

LB 118 Calculus I, Sections 003 & 004 Spring 2016 Course Syllabus

Instructor:	Robert Bell
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Office Hours:	F 10:00 a.m.–12:00 p.m.
Lectures:	MW 10:20 a.m. - 11:40 a.m. in C104 Holmes Hall
Recitation for sec. 003:	Tu 9:10 a.m.–10:00 a.m. in 140 Akers Hall
Recitation for sec. 004:	Tu 4:10 p.m.–5:00 p.m. in 140 Akers Hall
Learning Assistants:	Anthony DiPonio (003) & Caitlin Papa (004)
LA's E-mail:	diponi14@msu.edu & papacait@msu.edu
Discussion Forum:	https://piazza.com/
Course Web Page:	http://users.math.msu.edu/users/robertbe/lb118ss16.html

Textbook (required). We will use *Calculus for the Life Sciences: A Modeling Approach* by James Cornette and Ralph Ackerman, ISBN-13: 9781614446156, Mathematical Association of America, 2015. You must obtain a copy in electronic form. The main website for the textbook is the following: <http://www.maa.org/press/ebooks/calculus-for-the-life-sciences-a-modeling-approach>

Piazza (required). You will receive an e-mail invitation to join our online class discussion forum hosted by Piazza. Please use the discussion forum to ask questions, form study groups, offer hints, post links to helpful resources, etc.

R & RStudio (required for each group). We will learn to use the programming language, R, in this class. We will discuss how to install the relevant software (R and RStudio) in class. At least one student per in-class study group must install this software on a laptop computer. Documentation and tutorials will be provided.

Grading. Your grade for the course will be computed using the following formula:

$$H \times 0.20 + T \times 0.10 + Q \times 0.05 + (E1 + E2 + E3) \times 0.15 + F \times 0.20 = x,$$

where H , T , Q , $E1$, $E2$, $E3$, and F are as below. Each of these variables is a percentage score, i.e. out of 100. To determine your grade for the course, find the interval to which x belongs on the grading scale below. Details about specific types of graded work can be found in the sections below.

Graded Work		Grading Scale	
(H) Homework	20%	4.0	$90\% \leq x$
(T) Tutorial Worksheets	10%	3.5	$84\% \leq x < 90\%$
(Q) Quizzes	05%	3.0	$78\% \leq x < 84\%$
(E1–E3) Midterm Exams	15% each	2.5	$72\% \leq x < 78\%$
(F) Final Exam	20%	2.0	$66\% \leq x < 72\%$
		1.5	$60\% \leq x < 66\%$
		1.0	$55\% \leq x < 60\%$
		0.0	$x < 55\%$

Grading Criteria. All of your graded work in the course will be graded according to three criteria:

1. Did you **effectively communicate** your reasoning and methods?
2. Does you **completely answer** the question posed?
3. Does you **correctly answer** the question posed?

In particular, to receive full credit, you must show the steps taken to arrive at an answer. And, you should use complete sentences to clarify your answer when appropriate.

Topics. LB 118 is an introduction to differential and integral calculus. The overarching theme is to apply the concept of a limiting value to the study of functions of a single real variable. The major topics are models and functions, limits & continuity, tangent lines & derivatives, definite and indefinite integrals, and differential equations. The methods developed in the course will be applied to problems in the life sciences. There will be an emphasis on developing and utilizing mathematical models to study problems in biology. We will cover most of the topics in chapters one through ten of the textbook.

Learning Objectives.

1. Acquire proficiency in solving calculus problems. This includes mastering computational methods, interpreting graphs, drawing conclusions from computations, and setting up complex/multi-step problems.
2. Acquire experience in applying calculus to the solution of problems in the life sciences.
3. Learn how to use abstract reasoning to recognize and solve collections of problems which fall into the same category.
4. Develop the skill of communicating mathematical ideas in writing.
5. Acquire experience in working with others to solve math problems.

Midterm Exams and the Final Exam. There will be three midterm exams during the semester and a comprehensive final exam on the date scheduled by the university.

