The University of Manitoba
Faculty of Agricultural and Food Sciences

COURSE TITLE: Advanced Entomology I and II

Department	Course Number	Academic Session	Credit Hours
Entomology	ENTM 7150/7220 - MSc/PhD	Winter 2017	3

Prerequisites and how they apply to this course
This course is for graduate students. There are no prerequisites.

Classroom /Seminar Location	Meeting Days and Class Hours
Animal Science building, Room: 220	T/TH 10:00 -11:15

Department Office location	Phone Number
Animal Science Building 214	474-9257

Instructor Information

Instructors Name / Location

Alejandro C. Costamagna: 217-A Entomology	204-474-9007	Ale.Costamagna@umanitoba.ca
Kateryn Rochon: 215-A Entomology	204-474-8640	Kateryn.Rochon@umanitoba.ca

Office Hours: by appointment

Course Philosophy

Students' Learning Responsibilities
Students are expected to practice personal and academic integrity and to take responsibility for one's own personal and academic commitments. Within the context of this class, regular attendance is critical to facilitate effective learning and to participate in group discussions. Students should respect others and contribute to cooperative learning by promoting a respectful atmosphere and striving to learn from differences in people, ideas, and opinions. Students are expected to be prepared for class and submit assignments on time. Students are highly encouraged to ask for help under any circumstances, but particularly if having difficulty with material.

Why this course is useful?
This course is designed to prepare graduate students to perform successful research at the graduate level.

Who should take this course?
This is a required course for all graduate students in Entomology. The course is also open to graduate students from outside the department.

How this course fits into the curriculum
ENTM 7150 Advanced Entomology is a required course for all incoming Master's and Ph.D. students pursuing a graduate degree in Entomology. It is expected that students will complete this course within the first year of the program (Students starting in January would take this course in their first semester, students starting in May or September would take this course in their second semester).

Course Description

Graduate Calendar Description
A 3 credit required course for M.Sc. and Ph.D. students in Entomology. M.Sc. students will be required to develop and submit a written research proposal and present a seminar on their research proposal to the Department. Ph.D. students will be required to submit a grant proposal, developed as an extension of their research and present a seminar on their grant proposal to the Department. In addition, students are required to prepare for, and participate actively in, Departmental seminars, discussion sessions, and other class meetings.

Instructional Methods
This course combines short lectures, group discussions, writing of proposals and peer review to achieve course and learning objectives. Traditional lectures are intended to orient students to basic principles outlined in the course. Group discussion and peer review are intended to facilitate active participation in class and seminars, as well as develop critical thinking and communication skills for advanced research. Every second week is departmental seminar with a guest or student speaker – these are mandatory to attend, and will form the basis of discussion the following week.

Course Objectives
This course will prepare Master's students to develop their research proposal as part of their graduate degree and prepare Ph.D. students to write a grant application by learning to advance research beyond their current objectives.

Course objectives include:
- Developing and honing communication skills, including scientific writing and oral presentation.
- Building research skills including hypothesis development, literature searching, critical evaluation of published material, and synthesis of information in concise formats that effectively convey scientific information to a broad audience.
- Developing skills to give, receive, and value criticism in the form of peer review.
- Understanding the significance of scientific research in a broader context.
- Gaining an understanding and appreciation of ethics in scientific research.

Learning outcomes
By the end of the course students should be able to:
- Develop hypotheses and objectives based on their research.
- Effectively search for scientific literature in a variety of formats and be able to use reference management software.
- Critically evaluate scientific literature, including identifying strengths and weaknesses in methodology, results, and conclusions based on the research performed.
- Concisely synthesize information gathered from the literature to present their own research in context with previous works.
- Gain skills in scientific writing and be able to evaluate and correct the writing of peers.
- Understand how to avoid plagiarism and other unethical conduct in scientific research.
- Evaluate the scientific content and delivery of oral presentations.
- Give effective oral presentations.

Description of Assignments
All written assignments should be submitted by uploading a Word or PDF document to the appropriate "Dropbox" folder on course page on UMLearn.

1. **Literature searching and reference formatting assignment (5%)**

Students will be asked to gather a set of references using a variety of literature searching tools learned in the course. See the assignment handout for more details.

2. Critiquing Literature Discussion (20%)

Students will be provided with two papers from the primary literature in class. Each student will be expected to read these papers with a critical eye and come to class prepared for a detailed discussion evaluating the strength of the science, significance of the research, and clarity of the writing. The first discussion will be moderated by the instructors. Following paper discussions will be conducted by students; all students need to participate in the discussion, but students will take turns writing a one page summary of the discussion. See the assignment handout and grading rubric for more details.

3. Written Assignment (30%)

Students who have not yet had a committee meeting presenting their research proposal will be required to write their thesis proposal based on their own research. Students should refer to the assignment handout for more information. This assignment is meant to prepare students for their first committee meeting. Students must follow the outlined schedule for handing in draft versions for peer review (see deadlines on the schedule).

Students who have already had a committee meeting will write a grant proposal or research proposal. Students should refer to the assignment handout for more information. The grant proposal is designed to prepare students for applying for post-doctoral fellowships and funding for future academic careers. Students must follow the outlined schedule for handing in draft versions for peer review (on the schedule).

4. Peer Review (10%)

Students will be required to provide critical feedback on two student's written assignments. This assignment will help students to critically evaluate others work and prepare them for reviewing articles and other written works. Students will be graded on the thoroughness and effectiveness of the evaluation. An example will be provided in class. See the assignment handout and grading rubric for more information.

5. Rebuttal of Peer Review (10%)

Students will be required to write a rebuttal to the reviewer's comments, including how they have addressed the requested changes or provide justification for which changes they have not made. This will be handed in with the final written assignment. See the assignment handout and grading rubric for more information.

