Math 109—Mathematics for the Social & Management Sciences

The study systems of linear equations, matrices, linear programming, exponential growth and decay, mathematics of finance, and differential calculus with emphasis on applications. **4 credits**

Instructor: Gretchen Renfert	**Office Hours**	**Course Meeting Times**
Office: B248 Science Bldg	Tuesday **1 – 1:45 PM**	Sec Time Room
email: grenfert@uwsp.edu	Wednesday **9 – 9:45 AM**	2 **2 PM** MTWR **Zoom**
	or by appointment	

Text (rental): *Mathematical Applications for the Management, Life and Social Sciences,* 12th Ed., by Harshbarger & Reynolds (Published by Cengage) **ISBN**: 978-1-337-62534-0
Topics include most of those in Chapters 1–3, 5-6, and 9-11, but not in that order.

Calculators: You will need a scientific calculator during parts of the semester, preferably a model with at least a two-line display. (The TI-30XS and Casio Fx115 are two popular models)

***** A **graphing calculator** or **graphing app** will be necessary for the final unit. I will show you several apps that are either free or under $5 that you can use instead of a graphing calculator if you do not have access to one.

> Do not become too dependent on using calculators or technology--one of the goals of this course is for you to be able to predict how a change in variable, exponent, or coefficient effects the behavior of a function. Often the subtle changes are not visible in the graph displayed on a graphing calculator or graphing app unless you know where to look for the significant features of the graph.

Prerequisites: Math 107, Math 100, or a suitable placement test score.

Quantitative Literacy Learning Outcomes: Students will develop the following communication skills, and problem-solving approaches to applied problems in fields such as business, economics, life sciences and social sciences:

1) Select, analyze, and interpret appropriate numerical data used in everyday life in numerical and graphical format
2) Identify and apply appropriate strategies of quantitative problem solving in theoretical and practical applications.
3) Construct a conclusion using quantitative justification.

Evaluation: Final course grades will be determined by the following:

20 % for **Quizzes**	(see the last page for approximate Quiz dates)	
20 % for **Exam I**	**Thursday,**	**February 25**
20 % for **Exam II**	**Wednesday,**	**March 17**
20% for **Exam III**	**Thursday,**	**May 6**
20% for the **Comprehensive Final Exam** on	**Tuesday,**	**May 18, 12:30 – 2:30 PM**
100%		

Course Grades (%) at or above	93	90	87	83	80	77	73	70	67	60
will receive at least a grade of	A	A -	B +	B	B -	C +	C	C -	D +	D

* I reserve the right to exercise discretion in raising a student's grade if the final weighted average does not appear to reflect the quality of a student's work (for example, because of one low exam score early in the course). I will not use discretionary judgments to lower a student's final grade.

Homework: Almost every day a list of homework problems will be given in class. Each of these will be a *minimal* list of problems which you need to understand in order to do well in this course. Doing the homework is extremely important, so make sure you stay on top of it and ask questions on whatever you don't understand. The homework will not be graded, but it is highly recommended that you practice doing problems on your own. ** I post my worked-out solutions to the homework to help if you get stuck.**

* **Attendance** I expect you to make every attempt to keep up with what is being taught by checking CANVAS **DAILY**, following in your book and making every attempt to do the homework. You choose whether to attend the live Zoom class each day, or pull up the recorded video of that class later. You also will have access to the marked- up slides from the live class -- I post these 3 things in CANVAS daily.

*** Quizzes** and **Exams** may **NOT** be made up if missed, unless arrangements are made with me ahead of time, OR if a dire emergency occurs. If you miss an exam or a quiz, you must contact **ME** (email or text is fine) as soon as possible to see if an alternate quiz or exam will be allowed. All graded papers will be withheld from the rest of the class until it is determined if any make-ups will be allowed. There are **NO RETAKES**.

Incompletes: A grade of incomplete may be given if circumstances arise which are beyond the student's control and the student is unable to complete the course ***IF*** the student was passing when the circumstances arose. A written agreement between the instructor and the student must be completed and filed with the Dean's Office detailing the amount of work that must be completed and the agreed upon deadlines.

Disability Accommodations: Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodations needed for the course. For information on accommodations available to students with disabilities, call 715-346-3365, visit the Disability and Assistive Technology Center (DATC) in room 609 of the Learning Resources Center, or visit their website: http://www.uwsp.edu/disability/Pages/default.aspx .

CANVAS Our course management system at UWSP

To access CANVAS, use your regular campus logon ID and password, and then click on our course:
MATH 109 (Mathematics for the Social & Management Sciences)

Homework solutions, videos posted after live classes, occasional handouts, grade information, and other class announcements can be found on the web through CANVAS.

All students are expected to know the UWSP Community **Rights & Responsibilities** and the **Student Academic Standards and Disciplinary Procedures** found on the Dean of Students webpage at http://www.uwsp.edu/dos/Documents/CommunityRights.pdf.

For Academic Support:

1) Attend LIVE classes (if you are able) and ask questions as they arise.

2) Visit me during my office hours, arrange to see me at another time, or email me your questions.

3) Tutoring services are available for this course—see next page.

Tutoring

The Tutoring-Learning Center (TLC) offers **FREE** virtual tutoring to support you in your math classes. The tutors are UWSP students who have done well in their classes and who are here to share their successful study habits and math content knowledge to help others succeed. Discussing mathematical concepts and practicing problems together clarifies and solidifies knowledge, and the tutors are eager to study with you. The TLC will offer two main forms of math tutoring during Spring 2021:

- **Drop-In Tutoring**. Tutors are waiting in a Zoom room where students can "drop-in" for assistance. No appointment or registration is required and attendance is flexible. The schedule and Zoom links can be found here: http://www.uwsp.edu/tlc/Pages/dropInTutoring.aspx.

- **One-on-One Tutoring**. Tutors are available for weekly, recurring appointments. Weekly attendance is required, as this service is designed for long-term assistance. To sign up, students can submit a request form through the TLC webpage: https://www.uwsp.edu/tlc/Pages/Mathandscischedules.aspx. Appointments are made based upon tutor availability – we cannot guarantee that every student will be matched with a tutor. One-on-One Tutoring is **FREE** for all UWSP students during Spring 2021!

Math and Science Tutoring – Spring 2021

What	Details	Schedule	Cost
Drop-In Tutoring	Flexible attendance	https://www.uwsp.edu/tlc/Pages/dropInTutoring.aspx	**FREE**
One-on-One Tutoring	Weekly attendance required	Complete online request form here: https://www.uwsp.edu/tlc/Pages/request-math-science-tutoring.aspx	**FREE**

Gretchen Renfert's Schedule: Spring 2021

	Monday	Tuesday	Wednesday	Thursday	* Friday
8:00 - 8:50					*Other times by appointment*
9:00 - 9:50			**Office Hour** By **ZOOM**		
10:00 - 10:50	**Math 95.2** Virtual	**Math 95.2** Virtual	**Math 95.2** Virtual	**Math 95.2** Virtual	<== Only from **Jan 25 – Mar 18**
11:00 - 11:50					
12:00 - 12:50					*Evening, weekend or other times by appointment*
1:00 - 1:50		**Office Hour** By **ZOOM**			
2:00 - 2:50	**Math 109.2** Virtual	**Math 109.2** Virtual	**Math 109.2** Virtual	**Math 109.2** Virtual	
3:00 - 3:50					
4:00 - 4:50					

**** Tentative Math 109 Schedule*** **Spring 2021**

Week	Dates	Sections	Topic
1	January 25 - 28	Intro & 0.3 0.4 1.2 1.3	Course Intro & Integral Exponents Radicals and Rational Exponents Functions Linear Functions
2	February 1- 4	1.6 2.1 2.2 2.3 & **Quiz 1**	Apps of Functions in Business & Economics Quadratic Equations Quadratic Functions Business Applications and **Quiz 1**
3	February 8 - 11	2.4 Appendix A 9.1 9.1 (and 0.6)	The Special Functions Using a Graphing Calculator or Graphing App Limits: Graphically Limits: Algebraically (and Factoring Review)
4	February 15 - 18	9.3 9.3 9.4 9.8 & **Quiz 2**	Average Rate of Change Instantaneous Rate of Change: The Derivative Derivative Formulas (shortcuts) Higher Order Derivatives and **Quiz 2**
5	February 22 – 25	9.5 9.5 9.6 **Exam I**	The Product Rule The Quotient Rule The Chain Rule **Thursday, February 25**
6	March 1 - 4	9.6 5.1 & 11.2 5.2 & 11.1	The Chain Rule (continued) Derivative of Exponential Functions Derivative of Logarithmic Functions
7	March 8 - 11	10.1 10.2 **Quiz 3**	1st Derivative and Graphs 2nd Derivative and Graphs **Quiz 3**
8	March 15 - 18	10.3 Review **Exam II**	Absolute Extrema Review for Exam II **Wednesday, March 17**
9	March 29 – April 1	10.3 10.4 10.4 and **Quiz 4**	Optimization: Business & Economics Applications of Max and Mins More Applications of Max & Min and **Quiz 4**
10	April 5 - 8	6.1 6.2 6.3 6.4	Simple Interest Compound Interest Future Value Present Value
11	April 12 - 15	6.5 11.1 & 11.2 **Quiz 5**	Loans and Amortization Rate of Return Applications: Exponential & Log Derivatives **Quiz 5**
12	April 19 - 22	3.1 & 3.2 3.3 3.3 3.4	Introduction to Matrices Gauss-Jordan Elimination Matrix Application Problems (multiple solutions) Inverse of a Square Matrix
13	April 26 - 29	4.1 4.2 and **Quiz 6**	Linear Inequalities in Two Variables Linear Programming: Graphical Models & **Quiz 6**
14	May 3 - 6	 **Exam III**	More Linear Programming Applications **Thursday, May 6**
15	May 10 - 13	Review Ch 3-6	In-class review for Final Exam
	Tuesday, May 18	**12:30 - 2:30 PM**	**Final Exam**