



**UNIVERSITY OF  
NORTHWESTERN**  
ST. PAUL

OFFICE OF DUAL ENROLLMENT

# **MAT1126 Precalculus**

**FALL 2022**

**SYLLABUS**

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# MAT1126 Precalculus

University of Northwestern – St. Paul

## COURSE DESCRIPTION

A preparatory course intended for students who will take MAT2121 Calculus I. Topics include limits, functions (exponential, logarithmic, trigonometric), conic sections, polar coordinates and other topics in analytical geometry. Only offered in Dual Enrollment.

**Credits:** 4

**Prerequisites:** two years of high school algebra or ACT Math score of 24–27 [SAT Math score of 580–630]

## INSTRUCTOR INFORMATION

Please see “Contacting the Instructor” on the course site.

## COURSE OUTCOMES

At the end of this course, a successful student will be able to

- CO-1. Identify properties of algebraic functions, trigonometric functions and analytic Geometry.
- CO-2. Manipulate various expressions and functions.
- CO-3. Graph various expressions and equations.
- CO-4. Solve algebraic and trigonometric equations.
- CO-5. Model situations and data of various functions.
- CO-6. Analyze algebraic and graphical representations of algebraic functions, trigonometric functions, and analytic geometry.
- CO-7. Explain mathematical concepts in historical context.

## MATERIALS

### Required Textbooks and Materials

This course uses the following open textbook at no cost to students. A link to a digital copy of the open textbook is provided on the course site.

OpenStax, Precalculus. OpenStax CNX.

### Provided by Student

For this course, students will need access to Microsoft Office (available at no cost to students through the University of Northwestern-St. Paul), a PDF reader, and a standard internet browser. Please refer to the Tech Requirements found in the Technology Help section at the top of the course site for the full requirements.

In addition, a TI-83 or TI-84 calculator is recommended as well as miscellaneous materials such as lined notebook paper, graph paper, ruler, pencils, and erasers.

## GRADING POLICIES AND PROCEDURES

### Course Grade Explanation

Assignments	Grade Weight
Practice Problems (13)	10
Homework (13)	10
Discussion Forums and Projects (13)	10
Quizzes (8)	20
Exams (2)	50
<b>Total</b>	<b>100</b>

### Grading Scale Percentages

A	≥ 93	B	≥ 83	C	≥ 73	D	≥ 63
A-	≥ 90	B-	≥ 80	C-	≥ 70	D-	≥ 60
B+	≥ 87	C+	≥ 77	D+	≥ 67	F	< 60

### Late Work

All assignments are due as described in the course syllabus and the course site. Students are responsible for meeting assignment deadlines. Late assignments will be automatically deducted one letter grade. The assignments will drop an additional grade per day it is late, up to a 50% deduction in grade; late assignments will not be accepted for a grade beyond one week past the original deadline. Forum discussion activities must be completed on time to earn points. Late forum posts will earn zero points. Students should contact the instructor via e-mail if an extenuating circumstance exists.

### Feedback Expectations

Students should expect feedback for their submitted assignments within 5 days of the assignment due date or the time of their submission, whichever is later.

## INSTITUTIONAL POLICIES AND SERVICES

### Guidelines and Information

Students are responsible for all content of the DE Student Handbook. The most recent version of the DE Student Handbook is located on [confluence.unwsp.edu](http://confluence.unwsp.edu) and includes the following policies and procedures:

- Deadlines for Dropping or Withdrawing
- Student/instructor Communication
- Appeals, Exceptions, Disciplinary Process, & Grievances
- Assignments (late work and plagiarism)
- Examinations
- Grading System

Instructors may have course-related expectations that further detail the policies and procedures outlined in the DE Student Handbook. Any such expectations must be provided to students in writing (e.g., handout, course site posting) prior to or at the beginning of the class.

Traditional undergraduate students enrolled in DE courses are subject to the traditional undergraduate student handbook for all non-course-specific policies and procedures.

