MATH 225 CALCULUS I SUMMER 2023

INSTRUCTOR: Dr. Kavita Bhatia

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OFFICE HOURS: by appointment. All office hours will be conducted via Zoom. Link for office hours is available on the Course Home page in Canvas.

COURSE STRUCTURE: This course will be delivered entirely online through the course management system Canvas. You will use your UWSP account to login to the course from the Canvas Login Page. If you have not activated your UWSP account, please visit the Manage Your Account page to do so. I will be communicating with you primarily through Announcements in Canvas and email. Please ensure that your notifications are turned on in Canvas.

COURSE TECHNOLOGY REQUIREMENTS
View this website to see minimum recommended computer and internet configurations for Canvas. You will also need access to the following tools to participate in this course: Webcam, Microphone, a stable internet connection (don't rely on cellular)

REQUIRED MATERIALS for the COURSE:

- **Textbook:** *Calculus, Early Transcendentals,* 8th Edition by Stewart. We will be covering chapters 2-6. You may purchase or rent a hard copy if you wish.

- A scientific or graphing calculator will be helpful for the course. However, cellphone **calculators will not be allowed on exams.** A scientific calculator will be provided for exams.

GOALS & OBJECTIVES: To obtain an understanding of the ideas underlying differential and integral calculus. Specifically, the goals are to
- understand the idea of limits
- compute limits algebraically, graphically and numerically
- understand the notion of continuity and how it relates to limits
- understand the notion of the derivative

- understand the relation between the derivative and the tangent line
- calculate derivatives by using formulas
- apply the knowledge of the derivative to real world problems
- understand what definite integrals are
- understand the relation between the derivative and the integral
- compute definite integrals graphically and algebraically
- solve applied problems using integration

GRADING POLICY: Your course grade will be computed as follows:

Quizzes	10%
Homework	15%
Discussions	12%
3 Exams (21% each)	63%
Total	100%

GRADING SCALE: Grades will be assigned according to the scale below:

93%--100%	A	77%--79%	C+
90%--92%	A-	73%--76%	C
87%--89%	B+	70%--72%	C-
83%--86%	B	67%--69%	D+
80%--82%	B-	60% -- 66%	D
		59% or less	F

TEXTBOOK READING ASSIGNMENTS
You are required to read a corresponding section of the textbook prior to starting with homework assignment for that section. It is important that you learn how to read a math book, how to work through worked examples, and how to complete exercises from the problem sets in the book independently. This requires discipline which is absolutely essential for your success in online courses.

VIDEOS and NOTES
For each section of the textbook, you can find videos on Canvas under the corresponding section title. The videos will be short and should help you do the homework. I will also post the PowerPoint from the video in the NOTES module.

HOMEWORK: You will be using the software MyOpenMath to do your homework. MyOpenMath is a free open source, online course management and assessment system for mathematics. There will be one homework assignment for each textbook section covered in the course. The homework assignments will be automatically graded and must be completed by the due date. You are responsible for submitting all work on time.

Calculus problems are expected to be challenging and build on previous knowledge and understanding. Consequently, **you should set aside at least 8-10 hours per week for study**. (*Note: The amount of time required for study will vary by individual.*) It would be to your advantage to work extra problems, in addition to the ones assigned in the homework and assignments. If at any time you feel that you are falling behind, you should contact the instructor immediately.

DISCUSSIONS: Discussions are intended to help you collaborate on your homework assignments with others from this class. There will be two discussions every week. Selected problems from the homework will be presented in the discussions. Look for the Discussion Guidelines on the Canvas page for more information.

QUIZZES: There will be a quiz at the end of chapters 2, 3, 4 and 5. Look at the Couse schedule for exact dates. The quizzes will be on MyOpenMath and you will have a fixed amount of time to complete them. There will be NO make-up on the quizzes.

EXAMS: There will be three exams during the semester. Each exam will have a written portion and an oral portion. The written portion will be on Canvas and proctored using **Honorlock**. For the oral portion you will have to make an appointment. Appointment slots will be made available closer to the exam date. The oral portion will take place via Zoom. where I will ask you to explain your work on randomly chosen problems from the exam. For each exam you are required to write down your work, scan it to a pdf-file and submit it to an appropriate folder located under Assignments tab on Canvas.

I will be using Honorlock to proctor your exams this semester. Honorlock is an online proctoring service that allows you to take your exam from the comfort of your home. You DO NOT need to create an account, download software or schedule an appointment in advance. Honorlock is available 24/7 and all that is needed is a computer, a working webcam, a functional microphone, a stable Internet connection, and the Chrome browser.

ACCOMMODATION OF RELIGIOUS BELIEFS: Any student who cannot be present for a scheduled exam due to a religious observance will be provided with an alternative way of fulfilling that course requirement, provided the student notifies me ahead of time.

ACADEMIC MISCONDUCT: Academic integrity and honesty are central to the mission of this institution. If you are flagged for cheating, you will be contacted directly by the instructor and subject to penalties as articulated in the School Conduct Policy. All cases of academic misconduct will be treated according to the procedures laid out in UWS 14. UWS 14 allows for disciplinary sanctions that range from an oral reprimand to suspension or expulsion from the University.

This is a challenging course and requires serious effort on your part. I am available to help you whenever you need any help. Please do not wait to get help if you are having trouble. The only way to learn mathematics is by doing it. **So work hard and do not fall behind.**

List of Topics

- [ ] **2.1: The Tangent and Velocity Problems**

- [ ] **2.2: The Limit of a Function**

- [ ] **2.3: Calculating Limits Using the Limit Laws**

- [ ] **2.5: Continuity**

- [ ] **2.6: Limits at Infinity; Horizontal Asymptotes**

- [ ] **2.7: Derivatives and Rates of Change**

- [ ] **2.8: 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**

- [ ] **3.9: Related Rates**

- [ ] **3.10: Linear Approximation and Differentials**

- ☐ **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**
- ☐ **4.7: Optimization Problems**
- ☐ **4.8: Newton's Method**
- ☐ **4.9: Antiderivatives**
- ☐ **5.2: The Definite Integral**
- ☐ **5.3: The Fundamental Theorem of Calculus**
- ☐ **5.4: Indefinite Integrals and the Net Change Theorem**
- ☐ **5.5: The Substitution Rule**
- ☐ **6.1: Areas between Curves**
- ☐ **6.2: Volumes**
- ☐ **6.3: Volumes by Cylindrical Shell**
- ☐ **6.4: Work**
- ☐ **6.5: Average Value of a Function**