COMMUNICATING SCIENCE

Biology 5010-FA Graduate Seminar

COURSE OUTLINE FALL 2016

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Lectures, Class discussions and Research seminars: Fridays 2:30 am – 5:30 pm
Location: AT 1010

Course Objectives – *What will you learn?*

During this course you will …

- develop skills to present scientific information in different formats addressing varied audiences.
- apply information from lectures and textbook to organize your thoughts and ideas for effective written and oral communications.
- become comfortable in discussing issues relating to different areas of biological sciences.
- learn how to critically and fairly evaluate the presentation of a piece of scientific work.
- appreciate the breadth and depth of fields in biology by approaching all sessions with an analytical mindset and asking questions on issues you find interesting.
- improve and expand your critical understanding of major concepts in the biological sciences.

By the end of this course you will be comfortable in …

- organizing your thoughts to structure your thesis and research publications, asking the relevant scientific question(s), developing the necessary research protocols, record and analyze and interpret data to arrive at conclusions.
- attending scientific presentations, seminars, asking questions, participating in discussions and exchanging scientific ideas.
- giving your own oral presentations.
- evaluating scientific papers and reports.

Course Structure – *How will you learn?*

Introductory lectures
At the beginning of the semester there will be 2-3 introductory lectures by the instructor emphasizing i) the need for scientific communication, ii) scientific methods, iii) the general structure and content organization of a thesis, research proposal preparation and oral presentation of thesis proposal.

Biology retreat
Each year in the fall the new graduate students along with previous years graduate students and selected upper level undergraduate students organize a two-day retreat at Kingfisher field centre consisting of brief indoor oral presentations followed by nature walks, canoeing and short field trips in the nearby forests and lakes. This provides an opportunity to meet the fellow students and faculty and discuss science in a relaxed and informal setting. Pursuant to the Saturday evening dinner, we will hold a "Round Table" discussion of each new graduate student's research topic. This will be an informal discussion and opportunity for feedback from faculty and peers. Students will be asked to present verbally 1) their research topic, 2) personal and academic rationale for this research, and 3) the types of data they might collect to answer the question(s) they set forth. The idea of this exercise is to encourage students to begin to think about these concepts, and set the stage for their thesis proposal presentations later in the semester.

Attendance and participation
Class time will provide students with the opportunity to discuss major themes in the Biological Sciences. Participation is the lifeblood of this course and students are expected to contribute positively. Please come to class prepared to discuss the week's assigned readings or contribute to the discussion of a seminar presentation.

Refer to chapter 18 of textbook.

Oral presentation
Each student will give one oral presentation for 15 minutes followed by 5 minutes of question and answer. For most students, this will be a practice of their thesis proposal presentation as required for the MSc program in Biology. If you have already presented a thesis proposal, the presentation should cover a summary of your research progress. Please sign up in advance for these presentations.

Refer to chapters 13 to 16 of textbook.

Summary of a speaker presentation and its critique: Students are required to familiarize themselves with the subject matter of upcoming seminar presentations (often from the presenters' own synopses) before class. Time permitting, following the seminar, the guest speaker will meet separately with the BIOL-5010 class for 15-30 minutes to further discuss questions and other items brought forward by the students. A two-page 1.5 line spaced summary of the presentation and discussion is to be submitted for evaluation following four presentations; the first two seminars are compulsory, then submit one in the student's own field of research and one outside their field of research. **Note that participation at every seminar is mandatory**

Abstract writing and presentation exercise
Students are required to write an abstract from a journal paper/manuscript and present the work in a brief 5minute power-point presentation to the class. The abstract and presentation will be marked.

Refer to chapters 7 to 11 of textbook, specifically chapter 10

Reflection
At the end of the semester, you will submit a 1.5 to 2 page descriptive account reflecting on your course experience. The evaluation of this submission will be based on your ability to identify relevant issues, in-depth reasoning (giving specific examples) and suggestions for improvements.
You should work towards this paper throughout the semester. Keeping a small notebook to chronicle your thoughts might be helpful. Consider the following questions:

- What have you learned so far?
- What did you like and why?
- What did you not like and why?
- Has the course achieved the objectives stated? Why or why not?
- What areas would need more attention? Why and how?
- Are you satisfied with your own contributions to the course? Why or why not? What are your plans for improvement?
- How did your course experience change throughout the two semesters?

Written Submissions
All written work is due within one week (7 days) of being assigned and will be returned, graded with comments, one week following. Late submissions will not be accepted. Please remember this a graduate level course and an emphasis on critical thinking, formulated into coherent, well-structured, publication caliber writing is required. Furthermore, spelling and grammatical structure appropriate to graduate level performance is expected and will be duly evaluated on all written work. You are strongly encouraged to seek out one or more proofreaders to review all written work prior to submission.

