

**Course Outline:
Applied Mathematics 1201b
Calculus and Probability with Biological Applications
Winter 2018, Section 001**

Instructor: Lindi Wahl, Applied Math, MC267

Course Contact E-mail: am1201@uwo.ca

Lectures: 12:30-1:30 M/W/F NCB101

Summary: Differential Equations: Modeling, equilibria, separable equations. Fundamentals of linear algebra: vectors, matrices, eigenvalues. Systems of Differential Equations. Introductory probability: discrete and continuous random variables. Each topic will be illustrated by examples and applications from the biological sciences. 3 lecture hours, 0.5 course.

Prerequisite(s): One or more of Calculus1000A/B, 1100A/B, 1500A/B or Math 1225A/B.
This means you must have passed Calc1000 to get credit for AM1201b. No exceptions here.
Antirequisite(s): The former Calculus 1201A/B.

Tutorials: There are no tutorials for this course; instead there is a drop-in help centre.

Textbook: A custom edition of *Biocalculus: Calculus, Probability and Statistics for the Life Sciences*, by Stewart and Day, is required. The custom edition costs much less than the whole textbook, and contains only the chapters we need. It is available at the Western Bookstore. **Optional:** you may also purchase the custom edition with an access code for the online resource "Enhanced Web Assign". **Unlike previous years, you will NOT require this access code to do the assignments.** The assignments this year will be available for free, on OWL. However, Enhanced Web Assign does offer an online version of the textbook and many extra practice problems and solutions.

Evaluation: Weekly Assignments	10%
Midterm Examination #1 (Saturday Jan 27, 7pm, no make-up)	15%
Midterm Examination #2 (Saturday March 3, 7pm)	25%
Final Examination (scheduled by the registrar)	50%

Who should take this course? This course was designed because many students in the biological sciences at Western take Calculus 1000, and then one other half course which is their final course in mathematics. AM1201b pulls together small pieces of four other math courses (Calculus, Linear Algebra, Differential Equations and Probability) that are especially relevant and useful in biology and medicine. However, AM1201b does not cover enough material in these areas to serve as a pre-requisite for further courses in mathematics. **If you might be interested in taking further courses in the mathematical sciences, you should not take AM1201b.** Also, if you have already taken Linear Algebra or Differential Equations, you should not take AM1201b.

Practice practice: The material in this course is really fun and challenging, but it builds up. Practice problems will be assigned for every lecture, and it is recommended that you book fixed times in your weekly schedule when you will work on AM1201b practice problems.

Taking notes: There will be no lecture notes available for this course. Pedagogical research shows that taking handwritten notes during class is the best way to "absorb" a lecture. If you miss a lecture, get the notes from a friend or colleague in the class.

Working together: Working in pairs or groups, talking about problem solving strategies and studying together is encouraged. The real reason we have assignments in AM1201b is **not** assessment; *assignments are to give you incentive to keep up with the course work.*

Assignment logistics:

A "pre-assignment", worth no marks, will be "due" on **Sunday January 14** at 11pm. The pre-assignment will help you make sure that you can use OWL without any problems. After that, assignments will be due weekly through OWL. The lowest assignment grade for each student will be dropped. There are absolutely no make-up assignments or extra work to make up for missed assignments.

Computers in the "Genlabs" on campus are able to access OWL and assignments can easily be done there. Obviously you are welcome to use your own laptop or desktop as well.

However, "computer problems" or "internet access" problems will not be accepted as a reasonable excuse for missing a deadline. If you use a non-Western computer, you do so at your own risk. So to use your own computer, don't leave it to the last minute!

Hardware: We will use the standard science policy and standard science calculators on the midterm and final. To quote from the Faculty of Science guidelines: "The Sharp EL-510R(B) or Sharp EL-510RN(B) are the only calculator models permitted during exams. All other brands and Sharp models will be confiscated. Proctors and instructors for tests and exams do not lend calculators. It is your responsibility to bring the correct calculator and to ensure that it is in proper working order. It's not a bad idea to bring a spare calculator of the same model! The sharing or exchanging of calculators during tests or exams is strictly forbidden. Aside from the specified calculator, no other electronic devices (phones, iPods, etc.) may be in your possession during exams, even for timekeeping purposes."

Extra help: There will be many hours each week during which you can obtain one-on-one extra help on course material. The drop-in help centre will run at regular times each week. A document listing times and locations for this extra help is available under "Resources" on OWL. Private tutors are also available; search for the "Tutor Referral Service" or "Private Tutor List" at Western.

Examinations: A detailed list of chapters and sections which will be covered on each midterm will be posted to OWL. All material covered up to the end of the course will be considered testable on the final exam. The exams will weight each topic in the course approximately as weighted in the lectures. The practice problems assigned at each lecture are the best guide to material that is testable. The practice problems change from one year to the next, and are not generally available in advance. However before the midterms and final, a comprehensive list of assigned practice problems will be posted on OWL.

Both the midterms and the final exam will be entirely multiple choice (Scantron) format. To help you prepare, the previous midterms and final exams will be available on OWL.

Need to miss the midterm or final? There will be no make-ups for the first midterm; instead, the mark will be re-weighted to the second midterm. Course instructors in the Faculty of Science are not allowed to approve accommodation for course requirements that are worth more than 10% of any final grade. **Therefore, permission to miss an exam, for either the midterms or the final, must be obtained from the Academic Counsellors in your faculty.** Talk to the counsellors first. After you talk to them, they will e-mail the permission to your instructor. The course coordinator will then contact you to confirm the re-weighting (midterm #1) or to confirm the date and time for the make-up exam (midterm #2 and final).

