California State University, Long Beach  
Department of Mathematics

<table>
<thead>
<tr>
<th>Math 115</th>
<th>Business Calculus</th>
<th>Spring 2016</th>
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**Who is the instructor?**

**Instructor:** Florence Newberger  
**Office:** F03-218  
**Office Phone:** (562) 985-5675  
**Email:** fnewberg@csulb.edu  
**Office Hours:** This is my plan, but it is subject to change during the first weeks of class, to accommodate students' needs. Mondays and Wednesdays, 11:45-12:45, Tuesday mornings if you tell me you are coming, or by appointment (I am available at other times if needed).

**Where is class?**

**Course:** Math 115 Seminar – Business Calculus  
1:00 – 1:50 p.m. Mondays and Wednesdays  
Room Ph1-141  
Sec – 01A  Call #9533

**What materials do I need?**

**Required Materials:**

- Applied Calculus, Hybrid, 6th edition by Waner and Costenoble, and On-line homework access (Enhanced WebAssign)  
  OR  
  On-line homework access (Enhanced WebAssign) only (it includes the ebook).
- ALEKS access.
- An i>clicker plus, 1 or 2 (no WebClickers, sorry)
- A “two-line” scientific calculator; graphing calculators will not be permitted on exams.

**What dates should I put on my calendar right away?**

Your exam dates and administrative deadlines are already set.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, 9/7</td>
<td>Last day to withdraw without a W</td>
</tr>
<tr>
<td>YOUR Activity session Week 5, 2/15-2/18</td>
<td>Midterm Exam 1</td>
</tr>
<tr>
<td>YOUR Activity session Week 9, 3/14-3/17</td>
<td>Midterm Exam 2</td>
</tr>
<tr>
<td>Friday, 4/15</td>
<td>Last day to withdraw without the Dean's signature</td>
</tr>
<tr>
<td>3/28 – 4/1</td>
<td>Spring Break</td>
</tr>
<tr>
<td>YOUR Activity session Week 14, 4/18-4/21</td>
<td>Midterm Exam 3</td>
</tr>
<tr>
<td>In LARGE LECTURE, Wednesday, 5/11 at 12:30</td>
<td>Final Exam (Confirm on the university’s website.)</td>
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OK, now what's this class about?

The catalog description says:

But what is it really about?

In Business Calculus we will use mathematical models to guide decision making in business scenarios. We develop mathematical techniques for describing relationships between quantities, like price and demand, time and sales, or production level and profit. Then we use calculus to analyze these relationships, to predict the future and describe the past and present. In this class, we take time to practice talking to each other about the content, articulating in words both the business solutions and the mathematical ideas. This practice with the technical and contextual vocabulary leads to the ability to collaborate, sharing ideas as they are forming, and building on the ideas of others.

We have a great semester planned for you, with a wide variety of opportunities for you to discuss, read, write, listen to, think about, and thereby succeed in mathematics.

Math Objectives

The math objectives listed here take place throughout the 4 units of this course, described below.

1. Refresh and maintain the language and tools of algebra, so that they may be used proficiently to study calculus, business and economics.
2. Use the language and tools of calculus to study functions used in business and economics.
3. Use models to study the real world, and articulate results verbally and in writing.
4. Use a spreadsheet to organize, analyze and display data describing the real world.

Unit 1: Functions and rates of change.

i. Create models from data using a spreadsheet to perform a regression.
ii. Use models to make predictions in context and to describe change.
iii. Relate algebraic formulas for mathematical models to their graphs and numeric tables of values.
iv. Analyze mathematical models for cost, revenue and profit to inform decision-making in business and economics.

Unit 2: Derivatives

v. Relate the rate of change of a function to its graph.
vi. Calculate the derivative of a function algebraically for polynomial, rational and exponential functions.
vii. Use the derivative to describe how a model is changing in context.
Unit 3 Applications of Derivatives

viii. Find the input at which a function obtains its maxima and minima algebraically, numerically and graphically.

ix. Find the maximum and minimum values of models, to optimize quantities in the real world.

x. Calculate Elasticity of Demand and use it to describe the demand for a commodity.

Unit 4 Multivariable Derivatives

xi. Model contexts from business and economics using multivariable functions.

xii. Apply calculus to multivariable functions to describe changes in the multifaceted nature of the real world.

Study Habits Objectives

In addition to math objectives, this beginning college course has objectives designed to encourage students to develop a strong foundation of productive study habits.

5. Organize course materials to facilitate learning.

6. Listen actively to lectures, answering questions and taking organized notes.

7. Collaborate effectively with peers.

How am I going to learn all that?

