

**Instructor** Hurlee Gonchigdanzan*Office:* B246 Sci*Phone:* (715) 346-4114*Email:* [hurlee@uwsp.edu](mailto:hurlee@uwsp.edu)**Office Hours**

9:00 – 11:00 Mon, Tue, Thu

1:00 – 1:50 Mon, Tue, Wed, Thu

or by appointment

**Room** 2:00pm-2:50pm, Mon, Tue, Wed, Thu – A207 Sci**Text** *Precalculus: Mathematics for Calculus*, 7th Edition  
James Stewart, Lothar Redlin, Saleem Watson**Course Goal** Preparation for MATH 120 (calculus I). Topics include concepts, graphs, and properties of functions, inverse and algebraic functions, techniques of graphing, conic sections, linear systems, arithmetic and geometric series. See the *Course Outline* for more details. Visit the class webpage in CANVAS <http://canvas.uwsp.edu>**Prerequisites** Math.107 or a suitable placement test. Fundamentals can be found in Chapter 1 of the Textbook. It is highly recommended that you read prerequisite materials available in Chapter 1.**Calculator** A 'scientific' calculator will be necessary in this course, but a graphing calculator is recommended. However, any type of computers, phones, and calculators with "QERTY" keyboard such as TI-89, TI-92, and TI-Nspire CAS are NOT allowed during the test and exam. TI-83 or 84 is ok.

Cell phones and other electronic devices except for dedicated calculators must be turned off and put away during the test and exam.

**Attendance** Attendance is required and will be taken. Students are expected to attend every single class and read the textbook and come to class prepared. In case of absence, it is your responsibility to catch up the missed class.**Homework** Homework will be assigned on regular basis and will be graded. It will be posted in the class webpage in CANVAS <http://canvas.uwsp.edu>.

Late homework will NOT be collected or graded regardless of the reason. Three (3) assignments with the lowest percent will be dropped.

Separate sheets must be stapled together when you turn it in.

Besides assigned homework it is highly recommended to read the example in the textbook.



- Test We will have three (3) in-class tests. MAKE-UP test will NOT be given unless it is noticed in advance. If there is an unavoidable reason to miss it, you MUST document your absence.
- Final Exam 10:15am - 12:15pm in A207 SCI Monday, December 17. The final exam will be comprehensive.
- Grading Tests and Final exam are weighed as follows:  
 \*\*\* 3 Tests ~ 60% (each test 20%) \*\*\* HW ~ 15% \*\*\* Final exam 25%

Course letter grades will be assigned based upon the following table:

|                            |                         |                         |                         |
|----------------------------|-------------------------|-------------------------|-------------------------|
| $93\% \leq "A" \leq 100\%$ | $87\% \leq "B+" < 90\%$ | $77\% \leq "C+" < 80\%$ | $65\% \leq "D+" < 70\%$ |
| $90\% \leq "A-" < 93\%$    | $83\% \leq "B" < 87\%$  | $73\% \leq "C" < 77\%$  | $60\% \leq "D" < 65\%$  |
|                            | $80\% \leq "B-" < 83\%$ | $70\% \leq "C-" < 73\%$ | $0\% \leq "F" < 60\%$   |

- FOR HELP - Ask questions at any time as they arise.  
 - See me before or after class  
 - Come to see me during the office hours  
 - Schedule an appointment for another time.

TUTORING SERVICES

- The *Tutoring and Learning Center (TLC)*: <http://www.uwsp.edu/tlc/>
- The *MathRoom* (Sci. Bldg A113A)

DISABILITIES

If special accommodations are required for exams, you need to contact the Disability & Assistive Technology Center (DATC) [datctr@uwsp.edu](mailto:datctr@uwsp.edu)  
 DATC website: <https://www.uwsp.edu/datc/Pages/default.aspx>

RIGHTS AND RESPONSIBILITIES

- Student Academic Standards and Disciplinary Procedures, UWS/UWSP Chapter 14: <https://www.uwsp.edu/dos/Documents/UWS%2014-1.pdf>
- The general Rights and Responsibilities: <https://www.uwsp.edu/stuhealth/Pages/Patient%20Information/Rights-Responsibilities.aspx>



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## Chapter 2 Functions

### 2.1 Functions 148

- What is function?
- Piecewise defined function
- Evaluating a function
- Difference quotient
- Domain and Range of a function

