

Math 105 - Calculus for the Biological Sciences and Natural Resources Majors

Harry Griffith Hall – HGH 226 - (CRN 42559)

MWF - 12-12:50pm

Instructor - Amber Buntin

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email: Amber.Buntin@humboldt.edu (In subject please include: **Math 105**)

Webpage: <http://users.humboldt.edu/buntina> **Office:** BSS 229

Office hours: Mon/Wed 11-11:50pm & by appt. (Location TBA email me)

Course Description

Differential and integral calculus with applications from the biological sciences. The focus will be on topics in differential calculus: the notion of a limit, instantaneous rate of change and the derivative, rules of differentiations, higher order derivatives, applications of the derivative in optimization problems. The end of the course is devoted to the introduction of integrals and the substitution method. Throughout the course, applications of the mathematical ideas to biological problems will be emphasized. **Pre-requisite:** grade of C- or better in MATH 115; or math code 50.

Classroom Environment and Attendance

It is essential to our class that both the students and teacher behave in a manner that will provide a comfortable learning atmosphere. Be respectful to one another. You should not hesitate to ask questions nor feel embarrassed to ask for help.

Class time is valuable and while sometimes we will work on in-class activities, I ask that you DO NOT complete homework. Working on assignments during lecture typically results in students missing the current material, falling behind, and is an overall bad habit to form.

You are expected to arrive on time and to leave when the class is dismissed. Arriving late or leaving before dismissal is disruptive and disrespectful to your fellow students as well as your teacher. Please be prepared with your headphones put away and cell phones turned on silent. If you must miss a day, please check with a classmate to see what you missed. If you miss more than 3 classes, your grade may be dropped $\frac{1}{2}$ of a letter grade.

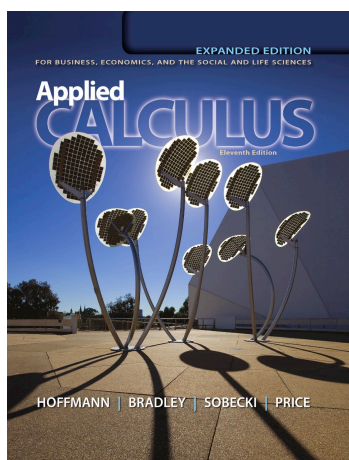
Learning Outcomes

- 1) Use skills beyond the level of interm. algebra to solve problems through quantitative reasoning.
- 2) Apply mathematical concepts and quantitative reasoning to problems.

Grades

Homework.....	25%	90-100%.....A
Quizzes.....	10%	88-89%.....B+
Exams	40%	83-87%.....B
Final Exam.....	25%	80-82%.....B-
		78-79%.....C+
		73-77%.....C
		70-72%.....C- (Passing)
		60-69%.....D
		0-59%.....F

*** Final grade is at the professional discretion of the instructor ***



Required Materials

Textbook - *Applied Calculus (11th edition) For Business, Economics and the Social and Life Sciences – Expanded Edition.*

- ISBN 9780073532370

- **New** \$251.75 buy, \$226.58 rent

- **Used** \$189.00 buy, \$75.53 rent

- **e-Book** \$147.25 (180 days access)

You WILL turn in hand-written exercises from the book for HW!

Supplies - Binder, paper, erasers, ruler/straight edge, graph paper.

Calculator (optional) - Although it is not required, you may consider getting a scientific/graphing calculator for this course for use on homework assignments and limited use on exams. A calculator will be helpful with homework/exams but will not be required.

Homework

Homework sets (problems from the textbook) will be announced in class, as well as posted on my webpage, and will be due after the lecture on a section is complete (nearly every class period). **No late work is accepted.** If you can't attend class, you should ask a friend to turn it in for you. All HW should be neat, and well organized. Use a pencil and eraser (or erasable pen), a ruler, and staple multiple sheets. Messy papers will be returned ungraded. Poorly organized papers or hard-to-follow problems will receive little or no credit (See "Homework Guidelines" Handout for more details). I will drop your **two** lowest homework scores at the end of the semester.

Our course will have a grader who will grade 4 selected problems from each set (2 points each), and also give credit for completeness and neatness (2 points) making assignments worth 10 points each. I suggest doing each assigned problem twice. Do the first draft on scratch paper and then, once you know exactly how a solution goes, transcribe it neatly onto the paper you will submit. Presentation is a component of your grade. It will benefit you to check (NOT COPY) the answers to the odd numbered problems in the back of the book.

The assignments may take a great deal of time so I recommend you:

- **read the section** of the textbook that is going to be covered **BEFORE** the class lecture.
- **start the homework as soon as lecture is started** for that section (or even before lecture).
- **set aside at least 2-3 hours** for each hour of class time, to do assignments.
- **start working on HW as soon after class as possible** this way you will have plenty of time to ask for help.

Quizzes

Quizzes will be given nearly every week in order to keep the material fresh (either in class or take-home). Quizzes will be given on Fridays at the beginning of class and they will typically be 2-3 questions long. These short quizzes contain material similar to recent problems from lecture and/or homework and they are given to keep the material fresh for exams.

Support Services

Learning Commons **Lower LIB room 101** (707) 826-5598 (Free small group tutoring avail.)

Math Tutoring Lab **LIB 208** Typical Hours: Mon-Thurs 11am-8pm, Fri 12-4pm, Sun 3-8pm

Private Tutor List **BSS 320** Available in the Math Dept. Office (and posted on my webpage)

Instructor Office Hours by appointment

Exams and the Final

There are three 50-minute, in class exams throughout the semester and a 2-hour comprehensive final examination at the end of the semester. I will announce the exam date **at least a week in advance**. The exams will be closed book. Calculator usage during exams will be determined by each exam and will be clearly stated ahead of time. Exams will consist of problems similar to those discussed in lecture and the homework. There are **NO MAKE-UPS**, so be sure to make all travel plans and such accordingly.

Final Exam: Monday Dec 14th, 2015 10:20-12:10 pm

How to Succeed in this Course

- **Read your text.** Read the section of the text ahead of the scheduled lecture date.
- **Be in class** on time every day.
- **Do your homework!** Plan to spend 1-2 hours outside of class for every hour inside of class. That is the minimum investment of time for success in this course.
- **Work with colleagues.** Mathematics is a social subject (but not a spectator sport). Working with fellow students helps in your own understanding of the ideas of the course.
- **Read and keep your returned work.** When you get work back, look for any remarks that the grader or I have made. Keep your work in a binder to keep a record of your scores.

Policies

- **Students with Disabilities:** Persons who wish to request disability-related accommodations should contact the Student Disability Resource Center in the Learning Commons, Lower Library 055, 826-4678 (voice) or 826-5392 (TDD). Some accommodations may take up to several weeks to arrange. <http://www.humboldt.edu/disability/>
- **Add/Drop policy:** Students are responsible for knowing the University policy, procedures, and schedule for dropping or adding classes. <http://www.humboldt.edu/~reg/regulations/schedadjust.html>
- **Emergency evacuation:** Please review the evacuation plan for the classroom (posted on the orange signs), and review http://www.humboldt.edu/emergencymgmtprogram/evacuation_procedures.php for information on campus Emergency Procedures. During an emergency, information can be found campus conditions at: **826-INFO** or www.humboldt.edu/emergency
- **Academic honesty:** Don't Cheat. You can get kicked out of college. Students are responsible for knowing policy regarding academic honesty: http://www.humboldt.edu/studentrights/academic_honesty.php or <http://pine.humboldt.edu/registrar/catalog/>
- **Attendance and disruptive behavior:** Students are responsible for knowing policy regarding attendance and disruptive behavior: http://www.humboldt.edu/studentrights/attendance_behavior.php

Final words

A few words about my expectations for you and myself in this course: My responsibilities include coming to class prepared to teach you mathematics, giving clear lectures, assigning carefully chosen homework problems that are relevant to our course and carefully preparing exam questions that accurately measure your progress in the course. Additionally, I am responsible to be available to you outside of class for consultation in office hours.

Likewise, I believe that you are ultimately responsible for your college education and I expect you to come to class motivated to learn the material and ready to work; this involves keeping up with homework assignments, seeking additional help, either from me or from the many resources available to you on campus, before it is too late ☺.

Guidelines for Writing Homework

1.2

Please follow these guidelines when completing homework assignments.

It makes my grading experience much more pleasant ☺

1. Complete all homework assignments on a **separate sheet of paper**. You **may use both sides** of the paper. Do NOT complete assignments on the pages of your textbook.
2. **Staple** all homework in the upper left hand corner.
3. **Label** your homework with your name, course number, and section number in the upper right hand corner (see example below).
4. Write your problems in order **down** the page. Please **skip a line** between problems.
5. **Circle, box, or highlight** your answers to each exercise so I can find your answer quickly.
6. Please use **pencil** when writing your homework, and please write legibly and neatly. Presentation is a component of your homework score.
7. Be sure to **show your work** when solving a problem. A problem with just the answer and no work shown will receive NO CREDIT.
8. **Cut or tear off** any frilly edges on paper torn from a notebook.
9. When creating a graph, you **MUST use graph paper and a ruler** or you will be asked to redo the assignment or will get a zero on the assignment.

HW 1.2: 4, 11, 20, 41

4. Solve $-26x + 84 = 48$

$$-26x + 84 = 48$$

$$-26x = 36$$

$$x = -\frac{36}{26}$$

20. Solve $-8 - 8(x - 3) = 5(x + 9) + 7$

$$-8 - 8(x - 3) = 5(x + 9) + 7$$

$$-8 - 8x + 24 = 5x + 45 + 7$$

$$-8x + 16 = 5x + 52$$

$$-13x = 36$$

$$x = -\frac{36}{13}$$

11. Solve $19x + 35 = 10$

$$19x + 35 = 10$$

$$19x = -25$$

$$x = -\frac{25}{19}$$

41. Solve $Ax + By = C$ for y

$$Ax + By = C$$

$$By = C - Ax$$

$$y = \frac{C - Ax}{B}$$