MATH 118 **Pre-Calculus Algebra** **SPRING 2022**
M,T,W,Th 2 – 2:50 pm

INSTRUCTOR: Dr. Kavita Bhatia **OFFICE:** Room 207B, Leopold Building

PHONE: 715-389-6548 **E-mail address:** kbhatia@uwsp.edu

OFFICE HOURS: M, T, Th 10 am – 11 am by appointment. You may connect with me during office hours by Zoom. The link is available on the course Canvas page.

COURSE DESCRIPTION: 4 cr. Topics include concepts, graphs, and properties of functions, inverse and algebraic functions, techniques of graphing, conic sections, linear and nonlinear systems, arithmetic and geometric series, mathematical induction and the binomial theorem. Preparation for 225 if you did not place into 225. Prereq: 107 or suitable placement test score. GDR: MATH BS BM/BFA. GEP: QL.

Face Coverings: At all UW-Stevens Point campus locations, the wearing of face coverings is mandatory in all buildings, including classrooms, laboratories, studios, and other instructional spaces. Any student with a condition that impacts their use of a face covering should contact the Disability and Assistive Technology Center to discuss accommodations in classes. Please note that unless everyone is wearing a face covering, in-person classes cannot take place. This is university policy and not up to the discretion of individual instructors. Failure to adhere to this requirement could result in formal withdrawal from the course.

Other Guidance:

- Please monitor your own health each day using this screening tool. If you are not feeling well or believe you have been exposed to COVID-19, do not come to class; email your instructor and contact Student Health Service (715-346-4646).
    - As with any type of absence, students are expected to communicate their need to be absent and complete the course requirements as outlined in the syllabus.
- Maintain a minimum of 6 feet of physical distance from others whenever possible.
- Do not congregate in groups before or after class; stagger your arrival and departure from the classroom, lab, or meeting room.
- Wash your hands or use appropriate hand sanitizer regularly and avoid touching your face.

Please maintain these same healthy practices outside the classroom

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REQUIRED MATERIALS for the COURSE:

- TEXT: Precalculus: Mathematics for Calculus, 7th Edition by Stewart, Redlin & Watson (Cengage)
- A graphing calculator. Preferred calculator is the TI-83 or TI-84. Calculators like the TI-89 that have a built in CAS will not be allowed. Cell phone calculators **will not be allowed** on exams and quizzes.

COURSE OBJECTIVES:

- Solving Equations Algebraically and Graphically
- Solving Rational-Function Inequalities via Sign Charts
- Functions
    - Definition and Properties (sums, differences, products, quotients, roots, compositions, inverses, average rate of change and difference quotients)

    - Polynomial and Rational Functions (Factor Theorem, Rational Zeros Theorem, long and synthetic division)
    - Graphs of functions (intercepts and zeros, asymptotes, symmetry, transformations)
    - Exponential and Logarithmic Functions
- Conic Sections (parabolas, ellipses, hyperbolas)
- Solving Systems of Linear Equations (substitution and elimination by hand; rref)
- Partial Fraction Decompositions
- Sequences (e.g., arithmetic, geometric)
- Sigma Notation and Geometric Series

Attendance and Participation: You are expected to attend all classes and participate in class discussions.

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

Quizzes	16%
Attendance and Participation	4%
Exams (3 x 20%)	60%
Final Exam	20%
Total	**100%**

The above distribution may change at the discretion of the instructor.

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

HOMEWORK : Homework will be assigned at the end of every class period. You are expected to work on the assigned problems. Homework will be spot checked periodically.

QUIZZES: There will be a quiz most Thursday's. There will be NO make-up on the quizzes. The quiz with the lowest score will be dropped.

EXAMS: There will be three in class exams and a two-hour final. All exams will be proctored. *Students that are taking the class remotely will have to be at a campus location for exams. Please contact me ASAP if you have any issues with this policy.* Tentative exam dates are listed in the calendar at the end of the syllabus. The final exam will be comprehensive. **It is scheduled for 5/19/2022, Thursday, 8 -10 am.**

TUTORING-LEARNING CENTER (TLC): The Tutoring-Learning Center promotes and supports the academic environment by providing free, confidential, student-centered academic support. The TLC offers one-on-one tutoring services via Zoom, and one-on-one academic coaching appointments. **The DUO Center** in Room 107 will offer tutoring for qualifying students, with professional tutors in Writing and Math.

Academic Coaching is available through the TLC. The Academic Coach partners with students to evaluate strengths and weaknesses, identify organizational skills and together work to develop tools to help

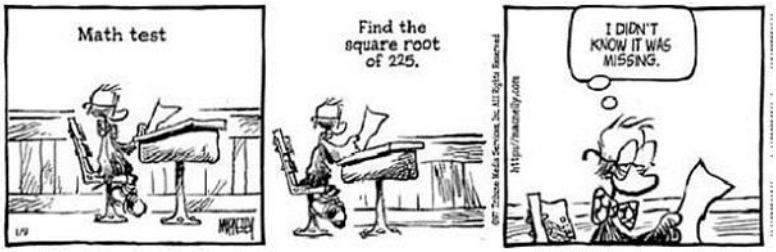
students achieve academic success. Faculty can refer students, or students can seek help on their own.

For additional information please visit the website or contact Marie Janz, Academic Success Associate, Room 404, email mjanz@uwsp.edu or phone 715-898-6036.

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. 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.

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.



Tentative Weekly Schedule – SPRING 2022

Week	**Approximate text sections to discuss this week**	**Events this week**
1. Jan. 24 – 27	**Review,** 1.9, 1.10	
2. Jan. 31 - Feb.3	1.8, 1.11, 2.1	Quiz 1
3. Feb. 7– 10	2.2 – 2.4	Quiz 2
4. Feb. 14 – 18	2.5– 2.8	Quiz 3
5. Feb. 21 – 24	Review, 3.1	Exam 1 Thursday Feb 24
6. Feb. 28 - March 3	3.2-3.4	Quiz 4
7. March 7 – 10	3.6, 3.7, Exponents Review	Quiz 5
8. March 14 – 17	4.1, 4.2	Quiz 6
March 21 – 25	**SPRING BREAK**	**No Class**
9. March 28 – 31	4.3, 4.4	Quiz 7
10. April 4 – 7	4.6, Review	Exam 2 Thursday
11. April 11 – 14	10.1 -10.3, 10.7	Quiz 8
12. April 18 – 21	11.1 - 11.4	Quiz 9
13. April 25 – 28	12.1-12.2	Quiz 10
14. May 2 – 5	12.2-12.3, Review	Exam 3 on Thursday
15. May 9 – 12	Review	
16. May 16 - 20	**FINALS week**	**Final Exam**

Final Exam is scheduled for 5/19/2022, Thursday, 8 -10 am.

1. Graphs

1.1 Real Numbers (Review)
1.2 Exponents and Radicals (Review)
1.3 Algebraic Expressions (Review)
1.4 Rational Expressions (Review)
1.5 Equations (Review)
1.6 Complex Numbers (Optional)
1.7 Modeling with Equations (Optional)
1.8 Inequalities
1.9 The Coordinate Plane; Graphs of Equations; Circles
1.10 Lines
1.11 Solving Equations and Inequalities Graphically
1.12 Modeling Variation (Optional)

2. Functions

2.1 Functions
2.2 Graphs of Functions
2.3 Getting Information from the Graph of a Function
2.4 Average Rate of Change of a Function
2.5 Linear Functions and Models
2.6 Transformations of Functions
2.7 Combining Functions
2.8 One-to-One Functions and Their Inverses

3. Polynomial and Rational Functions

3.1 Quadratic Functions and Models
3.2 Polynomial Functions and Their Graphs
3.3 Dividing Polynomials
3.4 Real Zeros of Polynomials
3.5 Complex Zeros and the Fundamental Theorem of Algebra (Optional)
3.6 Rational Functions
3.7 Polynomial and Rational Inequalities

4. Exponential and Logarithmic Functions

4.1 Exponential Functions
4.2 The Natural Exponential Function
4.3 Logarithmic Functions
4.4 Laws of Logarithms
4.5 Exponential and Logarithmic Equations
4.6 Modeling with Exponential Functions (Optional)
4.7 Logarithmic Scales (Optional)

Page Break

10. Systems of Equations and Inequalities

10.1 Systems of Linear Equations in Two Variables
10.2 Systems of Linear Equations in Several Variables
10.3 Matrices and Systems of Linear Equations
Remark: Only cover the use of **rref (r**educed **r**ow **e**chelon **f**orm**)** to solve linear systems.

10.4 The Algebra of Matrices (Omit)
10.5 Inverses of Matrices and Matrix Equations (Omit)
10.6 Determinants and Cramer's Rule (Omit)
10.7 Partial Fractions
10.8 Systems of Nonlinear Equations (Optional)
10.9 Systems of Inequalities (Optional)

11. Conic Sections
11.1 Parabolas
11.2 Ellipses
11.3 Hyperbolas
11.4 Shifted Conics
11.5 Rotation of Axes (Optional)
11.6 Polar Equations of Conics (Optional)

12. Sequences and Series
12.1 Sequences and Summation Notation
12.2 Arithmetic Sequences
12.3 Geometric Sequences
12.4 Mathematics of Finance (Optional)
12.5 Mathematical Induction (Optional)
12.6 Binomial Theorem (Optional)