6. Seminar on Written Assignment (15%)

Students will be required to give a 12 min seminar* on their written assignment. Eight minutes will be allowed for questions and feedback for each presentation. See the assignment handout and grading rubric for more information. (* length of seminar may be increased if class enrollment allows it)

7. Class participation (10%)

Class participation is an essential element of the class. Students will be evaluated on the frequency of participation and the quality of comments provided in discussion, as well as questions formulated to speakers during seminar. Students should consider how they can help create a supportive, respectful, and relaxed environment where everyone can contribute.

Letter Grade Equivalency:

A+ = >90%; A=80-89%; B+ =75-79%; B=70-74%; C+=65-69%; C=60-64%; D=50-59%; F=<50%.

Texts, Readings, Materials

- **Alley, M. (2003).** The craft of scientific presentations: critical steps to succeed and critical errors to avoid [ebook in U of M library]
- **Cargill, M. (2009).** Writing scientific research articles: strategy and steps [ebook in U of M library]
- **Day, R.A. (1998).** How to write and publish a scientific paper. Oryx Press, Phoenix, Az. 5th Edition. [ebook in U of M library]
- **Friedland, A. J., & Folt, C. L. (2000).** Writing successful science proposals. Yale University Press.

Supplementary Reading and Materials
Will be provided in class (posted on UMLearn page)

Course Policies

Inquiries to the Instructor or TA:
Students are encouraged to discuss issues pertaining to assignments with the instructor well in advance of deadlines. While every effort will be made to return student inquiries via email as soon as possible, students should expect a minimum of 24 hours to receive a response. Students are encouraged to drop by the instructor's office for assistance (though appointments are preferred).

Late Assignments
Late assignments will be deducted 5% of the final grade for that assignment for every 24-hour period it is late. Assignments must be submitted by class time on the date and time due through the 'Dropbox' function on the UMLearn page for the course. If assignments are not received by the end of class they are considered 1 day late. Late assignments should be submitted through the 'Dropbox' on UML.

Missed Assignments
To pass the course, all items for which a mark is allocated must be completed and submitted. Where assignments are missed and excused through written notification such as a doctor's certification of illness, evidence of death in the family, or other circumstances that are beyond the control of the student, the student may be given the following options: 1) complete the assignment and receive the late assignment penalty as described above, or 2) establish a new due date with the instructor and complete the assignment without penalty when handed in by the new due date.

Your Rights and Responsibilities
As a student of the University of Manitoba you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.

The Academic Calendar (http://umanitoba.ca/student/records/academiccalendar.html) is one important source of information. View the sections University Policies and Procedures and General Academic Regulations.
While all of the information contained in these two sections is important, the following information is highlighted.

If you have questions about your grades, talk to your instructor. There is a process for term work and final grade appeals. Note that you have the right to access your final examination scripts. See the Registrar's Office website for more information including appeal deadline dates and the appeal form http://umanitoba.ca/registrar.

Academic Dishonesty: Plagiarism, Cheating and Examination Impersonation
You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the Academic Integrity regulation. Visit the Academic Integrity Site for tools and support, and for more information (http://umanitoba.ca/academicintegrity).

PLEASE NOTE: The mandatory research integrity course will also cover aspects of plagiarism.

The University of Manitoba regard acts of academic dishonesty as serious offences and may assess a variety of penalties depending on the nature of the offence. See the Student Academic Misconduct procedure for more information.
Cell phones, pagers, PDAs, MP3 units or electronic translators are explicitly listed as unauthorized materials, and must not be present during tests or examinations.
Penalties that may apply range from a grade of zero for the assignment or examination, failure in the course, to expulsion from the University. The Student Discipline By-Law may be accessed at:
http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html

Electronic detection tools or the sharp memory of established professors may be used to screen assignments in cases of suspect plagiarism.

General University policies and resources: see *ENTM 7150/7220 Student Supports and University Policies at UML.*

Course Schedule

Date	Day	Activity	Lecture	Assignment	Assignment due
24-Jan	Tuesday	Introduction to course, literature searching, using reference management software	1	Literature Search	
31-Jan	Tuesday	Seminar: Dr. Maya Evenden			Literature Search
02-Feb	Thursday	Evaluating and synthesizing the literature, scientific method, developing hypotheses and objectives.	2	Research hypotheses & objectives	
07-Feb	Tuesday	Elements of a thesis proposal, elements of grant applications, ethics in science and research. Seminar Discussion	3	Proposal, Readings 1	
14-Feb	Tuesday	Seminar: Dr. Olivier Tremblay-Savard			Research hypotheses & objectives
16-Feb	Thursday	Critiquing the literature discussion 1. Seminar discussion			Literature critique 1
21-Feb	Tuesday	Spring Break			
28-Feb	Tuesday	Seminar: Dr. Claudio Stasolla		Readings 2 (student after approval)	
07-Mar	Tuesday	Peer review lecture. Seminar discussion	4	Peer review proposal assignment	Draft proposal
09-Mar	Thursday	Critiquing the literature discussion 2		Readings 3 (student after approval)	Literature critique 2.
14-Mar	Tuesday	Seminar: Dr. Marla Spivak			Peer review proposal assignment
21-Mar	Tuesday	Presenting scientific research. Seminar discussion	5		
23-Mar	Thursday	Critiquing the literature discussion 3		Readings 4 (student after approval)	Literature critique 3
28-Mar	Tuesday	Seminar: Dr. Nicola Koper			
04-Apr	Tuesday	Selling your research (broader impact & significance), CV, web. Seminar discussion	6		
06-Apr	Thursday	Critiquing the literature discussion 4			Literature critique 4
11-Apr	Tuesday	Seminar: Dr. John Markham			
18-Apr	Tuesday	Student seminars			Student seminar