

# BIOL 492—SENIOR SEMINAR

## Spring, 2010

Karl J. Fryxell

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Web site (will include course materials): <http://mason.gmu.edu/~kfryxell>

**Course Objectives:** 1) to introduce students to the lifelong task of keeping up with the new scientific information; 2) to develop the skill of the separation of an objective scientific information reported in the paper or in the presentation from the scientific speculation (a hypotheses) that still warrant further research to be proven; 3) to teach students how to present and listen to the primary reports of scientific discoveries and how to properly critique the content of such reports; and 4) to survey selected recent and exciting developments in biology that may be of general interest, and/or may be helpful in thinking about career goals.

### **Schedule and content:**

Section 1 Monday 1:30 – 2:45 in Research 1, room 202.

Section 2 Monday 3:00 – 4:15 in Robinson B203.

THESE TWO SECTIONS ARE NOT INTERCHANGEABLE !!!!

The first class meeting will be spent in organization and detailed discussion of what would be expected from students in this class. Next week will be dedicated to the 1-hr long lectures of Dr. Fryxell, who will discuss various elements of a typical experiment in biology, including formulation of the hypothesis, proper positive and negative controls, applicability of statistical methods and drawing a correct conclusion from the results of the experiment. The third week will be a lecture on how to write (and read!) a scientific paper. Material from these lectures will be covered in a brief exam at the end of the course (see below).

The following weeks we will have two individual student presentations a day in a form of PPT presentation. Each presentation will be based of an original research or short review paper, from *Nature* or equivalent journal. **ALL STUDENTS ARE REQUIRED TO READ THE CORRESPONDING PAPERS BEFORE THE CLASS.** Immediately after the presentation the peer evaluation/critique forms will be collected (see at the end of the syllabus). These forms have to be filled in class. **Students are responsible for printing out peer-evaluation forms for themselves and for bringing them to every class!**

Length of each student presentation is 25 minutes. Overlong presentations may be terminated by the instructor. Each presentation should allow adequate time for discussion. Each presenter must write, and present three discussion questions, and transmit them to the instructor.

Students are encouraged to include in the presentation relevant material from other sources, e.g. Internet, other scientific papers, books. Every used source has to be listed on the last PPT slide. If you download some picture from the web, you shall place the link to corresponding website at the slide (in small font). This is **REQUIRED** by Copyright law.

**IMPORTANT: papers for presentation often contain lots of “scientific” words and abbreviations. Explaining these to the class is an important part of the assignment. Presenters should research vocabulary terms and explain what they mean to the class.**

## **Grading:**

TAKE HOME MULTIPLE CHOICE EXAM (on scantron)

(based on discussion questions from all weeks) ...30%

PRESENTATION (instructor evaluation) .....25%

PEER-REVIEW EVALUATIONS/CRITIQUES.....25%

In-class discussions & attendance.....20%

Seminars require consistent participation by the whole group, so that students who prepare a good talk can expect a good audience, and vice versa. Therefore, there will not be any excused absences in this seminar, for any reason. If you must be absent, there are several ways to avoid a grading penalty. First, a single discussion/attendance grade will be automatically dropped for each student. Please plan ahead, and save your dropped absence so that it will be available for a real problem, like illness or job interviews. Second, students who wish to reschedule their presentations may do so, if and only if they mutually agree with another student to switch presentations dates/times, and if both students so notify the instructor. In all other cases, there will be a 10% per week penalty for late presentations.

## **Papers for student presentations:**

All topics to be reviewed in the class will be based on the recent scientific papers published in *Nature* or similar journals. Students should download these papers from the GMU library web site ([library.gmu.edu](http://library.gmu.edu), please consult the library if you need help in this process). Another convenient source of information is PubMed ([www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov), choose “search PubMed” from the pull down menu at the top).

## Course Schedule

Jan 25 – Introduction: course schedule and policies, etc.

Feb 1 – KJF lecture on Experimental Design

Feb 8 – KJF lecture on How to Write (and Read) a Scientific Paper

Feb 15 – student presentations 1

Feb 22 – student presentations 2

March 1 – student presentations 3

March 8 – spring break

March 15 – student presentations 4

March 22 – student presentations 5

March 29 – student presentations 6

April 5 – student presentations 7

April 12 – student presentations 8

April 19 – student presentations 9

April 26 – student presentations 10 (take home exam passed out)

May 3 – student presentations 11 (take home exam returned)

## BIOL 492 - PEER REVIEW EVALUATION/CRITIQUE FORM

(please write YOUR NAME at the bottom of every form your submit)

1. Name of the presenter/ Topic of the presentation

2. Please evaluate clarity of the presentation. Was the presenting student able to make the subject clear for you?

0 1 2 3 4 5 6 7 8 9 10

3. Please evaluate Powerpoint use by the presenting student (informative and interesting? Or just distracting?)

0 1 2 3 4 5 6 7 8 9 10

4. Please evaluate whether you gained new knowledge through this presentation

0 1 2 3 4 5 6 7 8 9 10

5. Please evaluate ability of the presenting student to handle questions from auditorium (if there were no questions, please state that and explain why do you think nobody asked any question after this presentation).

0 1 2 3 4 5 6 7 8 9 10

6. Please evaluate the total amount of work your fellow student did to prepare to this presentation

0 1 2 3 4 5 6 7 8 9 10

7. What were strong and weak sides of the presentation? (What would you do better if you will be presenting this topic yourself?)

Your name

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