### 2.2 Graphs of Functions 159

- The graph of a function
  - ✓ Piecewise defined function
  - ✓ Absolute value
- Vertical line test

### 2.3 Getting Information from the Graph of a Function 170

- Domain and Range
- Increasing and decreasing function
- Local and Absolute maxima and minima
- Concavity

### 2.4 Average Rate of Change of a Function 183

- Average rate of change
- Average speed

### 2.5 Linear Functions and Models 190

- Slope and Rate of change

### 2.6 Transformations of Functions 198

- Vertical shifting
- Horizontal shifting
- Reflection
- Vertical stretching and shrinking
- Horizontal stretching and shrinking
- Even and odd functions

### 2.7 Combining Functions 210

- Sum, difference, product, and quotient
- Composition of functions

### 2.8 One-to-One Functions and Their Inverses 219

- Definition
- Horizontal line test
- Inverse function

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Test #1

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## Chapter 4 Exponential and Logarithmic Functions

- 4.1 Exponential Functions 330
- Definition
  - The graph of an exponential function
  - Transformation
  - Compound interest
- 4.2 The Natural Exponential Function 338
- Definition
  - The graph of a natural exponential function
  - Transformation
  - Continuous compound
  - Hyperbolic cosin (cosh) and sin (sinh) functions
- 4.3 Logarithmic Functions 344
- Definition
  - Logarithmic and exponential forms
  - Evaluating logarithms
  - Properties of logarithms
  - Graph
  - Common and natural logarithms
- 4.4 Laws of Logarithms 354
- Expanding and combining logarithms
  - Change of base formula and use of calculator
- 4.5 Exponential and Logarithmic Equations 360
- Exponential and logarithmic equations

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Test #2

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## Chapter 3 Polynomial and Rational Functions

- 3.1 Quadratic Functions and Models 246
  - Polynomial function and Quadratic function
  - Standard form of a quadratic function
  - Maximum and minimum values
- 3.1.1 Polynomial Functions and Their Graphs 254
  - Basic polynomial functions
  - Graph of polynomial functions
  - End behaviors of a polynomial functions
  - Real zero
  - Using real zero to sketch the graphs
  - Local maxima and minima
- 3.1.2 Dividing Polynomials 269
  - Long division
    - ✓ Dividend
    - ✓ Divisor
    - ✓ Quotient
    - ✓ Remainder
  - Remainder Theorem
  - Factor Theorem
  - Finding a polynomial with given real zeros
- 3.4 Real Zeros of Polynomials 275
  - Rational Zeros Theorem
  - Finding rational zeros
- 3.6 Rational Functions 295
  - Definition
  - Finding asymptotes
  - Graphing rational functions
  - Case with Common factor
  - Slant asymptotes
- 3.7 Polynomial and Rational Inequalities 311
  - Polynomial inequalities
  - Rational inequalities

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## Chapter 10      Systems of Equations and Inequalities

- 10.1    Systems of Linear Equations in Two Variables 680
  - Solving analytically
  - Solving Graphically
- 10.2    Systems of Linear Equations in Three Variables 690
- 10.3    Matrices and Systems of Linear Equations 699
  - Matrix
  - The Augmented Matrix of a Linear System
  - Elementary row operations
  - Linear System in Row-Echelon Form
  - Linear System in reduced Row-Echelon Form
- 10.7    Partial Fractions 745
  - Distinct Linear Factors
  - Repeated Linear Factors
  - Irreducible Quadratic Factors

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Test #3

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## Chapter 11      Conic Sections

- 11.1    Parabolas 782
- 11.2    Ellipses 790
- 11.3    Hyperbolas 799
  - Conic sections
  - Geometric Definitions
    - ✓ **Parabola:** Axis, Vertex, Focus, Directrix, Equation, Graph, Focal diameter
    - ✓ **Ellipse:** Major and Minor axis, Vertices, Foci, Equation, Graph, Eccentricity
    - ✓ **Hyperbola:** Asymptotes, Vertices, Foci, Transverse axis
- 11.4    Shifted Conics 807

## Chapter 12      Sequences and Series

- 12.1    Sequences and Summation Notation 842
- 12.2    Arithmetic Sequences 853
- 12.3    Geometric Sequences 858