Textbooks and Resources
Recommended textbook
Davis, M. 1997. Scientific papers and presentations. 2nd ed. Academic Press, an imprint of Elsevier Science, San Diego, Ca. Available in the bookstore.

Recommended additional books, available on reserve in the library
Day, R.A. 1998. How to write and publish a scientific paper. Oryx Press, Pheonix, AZ. Call-#: T 11 D33 1998 (also available as E-book on-line)

Briscoe, M.H. 1996. Preparing scientific illustrations: a guide to better posters, presentations, and publications. Springer, New York, NY. Call-#: Q 222 B75 1996

Scientific style and format: the CBE manual for authors, editors and publishers. Cambridge University Press, New York. 1994. Call-#: Z 250.6 B5C8 1994 (Paterson Reference, Main Floor, non-circ.)

Additional Readings
"How to Be a Good Graduate Student" by Marie des Jardins. 1994. Available on the WWW at: http://www.cs.indiana.edu/how.2b/how.2b.html

Thesis Writing in the Sciences, *University of Florida*

More suggested readings and assigned readings will be distributed throughout the course.

Fall 2016 Schedule

Sept 9, Introductory lecture and Biology Retreat planning

At the introductory lecture aims and objectives of the course will be discussed including the need and modes of scientific communication, course structure, expectations and evaluation criteria. Dates for thesis proposal presentations will be chosen. Possible dates are November 18 and November 25. Please select a primary and backup date before arriving in class.

The TA will be introduced to the class and he will discuss the details on the annual Biology Retreat. Tasks for the weekend (e.g. cooking, grocery shopping, etc.) will be chosen. Participation in the weekend's activities contributes 15% to the students' final grades and should be taken seriously. Helpful literature regarding effective abstract writing will be distributed in class. Students are asked to review the material prior to class on September 23, 2015.

There will be a TA training session at CB 3013 lead by Dr. Susanne Walford after this one-hour class.

September 16, Lecture 2: Essentials of oral and written scientific communications, thesis research process.

September 23, Lecture 3: First there will be a short lecture on what to include/expect in an Abstract of a journal article then I shall discuss what involves in writing and submitting a journal paper including communicating with journal editor and handling of reviewer comments and finally we shall have a discussion on Research Seminars.

Sept 24-25 (Saturday-Sunday), Kingfisher Biology Retreat: Drive on your own or arrange a ride from your friend. I can drive 2 people in my car to be picked up at 8:30 am from lot # 5 beside the Centennial building.

September 30, Abstract presentation: Students will present abstracts prepared as per discussion in the previous class. The presentations will be in PowerPoint form (5-8 slides) and be no longer than five minutes. Emphasis here is on the excision, compression and iteration of the research question(s), highlights of main results and their significance of the research paper examined.

Research Seminar (All classes start at 2:30, after 1 hour of class discussion the seminars will start at 3:30 pm each time). These research seminars will involve oral presentations in class given by speakers mostly external to the University. Students are encouraged to pay close attention and take notes as they will be required to write a concise and thoughtful critique of the speaker's presentation. See Seminar critique marking scheme for details. Additionally, each student will be evaluated on (TWO) questions they ask the speaker and include in their critique.

October 7, Research Seminar
Speaker: Dr. Hoyun Lee, hlee@nosm.ca Professor of Medical Sciences, Northern Ontario School of Medicine (NOSM East campus), Laurentian University, Sudbury.
Title: Development of novel anticancer drugs and combinational therapies based on the rationalized approach
Host: Dr. Ingeborg Zehbe

October 14, Research Seminar
Speaker: Dr. Cody Dey, PDF, University of Windsor.
Title: Evolution by social selection: dominance and signaling in group-living animals.
Host: Drs. Mike Rennie & Azim Mallik

October 21, Research Seminar
Speaker: Dr. David Levin, University of Manitoba, Winnipeg.
Title: Use of genomics of cellulose fermentation for process optimization.
Host: Dr. Lew P. Christopher

October 28, Research Seminar
Speaker: Dr. David Deslauriers <David.Deslauriers@umanitoba.ca>

University of Manitoba
Title: Gaining ecological insight through bioenergetics and individual-based modeling: Examples from the sturgeon world.
Host: Dr. Mike Rennie

November 4,
Dr. Scott Wilson, Professor of Biology, University of Regina, Saskatchewan.
Title: Below-ground contributions to stability in Arctic ecosystems.
Host: Dr. Azim Mallik

November 11, Remembrance Day (no class)

November 18
Speaker: Dr. Dolf Schluter, <schluter@zoology.ubc.ca> Biodiversity Centre and Department of Zoology. University of British Columbia, Vancouver.
Title: Quest for the origin of (stickleback) species.
Host: Dr. Douglas W. Morris

November 25, Thesis proposal practice presentations
As part of the fulfillment of the requirements of the M.Sc. Biology program at Lakehead University, each student is required to present, publicly, a thesis proposal wherein the student describes their research intent and demonstrates *why* their research is novel and worthwhile. While the thesis proposal does account for a large part of a student's final grade, it represents, more importantly, an opportunity to receive valuable feedback on the research topic in question. Dates for thesis proposal presentation will be chosen on the first day of class.

