

# MATH200

**STUDENT WARNING:** This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

## Course Summary

**Course :** MATH200 **Title :** Analytic Geometry

**Length of Course :** 8

**Prerequisites :** MATH110, MATH111, MATH225 **Credit Hours :** 3

## Description

**Course Description:** This course introduces students to the concepts of analytic geometry. Some of the most important applications in physical sciences will be presented; however, emphasis is on the fundamentals of analytic geometry as a foundation for the study of calculus. Students may use this course for higher level prerequisite mathematics requirements. Topics include: plane analytic geometry; vectors in the plane; equations of lines, circles, and conic sections; transformation of coordinates; curve sketching of polynomial and rational functions; polar coordinates; parametric equations; and three dimensional vectors. (Prerequisite: MATH110 or higher)

### Course Scope:

The course is delivered online and is organized into two distinct parts over the 8 Week duration. Part I topics include: introduction to the Graphing Calculator, Plane Analytic Geometry; Vectors in the Plane; and Equations of Lines, Circles, and Conic Sections. Part II topics include: Transformation of Coordinates; Curve Sketching of Polynomial and Rational Functions; Polar Coordinates; Parametric Equations, and Three Dimensional Vectors. The Graphing Calculator will be introduced to students and used throughout the course. Careful attention is made to the presentation of concepts that will become important in the study of calculus, other advanced mathematics courses, and engineering courses.

## Objectives

After completing the course, the student should be able to accomplish these Course Objectives (CO):

- CO - 1. Use the Graphing Calculator to solve analytic geometry problems
- CO - 2. Apply the basic concepts of analytic geometry as a foundation for the study of calculus.
- CO - 3. Solve problems using plane geometry and vectors in a plane.
- CO - 4. Solve problems associated with lines, circles, and conic sections.
- CO - 5. Apply techniques of transformation of coordinates and curve sketching to practical problems
- CO - 6. Apply the concepts of polar coordinates, parametric equations, and three dimensional vectors to practical applications and calculus.

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# Outline

## Week 1: The Cartesian Plane and Introduction to Graphing Calculator

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Learning Objective(s)

Course CO-1, CO-2

- Use the graphing calculator
- Input data into graphing calculator to solve basic problems and interpret results
- Graph points and identify the quadrants on the Cartesian Plane
- Define all terms associated with the Cartesian Plane
- Apply the distance formula
- Apply the Midpoint formula
- Graph equations
- Find intercepts
- Test an equation for symmetry
- Find the slope of a line
- Determine if two lines are parallel or perpendicular

Reading(s)

Review tutorials on Micro Soft Mathematics 4.0

Chapter 1, Sections 1.1 – 1.4

Assignment(s)

Post to the Introductory Forum

Get started on the reading and practice homework in MyMathLab

### Complete Honor Code and Pledge Assignment

## Week 2: Vectors

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Learning Objective(s)

Course CO-1, CO-2, CO-3

- Define Vectors and their properties
- Add and subtract vectors algebraically
- Find a vector from its direction and magnitude
- Find the dot product of two vectors
- Find the angle between two vectors
- Determine if two vectors are parallel
- Determine if two vectors are orthogonal
- Apply the concepts of Vectors to real world applications

Reading(s)

Chapter 9, Sections 9.4 and 9.5

Assignment(s)

Read and study assigned sections

Week 2 Forum

Finish Practice Homework in MyMathLab

Submit Quiz 1 by the end of the week

### **Week 3: The Circle and Conic Sections**

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Learning Objective(s)

Course CO-1, CO-2, CO-4, CO-5

- Write the standard form for an equation of a circle.
- Find the equation of a circle.
- Sketch the graph of a circle.
- Apply constructs of the circle to real world situations.
- Use the graphing calculator to sketch and discuss circles.
- Know the names of Conic Sections
- Understand the definition of a (Parabola, Ellipses, Hyperbola)
- Sketch the graph of Conic Sections
- Solve applied problems involving Conic Sections

Reading(s)

Chapter 1, Section 1.5

Chapter 10, Sections 10.1 – 10.4

Assignment(s)

Read and study assigned sections

Week 3 Forum

Do Practice Homework in MyMathLab

### **Week 4: Translation and Rotation**

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Learning Objective(s)

Course CO-1, CO-2, CO-4, CO-5

- Identify a conic section from the general form of the equation of a conic
- Write the general equations of conic sections represented by a change in the position of the axes
- Define translation of the axes in the Cartesian coordinate system
- Define rotation of the axes in the Cartesian coordinate system
- Use the graphing calculator to sketch and discuss translation and rotation of conic sections

Reading(s)

Chapter 10, Section 10.5

Assignment(s)

Read and study assigned sections.