Exam I	Wednesday, February 3
Exam II	Wednesday, March 2
Exam III	Wednesday, April 13
Final Exam	Wednesday, May 4, 10:00 a.m.–12:00 p.m.

Exams are written and completed in class without the aid of the textbook, notes, calculators, or similar materials. You may request an alternate exam date in advance (by giving at least 3 days advance notice) if know you will be absent for university business or religious observances.

Homework. Homework will be assigned and collected on a weekly basis. Homework solutions must be written up neatly and succinctly. Each solution must begin with a clear restatement of the problem. For instance, start by writing—word for word—the statement of the problem. Then write your solution. Where appropriate, you should use complete sentences to clarify your

solution. You may work with other students on homework assignments, but you must indicate which students (first and last names) you worked with on each problem. You may ask the LAs or me for hints. You may also post questions on Piazza. You are encouraged to offer hints to your classmates on Piazza. Each student must write his or her own solutions to the homework problems.

Tutorial Worksheets. During each recitation and many lecture classes, you will be asked to solve problems on a worksheet. These “tutorial worksheets” or “tutorials” are not collected, but you receive a grade based on whether or not you are actively participating. The instructor or LA will note your attendance and keep a record of whether or not you are actively participating. Each tutorial is designed to help you learn a particular topic or set of topics. Solutions to the tutorials will be provided.

Tutorials are to be completed as part of an in-class study group. You must choose group members who attend the same recitation. Groups consist of 3 or 4 students. Some of the tutorials completed during the lecture classes will focus on using R and RStudio to study biological data and mathematical models of biological phenomena. If your group is not working together effectively, please let me know; and I will work with you to improve your effectiveness. In some cases, reassign students to different groups may be the best solution.

Quizzes. There will be quizzes during some of the recitations. The quizzes will consist on short problems related to the current topic.

Attendance and Make-up Policy. You are expected to attend all of the lectures and recitations. If you are absent for in-class work (tutorial worksheets, quizzes, and exams) without a *valid & documented* excuse, you will receive a score of zero for the assignment. The lowest 2 homework assignments, 4 tutorial worksheets, and 2 quizzes will be dropped. You may be excused from assignments if you have a valid & documented excuse. Examples of valid excuses include illness, family emergencies, and travel for university business. In all cases, you must provide documentation. If you are not sure how to provide documentation, please ask for help. If you know you will be absent for an exam, please provide at least three days advance notice to schedule an alternate exam date. If you miss an exam due to an emergency, provide documentation and ask for a make-up exam. You must contact me ASAP if you miss an exam due an emergency. Please send me an e-mail.

Ungraded Work. To be successful in this course, you must—in addition to completing the graded work—regularly read the textbook and test your understanding by solving textbook exercises and practice problems that are assigned in class. It is your responsibility to review prerequisite topics when they are not familiar. Please ask for help if you are struggling.

Resources for Success. Please use my office hours, the LAs office hours, the discussion forum (Piazza), and the math help room on the 2nd floor of East Holmes. If you cannot attend my regularly scheduled office hours, please send

me an e-mail to make an appointment.

Calculator Policy. The use of calculators is not be permitted on any of the exams or quizzes. Moreover, approximate answers will be penalized when an exact answer can be obtained. However, you are encouraged to use a calculator or computer to test your understanding when completing tutorial worksheets or when solving homework problems.

Students with Disabilities. If you require accommodations such as extra time on exams, please contact the MSU Resource Center For Persons with Disabilities (RCPD), <http://www.rcpd.msu.edu/>, and then schedule an appointment to meet with me.

Academic Honesty Policy. Cheating in any form will not be tolerated and will be reported to the deans of the college. You will receive a zero on any assignment in which there is a case of cheating. This includes, but is not limited to, plagiarism, failure to give proper citations, and copying another's work. If you are preparing an assignment and have a question about whether you are adhering to this policy, please ask. If you work on an assignment with other students, you must acknowledge your collaborators. A copy of the Lyman Briggs College Honor Code can be found at http://www.lymanbriggs.msu.edu/current_students/academics/AcademicPolicies.cfm.