December 2, Thesis proposal practice presentations

Marks Breakdown
Biology Retreat 15%
Abstract Writing Exercise 10%
Abstract Presentation 5%
Seminar Critiques (4 X 10%) 40%
Thesis Proposal Practice Presentation 20%
Reflections 5%
Class Attendance 5%
100%

Abstract Writing Exercise

Students will synthesize an abstract based on the article provided. As a guide, refer to the material you received in class 1 (Sept 11) outlining the effective writing of an abstract. The style in which you choose to design your abstract ('paragraph' or 'categorical') is up to you. Ideally, you should select a style consistent with publications in your given field of research.
While flexibility does exist in this exercise, there are certain "essentials" which must be present: (a) coverage of the key concepts/themes/etc., (b) a logical presentation of salient material, and (c) clear and concise writing. Feel free to contact your teaching assistant for guidance prior preparing your presentation for next week. Good Luck!

Criteria	Max Mark	Given Mark	Justification (details on reverse)
Coverage of key concepts/themes/ideas/etc.	3		
Logical structure	3		
Clear and concise writing	2		
Spelling, formatting, etc.	2		
Total	10		

Student Number: _____

Biology 5010: Communicating Science

Abstract Presentation

Student Number: _____

Students will prepare a brief (3-5 minute) PowerPoint presentation wherein they shall discuss the abstract they have written. The presentation should NOT be a reading of the written abstract. Rather, it should highlight elements you, the author, deem necessary for a thorough understanding of the research paper you've examined. The intent here is to familiarize students with presenting before an audience of peers.

While flexibility does exist in this exercise, there are certain "essentials" which must be present: (a) coverage of the key concepts/themes/etc., (b) a logical, clear and concise presentation of the material, and (c) evidence of appropriate preparation. Feel free to contact your teaching assistant for comments or suggestions on your abstract prior to preparing your presentation. Good Luck!

Criteria	**Max Mark**	**Given Mark**	**Justification (details on reverse)**
Coverage of key concepts/themes/ideas/etc.	3		
Logic structure and thoughtful slide design	3		
Voice projection, overall practice	2		
Ability to answer questions	2		
Total	10		

Marking Scheme for Seminar Speaker Critiques

Student Number: _____

Criteria	**Max. Mark**	**Mark Given**	**Justification (details on reverse)**
Identify the presentation's hypothesis, central question(s), or issue(s)	3		
Discuss the approach taken to test the hypothesis or address the question/issue	1.0		
How well did the evidence (data or logic) support the hypothesis, question, or issue? (i.e. are there elements that you feel were missing/ignored/etc?)	1.0		
How was the presentation's delivery? For example: - Visuals, use of technology - Rapport with the audience - Balance of breadth and depth - Audience-appropriate level of detail - Overall impression	1.0		
How did the speaker handle questions?	1.0		
What did you learn? What was surprising to you about this presentation? What appears to be	1.0		

the next stage/step, topic of inquiry for this speaker? What would you like to see this researcher do next?			
Total	**10**		

Thesis Proposal Practice Presentation Marking Scheme

Student Number: _____

Criteria	**Max. Mark**	**Given Mark**	**Justification (details on reverse)**
Clarity of the context, research question(s), hypotheses Appropriate depth of research	**6**		
Organization of the material, logical use of legible visual aids/illustrations	**6**		
Style of delivery, enthusiasm	**4**		
Ability to generate interest	**2**		
Answering questions			

	2		

BIOL 5010 benefits greatly from the input of students. This final exercise is an opportunity for you to provide feedback, which will ultimately be used in the design of next year's class. Here, more than anywhere else, there exists room for you to be creative. Keep in mind though, that it is important to provide ***specific examples*** to support your position. ***Many Thanks!***

Marking Scheme for Reflections

Student Number: _____

Criteria	**Max Mark**	**Given Mark**	**Justification (details on reverse)**
Discuss some of the skills you've acquired/improved upon in the class. Are you satisfied with your contribution to the class?	2		
What worked well in the class? What would you have done differently?	2		
What would you have added to the class to improve it?	2		
Use of appropriate, detailed examples (from the class) to justify your position re: the above	1		
Spelling, grammar, formatting, etc.	1		
Total	10		

Mark allocation rubric

Level 1 (50-70%) expectation:

Level 2 (70-80%) expectation:

Level 3 (80-90%) expectation:

Level 4 (90- 100%) expectation: