**Biological Literature and Communication (WAC)**
**BIOL 4700 Section 4**
**Spring 2015**

Meets: MW 2-3:15 PM
Wolfe Hall 3246

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Office Hours: TWTh 9:30 - 11 AM, or by appointment

**What this course is about:** Science is a method used to explore and understand the nature of the world around us. Scientific assertions of fact are based on experimental and observational evidence, and these assertions are typically first presented in peer-reviewed or open scientific forums where the data that supports the claims are shown. Published articles that present this primary data are known as the primary literature. There is also a large secondary literature that includes articles providing overviews of the primary literature, and evaluating and connecting the factual conclusions made in the original publications. Eventually discoveries may make their way into the popular press and textbooks. Scientists also communicate their findings at meetings and give seminars on their research work to other specialists in their field. Finally biologists write many additional types of documents in their professional lives.

In this course, we will read and discuss a number of articles from the primary biological literature. We will briefly look at some of the other types of writing that professional biologists carry out during their careers. Since this is a WAC ("Writing Across the Curriculum") course, a major component will be short written exercises, both in class and as outside work. You will also write a concise review article based on the primary literature ("term paper") and you will present a short oral presentation on the same specific topic.

By the end of this course you should be able to:

1) Understand the basis of the scientific method
2) Explain the difference between hypothesis testing and data collection
3) Understand the differences in goals and audience of primary literature, scientific reviews, and popular science writing.
4) Read primary biological literature in cell/molecular biology at a level of understanding that allows you to:
   A. Explain why the study was performed.
   B. State the hypothesis being tested.
   C. State what methods were used to test the hypothesis
   D. Explain what the presented data show.
   E. Critically evaluate the authors claims.
6) Explain the significance of published studies in the biological literature in language understandable to non-scientists.
7) Write a short review of a recent scientific finding based on primary literature sources in Standard English that would be understandable by your peers.

8) Understand and be able to identify examples of scientific misconduct including plagiarism, fraud, selective data reporting, conflict of interest and "honorary" authorship
9) Explain how and why particular areas of biology are studied more than others, including how science is funded.

**Class attendance and participation:** We will read a number of primary literature papers on specific topic(s) and discuss them in class. Attending class and participating in the discussion are essential, since your contributions to the class discussion will show that you have read and understand the papers. Some of the discussions will involve team activities. If you are unable to attend a specific class meeting, please provide a written excuse, in advance if at all possible. In addition, participation will include your critical comments on the short writing assignments of other students in the class. To earn the best grade possible: Attend *all* class meetings and *all* peer presentations (unless excused in advance for acceptable reasons). Complete *all* on-line peer critiques and peer presentation critiques. Be prepared to consistently contribute to class discussion. **If you miss more than 15% of the classes (unexcused) you will get an F in the course.**

**Short Written Assignments:** There will be a minimum of 3 short written assignments over the course of the semester. You will need to post your completed short writing assignment to your course blog page by the due date. Your peers will have 3 days to post helpful critical comments, and you will have the opportunity to revise and repost your assignment in response to your peers comments. One week after the original due date the revised (i.e. the most recently posted) version of the assignment will be graded. To earn the best grade possible: Give yourself enough time to review, revise, and complete *all* short written assignments on time. Complete *all* class surveys.

**Term paper:** The term paper is a 7-12 page review article (excluding references) on some biologically relevant topic of interest that you have selected after consulting with the instructor. You should not select a topic that you have already written up as a paper for another class! The paper (and all drafts) must be typewritten, double-spaced, using 10-12 point font with 1 inch or smaller margins. References must be in a standard format. Topics are due February 4. An outline draft will be due February 25, a written draft due March 25, and the final version due no later than May 1 (last Friday of the term). **A more detailed guide/rubric will be provided by Feb 4th**. The final paper will adhere to all of the following criteria:

> 1) Your paper needs to analyze and discuss the outcomes of a scientific study ("focus paper") from the recent primary literature, with the scientific advance in the focus paper clearly identified and analyzed.
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> 2) Your paper contains a concise, informative introduction that creates interest in what is to follow. Sufficient relevant background is given that the motivation for studies in the focus paper is clear. The hypothesis being tested in the focus paper studies is explicitly identified.
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> 3) Your paper contains a discussion that evaluates the results of the focus paper, notes any shortcomings of confounding issues with the results, and evaluates whether the results support or reject the hypothesis being tested. You should also include how the results contribute to the field and what the logical next steps are.
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> 4) There should be a concise, clear concluding paragraph.
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> 5) Your paper is well written, with clear sentences and organized paragraphs in a logical order. The writing should be at an appropriate level for the audience (namely: your peers), with a lack of jargon, and all terms and acronyms defined. The paper should be proofed with spelling and grammar mistakes absent. All formatting standards should be followed in terms of length, etc.