## **Academic Integrity**

Plagiarism is theft—steal of someone else’s words or ideas. It is claiming another’s work as one’s own. This would also include the following:

- Using the words or work of a former or current student in this class
- Recycling previously submitted assignments from a previous course attempt
- Using outside literature support sites such as, but not limited to, SparkNotes, Enotes or Schmoop that provide literary analysis of the texts we read throughout the semester

Students found plagiarizing are subject to discipline. The standard response ranges from loss of credit for the plagiarized assignment to earning an immediate “F” for the course to being placed on disciplinary probation. We should be committed to conducting ourselves with integrity in all things. Please refer to the DE Student Handbook for more detailed information about UNW’s honesty and integrity policies.

In every course, students are required to view the Understanding Plagiarism video and complete the Understanding Plagiarism Quiz prior to completing any of the course content. These items are part of the course orientation.

## **Academic Achievement**

UNW students requesting academic accommodations in association with the Americans with Disabilities Act (ADA) are directed to notify [Disability Services](#) to begin the application process. Academic Achievement also provides the following: [Writing Tutoring](#), [Subject Tutoring](#), advocating, transitional skill building, [Academic Coaching](#) (organization, time management, test taking, etc.).

Contact Academic Achievement for more information: [AcademicAchievement@unwsp.edu](mailto:AcademicAchievement@unwsp.edu) | 651-628-3316 | N4012 (Revised 07/21).

## **Support Services**

Links to support services are available found in the Student Services section at the top of the course site.

## **COURSE POLICIES AND INFORMATION**

### **Email and Announcements**

Students are responsible to regularly check their Northwestern student email and the announcements in the course site in order to receive updates and information.

### **Attendance**

Students are expected to participate in all course activities. Students must contact the faculty member in advance or as soon as possible if unable to participate in all or part of the course activities for a given week because of a medical (which includes having to quarantine or isolate due to COVID-19 exposure or confirmed illness), family, or work-related emergency. Students should refer to their course syllabus and/or faculty member for specific requirements. Students who do not participate in course activities and fail to withdraw from the course will receive a failing “F” grade.

## Submission Standards

All written assignments should adhere to the following DE guidelines. Documents should be in the following format **unless directed differently by the syllabus or course instructor**:

- Submitted on the course site in Microsoft Word document format (.doc or .docx)
- Set in a traditional typeface 12-point font
- Double-spaced (unless the syllabus instructs otherwise)
- Set with one-inch margins
- Formatted in APA style for in-text citations and reference page (LIT1100 may ask for MLA documentation style)
- Labeled and submitted with the following information (APA papers require this information on a cover sheet, as detailed in A Pocket Style Manual): Student Name, Course Code and Title, Instructor Name, and Date.

## Critical Response to Alternate Viewpoints

When students are reading or viewing course materials, they may encounter viewpoints, words, or images that their instructors would not use or endorse. Students should know that materials are chosen for their value in learning to read, write, and view critically, not because the materials are necessarily Christian.

## ASSIGNMENTS

See the course site for complete details on the assignments.

## Required Reading

The textbook is the primary source for your learning in this course. The link to the textbook is on the course site, and you have the option of viewing it in an online format or pdf format. There are several examples in the text to help you better understand the material. The types of examples include *How To* (provides a list of steps necessary to solve a problem) and *Try It* (a sample problem that provides an answer).

In the course site, there is a video playlist available each week that corresponds to the assigned reading from the textbook. While students are not required to watch every single video in the playlist, students may view them as needed while reading the textbook and working on assignments in order to better understand the concepts and worked examples presented in the textbook.

## Practice Problems

It is critical to practice the skills you learn each week in order to develop a deeper understanding of the concepts. After reading the assigned sections in the textbook, complete the set of practice Problems provided by a resource called *MyOpenMath*. Problems are set up so you can try each problem twice, and then the answer will show. You receive 100% credit for a correct first attempt and 50% credit for any attempt after the first. However, to improve your score, you can “Try a similar problem,” which will give you a new question of the same type. You can keep on working on versions of a question until you get a perfect score on the practice problems. If you need help, most problems offer a “Get help: Video” for you to watch.