**Large Lecture**
- 2 hrs/week
- Complete the Lecture Notes
- Participate (i>clickers)

**Activity Session**
- 2 hr/week
- Group work on ideas from Off-line Homework and Lecture Notes (bring these to Activity)
- Excel Group Projects

**Outside of Class**
- 3 units x 2 hrs/unit = 6 hrs per week
- ALEKS Homework
- WebAssign Homework
- Off-line Homework
- Excel Group Projects
Nice diagram, but what are all those tasks?

Online Homework (WebAssign)
Why you want to do your WebAssign homework: The only way to really learn math is to practice math. Online WebAssign homework provides immediate feedback and allows you to keep working until you get it.

What you will do in WebAssign: You will apply/practice the skills taught during class. Homework assignments are due most Tuesdays and Fridays by 11:30pm. You have 30 tries to complete each problem. If you are struggling, use the provided resources such as “Watch it”, “Master it”, and “Practice another version.” For any assignment or individual problems that you do not complete by the deadline you have 48 hours (2 days) immediately following the deadline to complete the assignment, but you only receive 80% of the credit for problems completed after the deadline. So if homework is due on Tuesday, you have Wednesday & Thursday to continue working at a reduced point value.

Excel Group Projects
Why you want to do the Excel Group Projects: These group projects are designed to bring real world applications of practical mathematics into the class. You will work in groups to model the professional workplace, and you will learn to use Microsoft Excel, a tool ubiquitous throughout industry.

What you will do in Excel Group Projects: During your Activity Session you will work with a group of your peers to complete a worksheet that introduces your project. You will then work with your group outside of class to complete an individual portion and group portion of the assignment. In the Excel Group Projects, you will use Excel to calculate and display data, and then write up your findings.

ALEKS
Why you want to do your ALEKS homework: Strong algebra skills are vital for success in this course and other business courses, including statistics, business statistics, economics and so on.

What you will do in ALEKS: This 6-week software package will help you review or learn the algebra needed for this course. You will begin by taking a 25-30-question assessment to determine what topics you need to practice. You will then complete exercises in the ALEKS system, and gain mastery of those topics.

For full credit on your ALEKS assignment, you should complete the following:
• The initial assessment must be completed by midnight, Sunday, 9/6 – No late assignments or partial credit available.
• A minimum of 90 topics must be mastered by midnight Sunday, 9/20 – No late assignments or partial credit available.
• All 120 topics must be mastered by midnight Sunday, 10/4 – No late assignments, but your grade will be prorated based on the percent of the total work you completed.

Be careful, it is possible to complete your online homework and not really learn from it. Don’t let yourself fall into this trap. Make a list of problems on which you used the videos or needed extra help, so that you can review that content.

ALEKS retests you frequently to ensure that you retain what you have learned. These assessments could come at any time.

Do not put ALEKS tasks off to the last minute.
Activity Sessions

Why you want to attend Activity Sessions: Participating in Activity Sessions provides an opportunity to learn in a small class setting, and use the vocabulary of mathematics, business and economics in conversation with your peers. You will complete difficult problems with the support of your peers and teachers, in preparation to solve problems independently outside of class.

What you will do in Activity Sessions: Once a week for 2 hours you will meet with about 30 students from your large lecture class. Print and bring the Lecture Notes and Off-line Homework to Activity, and be ready to work with your peers to answer questions about some of these exercises during class. In these hands-on sessions, you will practice articulating mathematical ideas verbally and in writing, and applying these ideas to answer questions about the real world. You practice solving problems using techniques demonstrated by your Activity Leader or your Large Lecture Instructor, and you explore new ideas to prepare you to understand them when they are discussed in Large Lecture. You work with your peers on problems similar to homework and exam problems, so that you will be productive when you tackle them on your own. You will also begin work on your Excel Group Projects during your Activity Sessions. In these projects you work with a spreadsheet on a real world application. In all cases, Activity Sessions are places in which you are active, learning mathematics by doing mathematics.

Testing for Business Calculus also takes place during the Activity Sessions. The three Midterm Exams take place in Weeks 5, 9 and 13 during Activity, and most sessions without exams include short quizzes, from which you receive feedback on your work before the higher-stakes exams.

Clickers

Why you want to come to class and answer clicker questions: If you are engaged during class you will retain more of what you hear. Clicker questions allow you to reflect on and practice what you have learned, at the same time allowing me, your instructor, know if you understand what I am teaching, so that I can make adjustments as needed.

What you will do with your i>clicker: This class requires each student to have an i>clicker, a wireless handheld response system which allows your response to be recorded in my grade book. Every class will have a few clicker questions. To receive full credit, you must answer 50% of the questions correctly. Thus, if you answer all questions correctly, you will earn extra credit in the Clicker category. That extra credit is then used to make up for missed questions, or if you forget your gadget or run out of batteries, but it does not carry over to other parts of your grade. There are no make up i>clicker assignments available.

