or substantially similar papers, to meet the requirements of more than one course without the approval and consent of all instructors involved; depriving another student of necessary course materials; or interfering with another student’s work.” Scholastic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of “F” or “N” for the entire course. Please consult the student conduct code at: <http://www.umn.edu/regents/policies/academic/StudentConduct.html>.

V. Course Withdrawal

School of Public Health students may withdraw from a course through the second week of the semester without permission. No “W” will appear on the transcript. After the second week students are required to do the following:

· The student must contact and notify their advisor and course instructor informing them of the decision to withdraw from the course.

· The student must send an e-mail to the SPH Student Services Center (SSC). The email must provide the student name, ID#, course number, section number, semester and year with instructions to withdraw the student from the course, and acknowledgement that the instructor and advisor have been contacted.

· The advisor and instructor must email the SSC acknowledging the student is canceling the course. All parties must be notified of the student’s intent.

· The SSC will complete the process by withdrawing the student from the course after receiving all emails (student, advisor, and instructor). A “W” will be placed and remain on the student transcript for the course.
After discussion with their advisor and notification to the instructor, students may withdraw up until the eighth week of the semester. There is no appeal process.

VI. Course Text and Readings

Primary literature to be chosen by students.

VII. Course Outline/Weekly Schedule

October 18: Introduction

October 25: Northern, Southern, and Western analysis; Receptor binding-15 min each-all students

November 1: Gene arrays- Marissa Lightbourne and Tom Higgins

November 8: Toxicology testing-Sing-Wei Ho and Shalene Thomas

November 15: Marissa Lightbourne-paper presentation

November 22: no class

November 29: Shalene Thomas-paper presentation

December 6: Tom Higgins-paper presentation
December 13: Sing-Wei Ho-paper presentation

Any student with a documented disability (e.g., physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the instructor and Disability Services at the beginning of the semester. All discussions will remain confidential. For further information contact the University of Minnesota Disability Services website at <http://disserv3.stu.umn.edu/index2.html> or call 612/626-1333 (V/TTY).