## Homework

Exercise problems are located at the end of each section in each chapter in the textbook. To access the Homework, you will need to download the text as a pdf, as the online text does not have the problems numbered. Each week you will be assigned a set of five problems to complete and upload to the course site. These problems will help prepare you for the exams. It is important that you not only state the final answer for every problem, but that you clearly communicate how you arrive at the solution. The following criteria will be used to grade each homework problem.

<b>10 points:</b>	Correct solution and work is complete; complete work is well organized and includes all necessary steps to obtain the final solution
<b>7-9 points:</b>	Correct solution, but work is incomplete; Incorrect solution due to arithmetic errors and work is complete
<b>4-6 points:</b>	Incorrect solution due to conceptual errors and work is complete
<b>1- 3 points:</b>	Incorrect solution due to conceptual errors and work is incomplete; Correct solution, but no work is shown
<b>0 points:</b>	No attempt made

## Discussion Forums

Discussion forums provide a means to interact with your classmates and explore real world applications of the concepts studied in this course. For the weeks when discussion forums are assigned, initial posts are due by 11:55pm on Wednesday and responses to at least two classmates' posts are due by 11:55pm on Friday. The following criteria will be used to grade discussion forums.

You can earn a maximum of 5 points for each forum based on the following:

**2 points for Evidence of Study**—Demonstrates an understanding of how the relevant mathematical concepts are applied to the discussion topic

**2 points for Contribution**—Leads conversation in original post and/or replies by contributing relevant value beyond existing course resources such as new examples, illustrations, critical thinking questions, cited references, links, or related current events

**1 points for Professional Style**—Correct grammar, clarity, organization, respectfulness, openness to healthy debate

## Quizzes

At the end of each chapter, you will complete a Quiz provided by a resource called *MyOpenMath*. Each quiz consists of 10 problems, and you have one attempt on each quiz.

## Exams

There are two exams throughout this course, each covering specific chapters listed below. The exams are open-book, and there is no time limit. You may use notes, the course textbook, videos, or any other course materials while completing the exams. However, assistance by another person to complete the exams is not permitted and is subject to disciplinary action.

- The Midterm covers sections 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 9.1, 4.1, 4.2, 4.3,

4.4, 4.5, 4.6, 4.7, 4.8, 10.1, 10.2, 10.3, and 10.4.

The Final covers sections 5.1, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.9, 10.3, 12.1, 12.2, 12.3, and 12.4.

## **COURSE SCHEDULE**

### **Format**

Everything needed to successfully complete this course in fifteen weeks is explained on the course site. Each assignment has been designed to work together during each week. When studying, be sure to follow the suggested format explained for each lesson.

For this course, students will receive access to each week's work as the semester progresses. There will be due dates during the week, but most weekly assignments will be due by 11:55 p.m. on Friday. Please refer to the schedule for the due dates of assignments.

Generally, for college-level work, students should expect to have an average of 9.5 hours of homework per week.

The last official class day in Week 15 varies from semester to semester. Please refer to the Semester Calendar found in the Academic Information section at the top of the course site for the actual last day of class. All course work must be completed and submitted by that day.

### **Due Dates**

All written assignments (outlined below) are to be submitted on the course site by 11:55 p.m. CT on Fridays at the end of each week in which they are assigned, unless otherwise noted.

For any questions regarding these assignments, contact the instructor.

