

**University of New Mexico- Valencia Campus**  
**Department of Science & Mathematics**  
**Math 180- Sec. 501- CRN # 22955)**  
**Elements of Calculus I**  
**Fall 2015**

<b>Instructor:</b> Khaled Kassem (Mr. K)	<b>Office Phone Number:</b> (505) 925-8609
<b>Email:</b> Use the message button within UNM Learn. You may also use: <a href="mailto:khaled@unm.edu">khaled@unm.edu</a>	
<b>Instructor Website:</b> (currently under modification) <a href="http://www.unm.edu/~khaled">http://www.unm.edu/~khaled</a>	
<b>Class Schedule:</b> Tuesday & Thursday @ 01:30 – 02:45AM - <b>A-129</b>	
<b>Office Room:</b> A-142 (E)	
<b>Office Hours:</b> Monday & Wednesday: 04:15 -05:30 PM, Tuesday & Thursday 04:15-06:30 PM.	
UNM LEARN URL: <a href="http://learn.unm.edu">learn.unm.edu</a> . Check this location frequently for messages and announcements. Also, find the syllabus of the course there and print a hard copy for yourself.	
<b>Textbook:</b> <i>Calculus with Applications</i> , 10 <sup>th</sup> Edition by Lial, Greenwell, Ritchey. (Packaged with My Lab)	
<b>MY LAB COURSE ID #:</b> <b>kassem59967</b> My Lab website at <a href="http://www.coursecompass.com">www.coursecompass.com</a>	

**Please note the following guidelines for the course:**

**-Prerequisite:** Grade of C (not C-) or better in Math 121 or Math 150

**- Grades:** Your grade will be based on your performance on the following assignments and exams. Your instructor may also give short in-class quizzes and special homework assignments that will contribute to your grade. To receive credit for this course you must have at least 70% on the final exam **and** 72% overall.

Five In-class Quizzes	100 points
My Lab Homework	100 points
3 in-class tests	300 points
Final Exam	200 points
Total	700 points

Your overall average will be found by dividing your total points by 7 and applying the following measure:

A	90% -100%
B	80% - 89%
C	72% - 79%
D	60%- 70%
F	Below 60%

**- Homework:** The graded homework is on My Lab website. The syllabus lists some **recommended** non-graded homework problems. These are **NOT** to be handed in. Keep all of your homework together in a folder so that if you are having trouble in the course, you can bring it with you when you go to see your instructor or get tutoring. The problems used on exams and quizzes are based on these homework problems. Work as many as it takes for you to understand the material. You should expect to spend an average of 10 hours per week on homework problems.

**- Attendance** is mandatory, and if you have five or more unexcused absences, you may be dropped from the course. **NOTE:** it is YOUR responsibility to drop the course if you decide to stop attending. If you don't, you may receive an F. The syllabus contains deadlines for dropping the course or making other changes.

**- Missed Exams:** If you miss an exam, contact your instructor immediately and provide a note (hardcopy or email) explaining your reason. Provide enough detail so that the instructor can check your excuse. Make-up tests will only be given if your excuse is valid. "I wasn't ready for it" is not a valid excuse. Be aware that make-up exams are more difficult than the original exam. *No exam scores will be dropped. Graphing Calculators are NOT allowed on any in-class exam including the final exam. You can use a scientific calculator. A 3" by 5" note card can be used only on the final exam.*

**- Student Behavior:** Students are expected to behave in a courteous and respectful manner towards the instructor and their fellow students. Please be on time for your class, turn off your cell-phone and refrain from talking or doing any other activity that could be disruptive to the class. You must stay in-class for all the class time. If you need to leave the class early, inform your instructor before the class starts.

**Academic Dishonesty:** Academic dishonesty is defined in the 2012-2014 UNM-Valencia catalog, and includes but not limited to copying work from other students. Any student found doing this is subject to disciplinary action, ranging from a reduced or failing grade for the work in question and/or the course, to dismissal from the University.

**- Disability Statement:** We will accommodate students with documented disabilities. During the first two weeks of the semester, those students should inform the instructor of their particular needs and they should also contact **Equal Access Services** at 925-8560.