Week 4 Forum

Finish Practice Homework in MyMathLab

Submit Quiz 2 by the end of the week

## **Week 5: Polynomial and Rational Functions**

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Learning Objective(s)

Course CO-1, CO-2, CO-5

- Identify Polynomial Functions and their degree
- Graph Polynomial equations
- Identify Real Zeros of a Polynomial Function
- Solve Polynomial Equations
- Find the domain of a Rational Function
- Find Vertical and Horizontal Asymptotes of Rational Functions
- Analyze the graph of a Polynomial and Rational Function

Reading(s)

Chapter 4:

Sections 4.1 – 4.2

Sections 4.4 – 4.5

Assignment(s)

Read and study assigned sections

Week 5 Forum

Do Practice Homework in MyMathLab

## **Week 6: Polar Coordinates, Parametric and Rectangular Equations**

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Learning Objective(s)

Course CO-1, CO-2, CO-6

- Plot Points using Polar Coordinates
- Convert from Polar to Rectangular and from Rectangular to Polar coordinates
- Analyze Polar Equations of Conics
- Graph Polar Equations of Conics
- Convert Polar Equation of a Conic to a Rectangular Equation
- Apply polar coordinates to real world applications
- Graph Parametric Equations
- Find Rectangular Equation for a curve defined by Parametric Equations and vice versa

Reading(s)

Chapter 9: Sections 9.1 – 9.2

Chapter 10: Sections 10.6-10.7

Assignment(s)

Read and study assigned sections

Week 6 Forum

Finish Practice Homework in MyMathLab

Complete Quiz 3 by the end of the week

### **Week 7: Vectors in Space**

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Learning Objective(s)

Course CO-1, CO-2, CO-6

- Compute the distance formula between two points in three dimensional space
- Perform operations on Vector in three dimension space using techniques associated with vectors in a plane
- Define and compute angles, cosines, and numbers of vectors in three dimensions.
- Compute the cross product of two vectors in three dimensions.

Reading(s)

Chapter 9: Sections 9.6 – 9.7

Assignment(s)

Read and study assigned sections

Week 7 Forum

Finish Practice Homework in MyMathLab

Complete Quiz 4 by end of this week

### **Week 8: Final Exam Week**

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Learning Objective(s)

Course CO-1 through CO-6

Demonstrate knowledge of Analytic Geometry

Reading(s)

Chapter 1, Sections 1.1 – 1.5

Chapter 4: Sections 4.1 – 4.2 and 4.4 – 4.5

Chapter 9, Sections 9.1-9.2 and 9.4 – 9.7

Chapter 10, Sections 10.1 – 10.4 and 10.5-10.7

Assignment(s)

Week 8 Forum

Take Final Examination. All exams must be completed by the last day of the class, by 11:55 PM Eastern time on the last day of class.

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## Evaluation

Course grading will be based on Forums participation (includes discussion questions, weekly summaries, and other activities), four graded quizzes, and a final examination.

### Forums:

Introduction Forum: Students are requested to introduce themselves to the instructor and to the rest of the class in the Introduction Forum. This forum will be worth 10 points and will represent a bonus of 1% of 100% the course grade. This forum also validates that a student is enrolled in the class. This assignment must be completed no later than 11:59 pm on Sunday of Week 1. Students not submitting an initial response to this forum may be automatically withdrawn from the course. Students automatically withdrawn from the course should immediately contact their Academic Adviser for assistance on reinstatement in the class. In addition to an initial response, students must respond substantially to a minimum of two of their classmates posting. The initial posting will be worth 6 points and the responses to a minimum of two classmates will be worth 4 points (2 points for each of the two required responses) for a total of 10 points.

Discussion Forum Questions: There will be discussion questions established each week. Student initial responses are due 11:59 pm, Thursdays of each week. Responses to a minimum of two classmates postings are due 11:59 pm, on Sundays of the week assigned. Assigned point value is 10 points for each forum. A maximum of 6 points will be allotted for initial responses and 2 points for responses to fellow students. Maximum assessment for each week is 2.5 percentage points of the course grade for a total of 20 out of 100 points. Each student is required to participate in the discussion question forum; initial responses will not be accepted or be given credit after the due date. Participation (submission of response) outside of any particular week will not be given credit. There are no exceptions to this policy. Additionally, students will not be able to pre-post forum discussion questions. These forums are "Moderated" students will not be able to see other student's postings until after the due date.

Other instructor directed activities: The weekly discussion forum will be used for other directed activities. The instructor will post additional activities and they will be noted in the Weekly Announcement. The Discussion Forum is a tool for the students to use to communicate their questions and comments. Please make full use of the Discussion forum by asking questions or making comments on the materials covered during any particular week. Do not ask for assistance on particular quiz or exam questions unless it is for clarification. Instead, find a similar problem in the text and ask detailed questions on that problem. Operating in this manner will not cause any student to gain an unfair advantage. However, once everyone has completed the quiz and the feedback is provided to all, questions can then be asked.

Quizzes: The four graded Quiz assignments are dispersed throughout the course (see course schedule). They are worth 15 points each. The Quizzes are posted in the My Math Lab. Students must access My Math Lab using the *MyMathLabs* Tab in the Sakai Classroom. Students must complete Quizzes by due date. Students should contact instructor if there is any conflict associated with completion of quizzes by due date. Students may use textbook and notes in completing the quizzes, but no help from anyone else.