Communication: When communicating with you, will use the lectures and the course website on OWL. In particular, OWL will be used to post grades, course material (under "Resources") and important announcements. Please also check your official UWO e-mail for announcements regarding this course. For communicating with us, please see the table at the end of this course outline.

Support Services: Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling. Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help. Additional student-run support services are offered by the USC, <http://westernusc.ca/services>. The website for Registrarial Services is <http://www.registrar.uwo.ca>.

Accessibility: Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

Code of Student Conduct

To foster a supportive and enriching academic environment that is conducive to learning and free inquiry, Western has a Code of Student Conduct (<http://www.uwo.ca/univsec/pdf/board/code.pdf>). You can expect your instructor to promote this environment and also respect each student's unique views and opinions. Because Western is also a part of your environment, we expect the same from you. Activities that disturb another student's right to this environment will not be tolerated; these include talking in class about matters irrelevant to the course and using electronic devices inappropriately. You can also expect your instructor to come prepared, on time, and eager to help you learn. In turn, we expect that you will come prepared, on time, and ready to learn.

Academic Dishonesty: Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this website: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf. Computer-marked, multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Illness when writing exams: It is Faculty of Science policy that a student who chooses to write a test or exam deems themselves fit enough to do so, and the student must accept the mark obtained. Claims of medical, physical, or emotional distress after the fact will not be considered. In AM1201b, there is no opportunity for a reweight of the other course components after the test or exam has been written. Arguing "I did not want to write a heavily weighted final" is not a valid reason for writing the midterm test while ill. If you are ill, obtain medical documentation (see below) and do not write.

Missed Course Components: If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the **Academic Counselling Office of your home faculty** as soon as possible.

If you are a science student, the Academic Counselling Office of the Faculty of Science is located in WSC 191, and can be contacted at 519-661-3040 or scibmsac@uwo.ca. Their website is http://www.uwo.ca/sci/undergrad/academic_counselling/index.html.

A student requiring academic accommodation due to illness must use the Student Medical Certificate (https://studentservices.uwo.ca/secure/medical_document.pdf) when visiting an off-campus medical facility.

For further information, please consult the university's medical illness policy at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

Missed Midterm or Final Exam: If you miss the midterm, and **if your faculty's Academic Counselling Office has approved your circumstances**, then you may write the makeup midterm which will be available during the week after the midterm. If you are unable to write the make-up, the weight of the midterm will be shifted to the Final Exam. There are no other possibilities or re-weightings. In particular, to remain fair to other students, it will **not** be possible to shift more weight onto the assignment component of the course.

If you miss the Final Exam, contact your faculty's Academic Counselling Office as soon as possible. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam). You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

Equal Opportunity and Evaluation Policy

The university is committed to academic integrity and has high ethical and moral standards. All students will be treated equally and evaluated using the criteria presented in this course outline and their respective weights. The evaluation criteria are based strictly on actual achievement, not on effort. Claims of an excellent academic history, of attendance in the course components, or of personal issues (family, relationship, financial, etc.) cannot be used to justify a higher grade in the course because they are not criteria for evaluation. There is no extra work available for extra credit or to "make up" another grade. We do not offer any extra assignments, essays, problem sets, or other work of any kind to any student.

The requirement for a higher grade in order to, for example, maintain a scholarship, enter a program, or obtain a higher GPA for various reasons, is not a justifiable reason for increasing your grade. If we increased or "bumped" your grade (i.e. gave you a grade that you did not legitimately earn), it would be unfair to the other students and also a great disservice to the scholarships and programs who are evaluating all students on the basis of their grades. This means, for example, if you receive 58% in the course **we will not "bump" your grade** to a 60%; you will simply need to take the course again if you need 60%.

Approximate Syllabus:

Week of course	Topics (from Stewart and Day)
Weeks 1 - 3	7.1 - 7.6
Weeks 4 - 7	8.1 - 8.8
Weeks 8 - 9	10.1 - 10.4
Weeks 10 - 12	12.1 - 12.5

How to reach us when you need more information

A document under "Resources" on OWL will list up-to-date TA and course coordinator contact info, office hours, office room numbers, and help sessions.

Type of question/issue	Examples	What to do	Extra info
questions about course material	<ul style="list-style-type: none"> - I need help with Q1.1 - the solution to Q4.3 is wrong in the manual - I'm lost and need help with Chap. 8! - Is method A the same as method B I learned in another course? 	- talk in person with one of our wonderful TAs at the drop-in help centre	- please try not to ask a math question by e-mail unless it is really straightforward
questions about assignments	<ul style="list-style-type: none"> - my grade on OWL isn't the same as my grade recorded by EWA - I forgot to do my assignment on time this week 	- e-mail am1201@uwo.ca or speak to a TA in person at the help centre	- please try not to ask a question covered in this outline
personal, administrative issues	<ul style="list-style-type: none"> - I have a disability - I need special permission to be signed into the course - I am a Mustang athlete and need accommodation for tournaments 	<ul style="list-style-type: none"> - go to your instructor's office hours - you can also e-mail am1201@uwo.ca if you prefer 	
requests for grade increases, "extra work", re-weightings	- I would like my assignments to be worth 20% of the course grade because I didn't do well on the midterms.	- re-read the policies in this course outline, and then hit the books in time for the final, because this request will not be considered!	... you might want to make use of study skills resources on campus (see "Support Services" paragraph)

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