**- Support Services:** The Valencia Campus Library provides a quiet atmosphere for study and is an excellent resource for supplementary materials. Audiotapes and videotapes are available for student use through the library. It will also have a link to all your course syllabi.

The Open Computer Lab (V123) provide free access to word processors, email, Internet access and other software that students may find useful in the course of their studies.

The Learning Center (TLC) can be reached at 925-8907. It provides tutoring at no charge for all UNM-Valencia Campus students. If you feel you need a tutor, you may set up a regular time for tutoring, make occasional appointments for tutoring, or ask to see a tutor on a walk-in basis without an appointment. Tutoring also can be provided through The STEM Center (925-8515). In addition, the online tutor, Ryan Baltunis, can be reached at 925-8553 or found in LRC 118.

Also, for those who drive from Albuquerque, you can get tutoring for this class at UNM- Main Campus at the CAPS- Center for Academic Program Support; 3<sup>rd</sup> floor of Zimmerman Library (277-4560).

### **Math 180 Tentative schedule and suggested homework**

*Expect that we will cover 3 sections minimum each week Or 2 sections if material is more challenging. We will cover 27 sections total this semester. These sections are distributed in seven chapters of the book. There will be three major tests. When we have a test, we will need to use all the 75 minutes of a class period for the test. Here is a list of sections to be covered and the recommended homework problems for each.*

***Remember that this homework is optional. The graded homework is on My Lab website.***

## **CHAPTER 1**

### **§1.1-Slopes and Equations of lines**

3 through 75 (multiples of 3)

### **§1.2- Linear Functions and Applications**

1 through 47 (odd)

## **CHAPTER 2**

### **§2.4-Exponential Functions**

1 through 53 (odd)

### **§2.5-Logarithmic Functions**

3 through 93 (multiples of 3)

### **§2.6-Applications: Growth and Decay; Mathematics of Finance**

1 through 45 (odd)

## **CHAPTER 3**

### **§3.1 – Limits**

1, 3, 5, 7, 9, 11, 21, 23, 25, 27, 29, 31, 35, 37, 39, 41, 45, 47, 49, 51, 61, 63

### **§3.2 – Continuity**

1, 3, 5, 7, 9, 11, 13, 15, 19, 21, 23, 25, 35, 36, 38, 39

### **§3.3 – Rates of Change**

1, 5, 7, 9, 15, 17, 29, 43

### **§3.4 – Definition of the Derivative**

1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 33, 35, 37, 39, 47, 49, 53, 57

### **Exam 1 (covers chapters 1, 2, and 3)**

## **CHAPTER 4**

### **§4.1 – Techniques for Finding Derivatives**

3, 5, 7, 11, 13, 15, 17, 19, 21, 23, 29, 31, 33, 35, 37, 41, 43, 45, 53, 55, 69, 73

### **§4.2 – Derivatives of Products and Quotients**

3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 33, 41

### **§4.3 – The Chain Rule**

23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 57, 63, 65ab

### **§4.4 – Derivatives of Exponential Functions**

1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 27, 29, 31, 33, 37, 39, 41, 59

### **§4.5 – Derivatives of Logarithmic Functions**

3, 5, 9, 11, 15, 17, 19, 23, 25, 27, 29, 35, 37, 39, 41, 43, 55, 63

## **CHAPTER 5**

### **§5.1 – Increasing and Decreasing Functions**

1, 3, 5, 7, 9, 11, 15, 17, 19, 21, 23, 27, 29, 33, 35, 53

### **§5.2 – Relative Extrema**

1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 23, 25, 27, 29, 31, 33, 35, 41, 43, 55