Final Exam: The Final Exam will be taken during the last week of the semester. It will be a three hour online exam administered in MyMathLab. The Final Exam will be worth 20 percentage points toward student's final course grade. The final exam will cover all materials in the course. Students will have 3 hours to complete the 30 question exam. (Students should make sure that adequate time is allocated to take the exam). The final exam will not be a proctored exam. Students may use the textbook and notes in completing the final exam, but no help from anyone.

Students' final grades will be posted as soon as the instructor receives and evaluates the Final Exam. Official grades will continue to be issued by the University on the grade report form. Professors have 7 days from the end of the semester to submit their grades to the University.

The points earned on the graded course assignments will determine the course grade. The final grade in the course will be based on total points. Grades will be assigned based on the following composite scores:

## Grading:

Name	Grade %
Honor Code and Pledge	0.00 %
APUS Honor Code and Pledge	0.00 %
Weekly Forums	20.00 %
Week 1 Forum	2.50 %
Week 2 Forum	2.50 %
Week 3 Forum	2.50 %
Week 4 Forum	2.50 %
Week 5 Forum	2.50 %
Week 6 Forum	2.50 %
Week 7 Forum	2.50 %
Week 8 Forum	2.50 %
Quizzes	60.00 %
Quiz 1 - Week 2	15.00 %
Quiz 2 - Week 4	15.00 %
Quiz 3 - Week 6	15.00 %
Quiz 4 - Week 7	15.00 %
Final Exam	20.00 %
Final Exam - Week 8	20.00 %

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## Materials

**Book Title:** MATH200 Pearson MyLab access provided inside the classroom

**Author:**

**Publication Info:** Pearson

**ISBN:** 1269565818

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**Book Title:** Precalculus Enhanced with Graphing Utilities - The VitalSource e-book is provided via the APUS Bookstore; hard copy not available from the APUS Bookstore, please try other sources.

**Author:** Sullivan

**Publication Info:** Pearson

**ISBN:** 9780321832139

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**Book Title:** You must validate your cart to get access to your VitalSource e-book(s). If needed, instructions are available here - <http://apus.libguides.com/bookstore/undergraduate>

**Author:** N/A

**Publication Info:** N/A

**ISBN:** N/A

**Additional Resources:** Students will need a graphing calculator to successfully complete this course. The preferred graphing calculator is Microsoft Mathematics 4.0. It is a free graphing calculator provided by

Microsoft. Students may download the software by clicking on the following link; [Microsoft Mathematics](#) Concepts using Microsoft Excel will also be explained. Students may make use of the above for all graded assignments during the course.

Tutorials: Additional online help is available through the University. Please go to the web page at <http://www.apus.edu/media/mathWV/index.htm> to view mathematics tutorials. These tutorials include 4-6 minute vignettes on some of the course topics and are focused on the weekly learning objectives for Calculus I. Students may access these videos from the links in the Course Outline above by clicking on *Ctrl+Click* on the link.

## Web Sites

In addition to the required course texts, the following public domain web sites are useful. Please abide by the university's academic honesty policy when using Internet sources as well. Note web site addresses are subject to change.

### Site Name Web Site URL/Address

Microsoft  
Mathematics [Microsoft Mathematics](#)

Graphing  
Calculator  
(Alternative <http://dlippman.imathas.com/graphcalc/graphcalc.html>  
for Mac  
Users)

Teacher  
Tube <http://www.teachertube.com>

Dr. Math <http://mathforum.org/dr.math/>

Purple Math <http://www.purplemath.com/>

Khan  
Academy <http://www.khanacademy.org/>

Just Math  
Tutorials <http://patrickjmt.com/>

Brightstorm <http://www.brightstorm.com/math/precalculus>

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## Course Guidelines

### Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative



essay or composition format must follow the citation style cited in the APA Format.

## **Tutoring**

- [Tutor.com](https://www.tutor.com) offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours\* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

## **Late Assignments**

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

## **Turn It In**

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

## **Academic Dishonesty**

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

## **Submission Guidelines**

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

## **Disclaimer Statement**

- Course content may vary from the outline to meet the needs of this particular group.

## **Communicating on the Forum**

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- "Substantive" means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says "I agree" is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an

argument, etc.

- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

## Identity Verification & Live Proctoring

- Faculty may require students to provide proof of identity when submitting assignments or completing assessments in this course. Verification may be in the form of a photograph and/or video of the student's face together with a valid photo ID, depending on the assignment format.
- Faculty may require live proctoring when completing assessments in this course. Proctoring may include identity verification and continuous monitoring of the student by webcam and microphone during testing.

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## University Policies

### [Student Handbook](#)

- [Drop/Withdrawal policy](#)
- [Extension Requests](#)
- [Academic Probation](#)
- [Appeals](#)
- [Disability Accommodations](#)

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.

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