Math 147 - Summer 2013
Texas A&M University

Instructor (June 3 - July 10): Heather Ramsey
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Instructor (July 11 - Aug. 13): Dr. Yvette Hester
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Office hours: TBA and by appointment

Class Times and Locations: This course meets every weekday according to the schedule below from June 3, 2013, to August 12, 2013, with two exceptions: Classes will not meet on Thursday, July 4, 2013, or on Monday, July 8, 2013. Also, students are required to take the comprehensive final exam for this course on Tuesday, August 13, 2013, from 10:30am to 12:30pm.

<table>
<thead>
<tr>
<th>Section</th>
<th>Days</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>301 Lecture</td>
<td>MWF</td>
<td>10am-11:25am</td>
<td>BLOC 160</td>
</tr>
<tr>
<td>301 Recitation</td>
<td>TR</td>
<td>10am-10:50am</td>
<td>BLOC 160</td>
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</tbody>
</table>

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Catalog Title and Description: (CREDIT 4.0) Calculus I for Biological Sciences - Introduction to differential calculus in a context that emphasizes applications in the biological sciences. Prerequisite: MATH 150 or equivalent or acceptable score on TAMU Math Placement Exam. Credit will not be given for more than one of MATH 131, MATH 142, MATH 147, MATH 151 and MATH 171.

Course Goal: The goal of this course is to introduce students to differential and integral calculus in a context that emphasizes applications in the biological sciences. First semester topics will include limits, continuity, differentiation, differentiation techniques and applications, integration, integration techniques and applications. Note: A tentative schedule for this course, including the topics to be taught, can be found on my web page. A brief summary of the lecture schedule is given at the end of this syllabus.

Learning Outcomes: During the course of MATH 147, students will gain the following specific knowledge and skills and be able to

- graph linear, trigonometric, exponential, and logarithmic functions.
- read semilog and double-log plots and derive functional relationships associated with such plots.
- compute basic limits of functions.
- understand the concept of continuity and be able to determine whether or not a given function is continuous.
- compute limits of functions using the Sandwich (Squeeze) Theorem.
- understand the Intermediate Value Theorem and be able to apply it in locating roots of algebraic equations.
- compute derivatives using the limit definition of the derivative.
- compute the equation of a line tangent to a curve at a given point.
• compute derivatives of polynomials, rational functions, trigonometric functions, exponential functions, inverse functions, and logarithmic functions.

• compute derivatives with the product rule, the quotient rule, and the chain rule.

• solve problems of related rates.

• compute the linear approximation of a function and use it in applications of approximation and error estimation.

• locate critical values of a function and categorize them as minima, maxima, or inflection points.

• compute intervals of monotonicity and intervals of concavity.

• graph complicated functions using information obtained by differentiation.

• analyze optimization problems.

• compute limits using L'Hospital's Rule.

• compute limits of sequences and recursions.

• model single-species populations and analyze single-species population models.

• compute integrals using Riemann sums.

• compute integrals using the Fundamental Theorem of Calculus.

• compute integrals using the method of substitution.

• use integration to compute areas, volumes, average values and arclengths.

Email Policy: Check your TAMU email account EVERY day. You are responsible for any information I send via email. If you send an email to me, be sure to include your full name and section number in the message. NOTE: Because of privacy rights, I cannot discuss grades via email or over the phone.

Cell Phone/Laptop Computer Policy: As a courtesy to me and your classmates, all cell phones and laptop computers (and other electronic devices) must be OFF and put away during lecture. If you disrupt class or distract your neighbor with your cell phone or other electronic device, you will be asked to leave class.

Grading Policy: Grades will be calculated according to the following percentages:

- Three Exams: 18% each
- Quizzes: 15%
- Recitation Assignments: 8%
- Comprehensive Final Exam: 23%

A = 90-100%
B = 80-89%
C = 70-79%
D = 60-69%
F = below 60%

Note: Any questions regarding grading/scoring must be made within one week of the return of the exam or quiz or no change in the grade will be made.

Make-up Policy: No make-ups will be given without written evidence of an official University excused absence. (See University Student Rules.) According to Section 7.3 of the University Student Rules, for an absence to be considered excused,
the student must notify his or her instructor in writing (acknowledged e-mail message is ac-
ceptable) prior to the date of absence if such notification is feasible. In cases where advance
notification is not feasible (e.g. accident or emergency) the student must provide notification
by the end of the second working day after the absence. This notification should include an
explanation of why notice could not be sent prior to the class.

If no such notice is given, the rights to a make-up are forfeited. In addition (and also in accordance with
University Student Rules), a written excuse must be presented upon return to class. Specifically, in the
case of illness or injury, students are required to obtain a confirmation note from a health care professional
affirming date and time of a medical office visit regarding the illness or injury. I will NOT accept the
Explanatory Statement for Absence from Class form as sufficient written documentation of an excused
absence.

**Exams:** There will be three exams on the dates listed below and a comprehensive final, scheduled as shown
below. Exam grades will NOT be curved.

<table>
<thead>
<tr>
<th>Tentative Exam Schedule</th>
<th>Final Exam</th>
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<tbody>
<tr>
<td>Exam 1: Friday, June 21</td>
<td>Tuesday, Aug. 13, 10:30am-12:30pm</td>
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<tr>
<td>Exam 2: Wednesday, July 10</td>
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<tr>
<td>Exam 3: Monday, Aug. 5</td>
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</table>

**Quizzes:** Announced and unannounced quizzes and will be given throughout the semester during recitations
and occasionally during lecture. Each quiz will be graded on a 10-point scale, and no make-up quizzes
will be given without written verification of a University excused absence. One quiz grade will be dropped.

**Recitation Assignments:** A set of problems will be assigned during recitation each Tuesday and will
be due during that class period. Students may work on these problems in groups of up to three. These
assignments will be graded on a 10-point scale, and no make ups will be allowed for missed recitation
assignments. One recitation assignment grade will be dropped.

**Homework Assignments:** Homework assignments will be posted on the course website. These assign-
ments will not be collected for a grade, but completing them is essential to doing well in the course.

**Attendance:** I STRONGLY suggest that you make every attempt to not miss a single day of lecture or
recitation. Falling behind in this course can be very detrimental to your grade.

**Calculator Policy:** Students will be allowed to use a scientific calculator on most quizzes and exams, with
potentially a few exceptions. No graphing calculators, cell phone calculators, or any other electronic device
will be allowed.

**Scholastic Dishonesty:** You are encouraged to work together on the homework assignments, but do
not copy another student’s work. Copying work done by others, either in class or out of class, is an act
of scholastic dishonesty and will be prosecuted to the full extent allowed by University policy. Using an
unauthorized calculator during an exam or quiz will result in a zero on the assignment. Also, cell phone
use during an exam, quiz, or recitation assignment will result in a zero on the assignment. Always abide
by the Aggie Code of Honor: An Aggie does not lie, cheat, or steal or tolerate those who do. Please
refer to Honor Council Rules and Procedures at http://www.tamu.edu/aggiehonor for more information on
academic integrity and scholastic dishonesty.

**Extra Help and Preparing for Exams:**

- **Your Instructor:** We want each and every one of our students to be successful in this class. Please
  feel free to ask questions in class. If you need more help, drop in during office hours or make an
appointment to see the instructor. Remember, we are here to help, but we cannot do that if we don’t know that there is a problem.

- **Recitation and TA:** You will attend recitation with a teaching assistant twice per week. During these class periods, you will be able to ask the TA to explain homework problems and review any topics from lecture, so be sure to take advantage of this class time.

- **Your Classmates:** Get to know your classmates. Form study groups and work on suggested problems outside of class.

- **Practice:** Working ALL of the suggested homework problems from your textbook is essential to doing well in this course. If you struggle with these problems the first time you work them, be sure to work them again AND work other problems from the textbook that are similar. We strongly recommend that you practice problems **DAILY**.

- **Free Tutoring!!! (a.k.a. Help Sessions):** Help sessions are an opportunity for you to ask questions and get help with your homework. The schedule for summer help sessions can be found on my webpage. These sessions are come-and-go, i.e., you can come at any point during the help session and leave whenever you want.

**ADA Policy Statement:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Room B118 of the Cain Hall or call 845-1637.

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**Weekly Lecture Schedule:** Roughly speaking, we should cover the following material from the textbook by Neuhauser on the following schedule:

<table>
<thead>
<tr>
<th>Week of Monday</th>
<th>Sections Covered</th>
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<th>Sections Covered</th>
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<tbody>
<tr>
<td>June 3</td>
<td>1.1 - 1.3, 3.1</td>
<td>July 15</td>
<td>5.2 - 5.5</td>
</tr>
<tr>
<td>June 10</td>
<td>3.1 - 3.5</td>
<td>July 22</td>
<td>5.5, 2.1-2.3, 5.6</td>
</tr>
<tr>
<td>June 17</td>
<td>3.5, 4.1, Exam 1</td>
<td>July 29</td>
<td>5.6, 6.1, Review</td>
</tr>
<tr>
<td>June 24</td>
<td>4.2 - 4.5</td>
<td>Aug. 5</td>
<td>Exam 3, 6.2, 7.1, 6.3</td>
</tr>
<tr>
<td>July 1</td>
<td>4.6 - 4.8</td>
<td>Aug. 12</td>
<td>6.3, Review</td>
</tr>
<tr>
<td>July 8</td>
<td>Exam 2, 5.1</td>
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