Notebooks

Why you want to keep a notebook: We provide you with many resources and assignments to help you learn Business Calculus. But none of them do any good if you cannot find them. Keep a notebook to organize everything and optimize the resources you need to study.

What you do with your notebook: Put your 115 stuff in it.
How does it all fit together?
Here is the learning flow that relates the various tasks we provide to help you learn Business Calculus.

<table>
<thead>
<tr>
<th>Prerequisites</th>
<th>ALEKS</th>
<th>Large Lecture Activity</th>
<th>Activity Classwork</th>
<th>WebAssign Off-line Homework and Lecture Notes</th>
<th>Independent Practice</th>
<th>Demonstrate Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Content</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

How will I be graded?
The following in-class participation, homework, quizzes and exams comprise the grades for Math 115.

<table>
<thead>
<tr>
<th>Graded Task</th>
<th>Points</th>
<th>Percentage of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALEKS Homework</td>
<td>16</td>
<td>1.6%</td>
</tr>
<tr>
<td>i&gt;clicker questions</td>
<td>10</td>
<td>1%</td>
</tr>
<tr>
<td>WebAssign Homework</td>
<td>66</td>
<td>6.6%</td>
</tr>
<tr>
<td>Activity participation</td>
<td>30</td>
<td>3%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>80</td>
<td>8%</td>
</tr>
<tr>
<td>Excel Projects</td>
<td>18</td>
<td>1.8%</td>
</tr>
<tr>
<td>3 Midterm Exams</td>
<td>500</td>
<td>50%</td>
</tr>
<tr>
<td>Cumulative Final Exam</td>
<td>280</td>
<td>28%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1000</strong></td>
<td><strong>100%</strong></td>
</tr>
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Here is a brief description of what to expect.

**Breakdown:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebAssign</td>
<td>These 16 (or so) assignments are equally weighted.</td>
</tr>
<tr>
<td>Excel Projects</td>
<td>The 2 projects are equally weighted.</td>
</tr>
<tr>
<td>ALEKS</td>
<td>Complete the Initial Assessment by Sunday, Week 2. (3 points) Complete 90 topics by Sunday, Week 4. (5 points) Complete all 120 topics by Sunday, Week 6. (8 points)</td>
</tr>
<tr>
<td>Activity Participation</td>
<td>Participation in weekly Activity sessions is equally weighted.</td>
</tr>
<tr>
<td>Clicker Questions and Beachboard Quizzes</td>
<td>All clicker questions are equally weighted; answer 75% of the questions correctly for full credit.</td>
</tr>
<tr>
<td>Quizzes</td>
<td>Quizzes will be equally weighted. We plan to have 5 quizzes, but we are going to play it by ear.</td>
</tr>
<tr>
<td>Midterms</td>
<td>Midterm Exam 1 is worth 100 points; Midterm Exams 2 and 3 are worth 200 each.</td>
</tr>
</tbody>
</table>
Letter Grades
We award letter grades according to the following scale. We do not adjust cut-offs based on the numbers of students who receive a given letter grade (so ALL of you can get an A if you do the work!).

<table>
<thead>
<tr>
<th>Score</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>900-1000</td>
<td>A</td>
</tr>
<tr>
<td>800-899</td>
<td>B</td>
</tr>
<tr>
<td>700-799</td>
<td>C</td>
</tr>
<tr>
<td>600-699</td>
<td>D</td>
</tr>
<tr>
<td>0-599</td>
<td>F</td>
</tr>
</tbody>
</table>

Small print
Exams: There will be 3 midterm exams, which you will take in your activity session. The test dates are listed above. You may not take an exam during a different day without an approved university excuse. In the event that you must miss an exam, notify me immediately. Be sure to keep your midterm exams in your notebook since they will be excellent preparation for the cumulative final.

Cumulative Final: The final exam is in our large lecture classroom at the time and date specified by the university. Since the time is longer than our regular class, make arrangements now to attend for the full time. The Final will be cumulative.

In the event that you must miss an exam, notify me immediately.

Cheating: Don't cheat. If you cheat on an exam you will receive a zero score for that test and are subject to further disciplinary actions through the University. If you i>click for another student, or another student i>clicks for you, you will both receive 0 in the i>clicker category, and you will be subject to further disciplinary actions through the University. I will not sign withdrawal petitions for students who cheat.

University Policies:
- The instructor may change the syllabus as needs arise, including exam dates (not likely).
- It is the students’ responsibility to notify the instructor within the first two weeks of school for:
  - Accommodation related needs pertaining to a university verified disability. Let me know if something I can do during my presentations will help you see, hear or participate more effectively.
  - University related activities, such as a sports or clubs, which would cause the student to miss an exam.