University of Victoria

Faculty of Science | Department of Mathematics and Statistics
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Course Outline
MATH 475/575: Topics in Mathematical Biology

Instructor(s)

Lecturer   Junling Ma

Research Area Mathematical modeling of the evolution, spread and control of infectious diseases, and other ecological problems.

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General Course Information

Number of Units   1.5

Pre-requisites   Minimum third-year standing; and declared Honours or Major in Mathematics, Statistics, or Biology; and permission of the department.

Office Hours and Assistance

Days   Mondays and Thursdays 3:30 – 4:30PM or by appointment (send email to book one)

Math Club Students in Undergraduate Mathematics and Statistics (SUMS) was founded in 2014 as the reincarnation of a previous undergraduate course union that had been inactive for a few years. Please see http://www.uvic.ca/science/math-statistics/current-students/undergraduate/sums/index.php for more information.

Learning Objectives

Understand how to setup mathematical models to describe biological problems in ecology, epidemiology, and other biological systems (e.g., genetic models). Conduct mathematical analysis on the models, and interpret the results.

Course Materials and Online Resources

Textbook   An Introduction to Mathematical Biology, by Linda Allen. 2007. Pearson Prentice Hall.

Course webpage Course materials are available on Course Spaces.

Class Meetings

Mondays, Wednesdays, and Thursdays at 2:30—3:20 in CLE A325, starting on January 4th.

Evaluation and Grading

Assignments: There will be 5 assignments due on Mondays of the week indicated in the course schedule. The highest 4 will be counted towards the course total. They will be posted a week before the due date.

Midterm project: There will be a midterm project due on Monday February 21.

Final project: There will be a final project. The report is due on Tuesday April 18th. The presentation (20 minutes presentation + 5 minutes questions) will be scheduled in the final exam period before April 18th.

Your final percentage grade will be computed according to the following scheme.

Assignments	Midterm project	Final project presentation	Final project report
30%	30%	10%	30%

Missing work If you have a legitimate reason to miss an assignment, the other assignments will be reweighed to cover the missed one. If you have a legitimate reason to miss the midterm project, the final project report will be reweighed as 60% to cover it.

Accessibility Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the Resource Centre for Students with a Disability (RCSD) as soon as possible. The RCSD staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations http://rcsd.uvic.ca/. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Supplemental Examinations. The Department of Mathematics and Statistics does not award 'E' grades or offer Supplemental Examinations in any of its courses.

Policies and Ethics

Attendance The university Calendar states 'Students are expected to attend all classes in which they are enrolled.' Our courses are conducted on that basis. If you miss an announcement (information concerning midterms, corrections to assignment, etc.) because you did not attend class, you must accept the consequences of not having learned of the change. (see http://web.uvic.ca/calendar2017-01/undergrad/info/regulations/attendance.html#).

Guidelines on Religious Observances Where classes or examinations are scheduled on the holy days of a religion, students may notify their instructors, at least two weeks in advance, of their intention to observe the holy day(s) by absenting themselves from classes or examinations. Instructors will provide reasonable opportunities for such students to make up work or missed examinations.

Academic Integrity Academic integrity is intellectual honesty and responsibility for academic work that you submit individual or group work. It involves commitment to the values of honesty, trust, and responsibility. It is expected that students will respect these ethical values in all activities related to learning, teaching, research, and service. Therefore, plagiarism and other acts against academic integrity are serious academic offenses.

The responsibility of the institution

Instructors and academic units have the responsibility to ensure that standards of academic honesty are met. By doing so, the institution recognizes students for their hard work and assures them that other students do not have an unfair advantage through cheating on essays, exams, and projects.

The responsibility of the student

Plagiarism sometimes occurs due to a misunderstanding regarding the rules of academic integrity, but it is the responsibility of the student to know them. If you are unsure about the standards for citations or for referencing your sources, ask your instructor. Depending on the severity of the case, penalties include a warning, a failing grade, a record on the students transcript, or a suspension.

It is your responsibility to understand the University's policy on academic integrity: http://web.uvic.ca/calendar2017-01/undergrad/info/regulations/academic-integrity.html#

Course Schedule (Dates are approximate)

Week of	Lecture	Tutorial
4/01/17	Introduction, §3.2 (population models)	
9/01/17	§3.3, §3.4 (host-parasitoid models)	
16/01/17	§3.5, §3.6 (predator-prey models) Last day for adding courses that begin in the second term: 20/1/17	HW #1
23/01/17	§3.7 (population genetic models)	Midterm project available
30/01/17	§3.8 (structured models)	HW #2
6/02/17	§3.8 (structured models)	
13/02/17	Reading Break, no classes	
20/02/17	§6.1, §6.2 (continuous single population models)	**Midterm project due on Monday February 21st**
27/02/17	§6.3, (continuous time predator-prey models) Last day for withdrawing from second-term courses without penalty of failure: 28/02/17	HW #4
6/03/17	§6.4 (competition models)	Final project available
13/03/17	§6.6 (patch models)	HW #4
20/03/17	§6.7 (chemostat models)	
27/03/17	§6.8 (disease models)	HW #5
3/04/17	Review Last day of class: 4/4/17	
		Final project report due on April 18th Final presentations between April 5th and 17th.