### **Orientation**

- Read the Getting Started Page
- Participate in the Introductions Forum
- View and Complete Understanding Plagiarism Presentation and Quiz
- Complete Student Responsibilities Exercise

### **Week 1: Polynomials**

- Read Textbook sections 3.1, 3.2, 3.3, 3.4 & 3.5 and view videos as needed
- Participate in Week 1 Discussion Forum: History of Algebra
- Complete Week 1 Practice Problems
- Submit Chapter 3.1 – 3.5 Homework

### **Week 2: Finding Zeros**

- Submit Week 2 Project: Function Transformations
- Read Textbook sections 3.6, 3.7, 3.8, 3.9 & 9.1 and view videos as needed
- Complete Week 2 Practice Problems
- Submit Chapter 3.6 – 3.9 & 9.1 Homework
- Complete Chapter 3 Quiz

### **Week 3: Exponential and Logarithmic Functions**

- Read Textbook sections 4.1, 4.2, 4.3 & 4.4 and view videos as needed
- Participate in Week 3 Discussion Forum: Slide Rule
- Complete Week 3 Practice Problems
- Submit Chapter 4.1 – 4.4 Homework

### **Week 4: Exponential and Logarithmic Models**

- Read Textbook sections 4.5, 4.6, 4.7 & 4.8 and view videos as needed
- Complete Week 4 Practice Problems
- Submit Week 4 Project: Construct a Slide Rule
- Submit Chapter 4.5 – 4.8 Homework
- Complete Chapter 4 Quiz

### **Week 5: Conic Sections**

- Read Textbook sections 10.1, 10.2, 10.3 & 10.4 and view videos as needed
- Complete Week 5 Practice Problems
- Submit Week 5 Project: Minnesota Mosquitoes
- Submit Chapter 10 Homework
- Complete Chapter 10 Quiz

### **Week 6: Midterm Exam**

- Submit Midterm Exam

### **Week 7: Trigonometric Functions**

- Read Textbook sections 5.1, 5.2, 5.3 & 5.4 and view videos as needed
- Complete Week 7 Practice Problems
- Submit Week 7 Project: Special Angles Chart
- Submit Chapter 5 Homework
- Complete Chapter 5 Quiz

### **Week 8: Periodic Functions**

- Read Textbook sections 6.1, 6.2 & 6.3 and view videos as needed
- Complete Week 8 Practice Problems
- Submit Week 8 Project: Circumference of the Earth and Eratosthenes
- Submit Chapter 6 Homework
- Complete Chapter 6 Quiz

### **Week 9: Trigonometric Identities**

- Read Textbook sections 7.1, 7.2 & 7.3 and view videos as needed
- Complete Week 9 Practice Problems
- Participate in Week 9 Discussion Forum: History of Trigonometry



- Submit Chapter 7.1 – 7.3 Homework

## **Week 10 : Solving Trigonometric Equations**

- Read Textbook sections 7.4, 7.5 & 7.6 and view videos as needed
- Complete Week 10 Practice Problems
- Participate in Week 10 Discussion Forum: History of Geometry
- Submit Chapter 7.4 – 7.6 Homework
- Complete Chapter 7 Quiz

## **Week 11: Solving Triangles**

- Read Textbook sections 8.1, 8.2 & 8.3 and view videos as needed
- Complete Week 11 Practice Problems
- Submit Week 11 Project: Triangles
- Submit Chapter 8.1 – 8. 3 Homework

## **Week 12: Polar Coordinates**

- Read Textbook sections 8.4, 8.5 & 10.5 and view videos as needed
- Complete Week 12 Practice Problems
- Participate in Week 12 Discussion Forum: Polar Coordinates
- Submit Chapter 8.4, 8.5, 10.5 Homework

## **Week 13: Parametric Equations**

- Read Textbook sections 8.6, 8.7 & 8.8 and view videos as needed
- Complete Week 13 Practice Problems
- Complete Week 13 Project: Cycloid
- Submit Chapter 8.6 - 8.8 Homework
- Complete Chapter 8 Quiz

## **Week 14: Introduction to Calculus**

- Read Textbook sections 12.1, 12.2, 12.3 & 12.4 and view videos as needed
- Complete Week 14 Practice Problems
- Participate in Week 14 Discussion Forum: Discovering Math or Creating Math?
- Submit Chapter 12 Homework
- Complete Chapter 12 Quiz

## **Week 15: Final Exam**

*The final week varies in length based on the semester. Please refer to the Semester Calendars found in the Academic Information section at the top of the course site for details.*

- Submit Final Exam