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 topics 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	Two assignments per week 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. Besides assigned homework it is highly recommended to read the examples 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	12:30pm -2:30pm in the classroom Tuesday, May 16. 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/

DISABILITIES

If special accommodations are required for exams, you need to contact the Disability & Assistive Technology Center (DATC) 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

MATH 118 **COURSE OUTLINE**

Precalculus: Mathematics for Calculus, 7th Edition James Stewart, Lothar Redlin, Saleem Watson

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 and Floor function
- Vertical line test: Graphs that represent functions
- Equations that represent functions

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 and 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

Test #1

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

Test #2

Chapter 3 Polynomial and Rational Functions

3.1 Quadratic Functions and Models 246

- Polynomial function and Quadratic function
- Standard from of a quadratic function
- Maximum and minimum values

3.2 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

3.3 Dividing Polynomials 269

- Long division
  - ✓ Dividend
  - ✓ Divisor
  - ✓ Quotient
  - ✓ Remainder
- Remainder Theorem
- Factor Theorem
- Finding a polynomial with giving 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

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

Test #3

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