

## Syllabus for Math 120, Sec 03

Fall 2016,

**Teacher:** Dr. Robert Kreczner

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**Office Hours:** 11:00 am –11:50 am, Monday to Friday, except Tuesday, or by appointment if this time is not convenient for your schedule.

**Text Book:** *Calculus, 8<sup>th</sup> Edition, Early Transcendentals*, by James Stewart, ISBN 978-1-305-27037-4

A reading of the textbook is required and necessary part for acquiring basic information and knowledge about the course subject. The reading will also provide you with another perspective on the studied material, different from the one presented in my lectures. Without reading the textbook, it is difficult to gain a full understanding, mastering, and appreciation of the course subject.

**Prerequisites:** Math 118 and Math 119, or equivalent

**Course Description:** Study the concept of limit, continuity, differentiability, and integrability, for functions of one variable, including exponential and logarithmic functions. The course also covers rules for computing limits, derivatives, indefinite and definite integrals; and in the area of applications related rates, sketching graphs, optimization, and areas. The main theorems included are the Chain Rule, Mean Value Theorem, Fundamental Theorem of Calculus, and Substitution Rule for both definite and indefinite integrals.

**Learning Outcomes:** Upon completion of the course you should be able to:

1. Compute limits of elementary functions at finite points and at infinity
2. Determine horizontal and vertical asymptotes of elementary functions
3. Determine the derivative of a function by using the definition
4. Compute the derivative of any function by using the basic rules
5. Determine the main geometric features, tangent lines, monotonicity intervals, relative extrema, inflection points, of elementary functions of one variable
6. Apply the derivative to solve problems about velocity, acceleration, related rates, and optimization
7. Determine antiderivatives and indefinite integrals
8. Compute Riemann sums
9. Compute Riemann integrals by using the Fundamental Theorem of Calculus and the Substitution Rule.
10. Apply the Riemann integral to compute areas and net changes.

**Textbook Contents:** Chapters 2 through 5.

**Sections to be Covered:**

- 2.2 The Limit of a Function
- 2.3 Calculating Limits Using the Limit Laws
- 2.4 The Precise Definition of a Limit (optional)
- 2.5 Continuity
- 2.6 Limits at Infinity; Horizontal Asymptotes
- 2.5 Evaluating Limits Algebraically
- 2.7 Derivative and Rates of Change
- 2.7 Limits at Infinity
- 2.9 The Derivative as a Function
  
- 3.1 Derivatives of Polynomials and Exponential Functions
- 3.2 The Product and Quotient Rules
- 3.3 Derivatives of Trigonometric Functions
- 3.4 The Chain Rule
- 3.5 Implicit Differentiation
- 3.6 Derivatives of Logarithmic Functions
- 3.7 Rates of Change in the Natural and Social Sciences
- 3.8 Exponential Growth and Decay
- 3.9 Related Rates
- 3.10 Linear Approximation
  
- 4.1 Maximum and Minimum Values
- 4.2 The Mean Value Theorem
- 4.3 How Derivatives Affect the Shape of a Graph
- 4.4 Indeterminate Forms and l'Hospital's Rule
- 4.4 Summary of Curve Sketching
- 4.6 Graphing with Calculus and Calculators
- 4.7 Optimization Problems
- 4.8 Newton's Method (optional)
- 4.9 Antiderivatives
  
- 5.1 Areas and Distances
- 5.2 The Definite Integral
- 5.3 The Fundamental Theorem of Calculus
- 5.4 Indefinite Integrals and the Net Change Theorem
- 5.6 The Substitution Rule

If the time permits, some additional sections may be added.