### **§5.3 – Higher Derivatives, Concavity, and the Second Derivative Test**

7, 9, 11, 13, 15, 19, 21, 25, 27, 29, 31, 35, 39, 41, 43, 45, 49, 51, 59, 63

### **§5.4 – Curve Sketching**

5, 7, 9, 11, 13, 19, 23, 25, 27, 29, 35, 37

### **Exam 2(covers chapters 4 and 5)**

## **CHAPTER 6**

### **§6.1 – Absolute Extrema**

11, 13, 15, 17, 19, 21, 31, 33

### **§6.2 – Application of Extrema (Optimization)**

1, 3, 7, 9, 11, 13, 19, 23

### **§6.4 – Implicit Differentiation**

1, 3, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 35, 41, 47

### **§6.5 – Related Rates**

1, 7, 9, 11, 21, 23, 25, 27, 29, 31

## **CHAPTER 7**

### **§7.1 – Antiderivatives**

5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 47, 65, 67

### **§7.2 – Substitution**

3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 39

### **§7.3 – Area and the Definite Integral**

15, 16, 19, 21

### **§7.4 – The Fundamental Theorem of Calculus**

1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 35, 39, 45, 47, 57, 59, 61

### **§7.5 - The Area between Two Curves**

1, 3, 5, 7, 9, 11, 13, 15

### **Exam 3 (covers chapters 6 and 7)**

#### **Important Dates:**

**08/28 (Friday) Last day to add courses or change sections**

**09/04 (Friday) Last Day to Drop without a grade, Last Day to Drop with a Refund**

**09/07 (Monday) Labor day Holiday (NO Class)**

**09/11 (Friday) Last day to change grading options**

**October 08-09 – Fall Break – No Classes**

**11/ 06 (Friday) Last day to withdraw without the Dean’s approval**

**November 26-27 – Thanksgiving Holiday – No Classes**

**12/ 04 (Friday) Last day to withdraw with the Dean’s approval**

**In-Class Final Exam: *Thursday, December 10, 2014 at 01:30-03:30 PM in the same classroom, A-129.***

### **List of Learning Outcomes for Math 180**

#### **Course Goal #1: Communication**

##### **Student Learning Outcomes (SLOs)**

**SLO 1:** Students will use correct mathematical notation and terminology

**SLO 2:** Students will be able to generate, read, and interpret graphs of functions

**SLO 3:** Students will be able to use functions that model real-world situations such as the profit of a business, the design of a box, and the height of a thrown ball.

**SLO 4:** Students will use the various notations for the derivative.

#### **Course Goal #2: The Derivative**

**Addresses UNM core area 2/ HED area II: Mathematics (Calculus)**

**SLO 1:** Student will be able to determine the slope of a straight line from a graph and from any of the forms of the equation, and interpret it as a rate of change.

**SLO 2:** Students will understand the slope of a curve at a point as the slope of the tangent line to the graph at that point, and will be able to determine the slope from a graphic representation and also analytically. They will be able to write the equation of the tangent line to a curve at a given point.

**SLO3:** Student will be able to determine when the limit of a function exists and when it doesn't, and to find limits algebraically and also from the graph of a function.

**SLO 4:** Students will be able to determine derivatives of simple functions using the limit definition, and will be able to apply the different rules of differentiation (power, product, quotient, chain)

**SLO 5:** Students will be able to use the graph of a function to explain why a function is or is not continuous or differentiable at a point.

### **Course Goal #3: Applications of the Derivative**

**Addresses UNM core area 2/ HED area II: Mathematics (Calculus)**

**SLO 1:** Students will be able to describe the graph of a function as increasing or decreasing, concave up or concave down and relate these descriptions to the first and second derivatives.

**SLO 2:** Students will be able to use the first and second derivative to find relative maxima, relative minima, and inflection points.

**SLO 3:** Students will be able to sketch the graph of a function using numbers 1 and 2 above.

**SLO 4:** Students will be able to solve optimization problems using the concept of derivative.

**SLO5:** Students will be able to analyze and solve real-world problems involving exponential growth and decay.

### **Course Goal #4: Integrals**

**Addresses UNM core area 2/ HED area II: Mathematics (Calculus)**

**SLO 1:** Students will be able to find anti-derivatives of various types of functions.

**SLO 2:** Students will be able to use the Fundamental Theorem of Calculus and the rules of integration to evaluate definite integrals of simple functions.

**SLO 3:** Students will be able to find areas under curves, and use the definite integral to solve applied problems