6) Citations and credit given where appropriate. A minimum of 7 peer-reviewed /3 primary citations, used appropriately in the text and correctly referenced should be provided. Un-cited lifting of material (i.e. plagiarism) or excessive used of quoted material will result in a grade deduction, or, in egregious cases, a failing grade on the paper.

**Final Presentation:** In addition to the paper you will give a short (12-15 minute) oral presentation near the end of the term on your topic. Your presentation should use visual aids (e.g. PowerPoint or the equivalent). At the end of the presentation about 5 minutes will be set aside for questions from the class about your topic. **A more detailed guide/rubric will be provided by March 9th.** A successful presentation will adhere to all of the following criteria:

1) The presentation will describe and evaluate a specific scientific advance ("focus study": this should be the same as the focus paper in your term paper). You give a clear introduction to the topic and the hypothesis, with sufficient relevant background to allow the audience to follow the logic of your presentation, and why this study is important. You include selected pertinent data from "focus study" with the logical conclusions and impact of the study on the field discussed. You also identify what the next logical steps in the field are.

2) The presentation is presented at level appropriate for the audience (i.e. other students in the class). For clarity, all specialized terms are defined and used correctly. You should also be able to completely answer questions from the audience.

3) Your presentation will be 12-15 minutes in length, well organized, in a logical and interesting order that engages the audience. You are clearly prepared and rehearsed. You may have notes available, but you do not need to read from them or refer to them excessively. You speak clearly, at the right pace and to the audience (not the board). Your slides are clear, well organized and add to understanding the topic, there are not an excessive number of slides or extraneous slides. Non-original material on the slides (e.g. photos or figures) is cited.

You are strongly urged to view the video on "Designing effective scientific presentations" under the Weblinks to reading/videos tab on the Blackboard Course site, as you plan the presentation.

**Grades:** Your grade will be based on:

30% Class Participation
25% Term paper (including outline and draft)
20% Final Presentation
25% Other written assignments

Your final grade will be based on the percentage of the total points you earned: 90% or better is an A, 80% to 89% a B, 70 to 80% a C, 60% - 70% a D. In the case of borderline scores (3 % points above/below the cutoff) I will give + or - grades.

**"Extra credit"** Everyone likes the opportunity for extra credit, in this class you can earn up to an additional 5% towards your grade by attending and reporting on a research seminar. These talks can be as part of a seminar series, a conference, or a symposium. If you are interested in doing this please come see me **early** in the semester for suggestions and guidelines.

**Withdrawals and incomplete grades:** The last day to withdraw from this course is March 27. A grade of IN will be given only under exceptional circumstances in which you can provide a documented emergency reason for being unable to complete the course during this semester.

**Electronic devices:** Electronic devices may be used for class related uses, inappropriate use will be considered evidence of non-attendance in the class, and will impact your grade.

**Academic Accommodations:** Any student who feels s/he may need academic accommodations based on the impact of a disability may speak with me and/or should contact the Office of Accessibility directly at 419-530-4981.

**Academic Honesty:** The Department of Biological Sciences and the University of Toledo have specific policies regarding academic dishonesty. Please read the attached Biological Sciences Department's Statement of Academic Dishonesty. The University of Toledo's policies on Academic Honesty can be found in the University Catalog under general policies.

**STATEMENT ON ACADEMIC DISHONESTY**
**Department of Biological Sciences**

Academic dishonesty by students enrolled in undergraduate or graduate courses and programs offered by the Department of Biological Science will not be tolerated. Academic dishonesty includes, but is not limited to:

1. Obtaining assistance from another individual during an examination.

2. Giving assistance to another individual during an examination.

3. The unauthorized use of study material or textbooks during an examination.

4. Changing answers on an examination after it has been returned and then submitting it for regrading.

5. Plagiarizing written assignments. Plagiarizing includes: (a) copying laboratory reports from previous years, (b) copying or paraphrasing reports, term papers, or theses prepared by other students, (c) unauthorized collaboration in the preparation of reports, term papers, or theses, and (d) use of another author's materials without appropriate acknowledgment through quotation and citation.

6. Attempting to bribe or otherwise induce an instructor to alter either a grade or examination score.

7. Obtaining or attempting to obtain a copy of an examination prior to its administration.

In accordance with policy outlined in the Student Handbook and the University Catalog, instructors have the responsibility and right to bring cases of alleged dishonesty to departmental, college, and university administrative units. Students involved in academic dishonesty may expect to receive a grade of F on specific assignments as well as in the course where the assignment was made. In addition, disciplinary action may be recommended through appropriate college and university disciplinary committees.