**Calculators, Computers, iPhones, Smartphones:** For most of the course, if not for the whole, you may not need any calculator or computer. For some computations, however, a calculator might be very helpful. It is solely up to you to decide whether or not to purchase one. In case you decide to buy a calculator, I would recommend TI 83, 84, 85, or 86. You are responsible by yourself for learning how to use your calculator. You may use any graphic calculator during the exams; **however, laptops, computers, iphones, smartphones, or any computing devices with wireless connection capability are not allowed during the tests.**

**Attendance:** You ought to attend every class. There is no makeup for missing classes or exams, except university's schedule conflicts, or extreme personal emergencies. You should get my approval beforehand in case you plan to miss a class or test, and it is your responsibility to make prompt arrangements with me for finding out what you have missed and for making up any assigned work. I will check attendance every class. For each missing class you will have deducted one percentage point, but not more than 5 per cent. In addition, you may miss two classes for personal emergencies without incurring any penalties. Regarding the university's attendance policy, you should check 2013-14 UWSP Catalog, page 25. In case of extreme personal emergencies, you should contact me immediately, and if possible, I will try to find a positive way to handle your absence. Examples of extreme emergencies: being sick or hospitalized, death in immediate family, court or military duties, etc.; some documentation will be required. Examples of not extreme emergencies: oversleeping, broken car, going on vacations, having scheduled a flight, etc.

### **Homework**

Every week there will be given a homework assignment online. Each such assignment, usually, will be posted on Monday and will be due the following Monday. The instructions how access the website pertaining to homework you can find in an access code packet, which you can pick up from Text Rentals.

### **Exams**

There will be four one- class-period chapter exams during the semester, during the class time. Each of these exams will be given right after a studied chapter is covered. The exact dates will be announced in class, at least one week prior to the exam.

- Midterm I, after Chapter 2
- Midterm II, after Chapter 3
- Midterm III, after Chapter 4
- Midterm IV, after Chapter 5

**The Final Exam** is on Friday, Dec. 16, 10:15 – 12:50, and it is comprehensive, with the main focus given to Chapter V.

### **Grading:**

A	93-100%	C	73-76%
A-	90-92%	C-	70-72%
B+	87-89%	D+	65-69%
B	83-86%	D	60-64%
B-	80-82%	F	< 60%
C+	77-79%		

Description	Points
4 Midterms	4 x 15% = 60% of final grade
Final Exam	20% of final grade
Online Homework	15%
Attendance	5% of final grade
Total	100%

### **An Example how your Final grade will be Determined**

Let's assume that your grades are as follows: the first midterm 80%, second 70%, third 85%, fourth 95, online homework 90%, the final exam 80%, and you missed 6 classes, which is 4 above the allowance, so your number of percentage points for the attendance is  $5 - 4 = 1$ .

Then, your final cumulative percentage will be computed as follows:  $80 \times 0.15 + 70 \times 0.15 + 85 \times 0.15 + 95 \times 0.15 + 90 \times 0.15 + 80 \times 0.20 + 1 = 80\%$ , and this corresponds to letter grade B-.

I also reserve the rights to exercise discretion in raising student's final grade in some special circumstances. Examples for raising the grade, student was very active during whole semester by asking and answering questions, got very high score on the final test, made some interesting discovery that pertained to the course, read mathematical books or articles, achieved the final score higher than most of the students, etc.

### **Attention**

If you need any help or experience any problems with regard to this course, please feel free to make an appointment to see me. You are always welcome to see me and talk to me.

### **Add/Drop**

The dates for add/drop deadlines can be found at <http://www.uwsp.edu/regrec/Pages/calendars.aspx>

**Rights and Responsibilities:** You should be fully aware of your rights and responsibilities as a UWSP student, and the pertaining information you can access at

<http://www.uwsp.edu/dos/Documents/CommunityRights.pdf>

**Disabilities:** Information regarding Section 504 of the Rehabilitation Act or the Americans with Disabilities Act can be found at the UWSP Disability and Assistive Technology Center site

<http://www4.uwsp.edu/special/disability/>

**HAVE A GREAT SEMESTER! AND ABOVE ALL  
ENJOY LEARNING THE NEW MATERIAL IN THIS  
COURSE!**

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100

