

St. Petersburg College
Course Syllabus

MAC 1147 Pre-Calculus Algebra and Trigonometry, Class Number 4986, Fall, 2016

INSTRUCTOR:

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Note: My Courses email is the preferred method of communication outside of office hours.

MATHEMATICS DEPARTMENT:

Dean: Jimmy Chang
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Chair(or Program Director): David Kolonoski
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COURSE INFORMATION:

MAC Prefix	Number	COURSE TITLE	Cr.Hrs.
MAC	1147	PRE-CALCULUS ALGEBRA/TRIGONOMETRY	5

A. Course Description:

Prerequisite: High school trigonometry and MAC 1105 or appropriate score on the SPC mathematics placement test. This is an accelerated course covering the topics of both MAC 1140 and MAC 1114 in a single session and is intended primarily for the student who plans to take MAC 2311-2313. Major topics in algebra include: polynomial, rational and other algebraic functions, their properties and graphs; polynomial and rational inequalities; exponential and logarithmic functions, their properties and graphs; piecewise-defined functions; conic sections, matrices and determinants; sequences and series; mathematical induction, binomial theorem and applications. The trigonometry has emphasis on circular functions. Major topics in trigonometry include: trigonometric functions, their properties and graphs; inverse trigonometric equations; solutions of triangles; vector algebra; parametric equations; polar coordinates; applications. Credit is only given for MAC 1147 or MAC 1140 or MAC 1114. 77 contact hours.

B. Major Learning Outcomes:

1. The student will demonstrate knowledge of the fundamental concepts of algebra and trigonometry.
2. The student will demonstrate ability to apply the methods of this course in problem solving and graphing.
3. The student will demonstrate ability to analyze the concepts of this course including proofs and derivations.

C. Course Objectives Stated in Performance Terms:

1. The student will demonstrate knowledge of the fundamental concepts of algebra and trigonometry by:
 - a. communicating using precise mathematical language.
 - b. determining the properties and graphs of given functions (polynomial, rational, exponential, logarithmic and other algebraic functions).
 - c. solving and graphing piecewise-defined functions.
 - d. determining the properties and graphs of conic sections (circle, ellipse, hyperbola, parabola).
 - e. determining specific terms of arithmetic and geometric sequences and sums of series.
 - f. expanding by the use of the binomial theorem.
 - g. performing operations involving complex numbers in standard or polar form.
 - h. finding powers of complex numbers by using DeMoivre's Theorem.
 - i. performing operations involving vectors such as additions, subtraction, scalar, multiple, finding norm, magnitude, dot product and direction.
2. The student will demonstrate ability to apply the methods in this course in problem solving and graphing by:
 - a. solving and graphing polynomial and rational equations and inequalities.
 - b. solving systems of equations by matrices and determinants.
 - c. graphing trigonometric functions and describing their properties.
 - d. graphing inverse trigonometric functions and describing their properties.
 - e. solving conditional trigonometric equations.
 - f. transforming parametric equations into a non-parametric equation.
 - g. solving problems involving right triangles.
 - h. solving for the roots of a complex number using polar form.
 - i. graphing in polar coordinates.

3. The student will demonstrate ability to analyze concepts of this course by:
 - a. proving a given statement by use of mathematical induction.
 - b. applying knowledge of given functions to real world problems such as curve fitting, modeling, optimization, exponential and logarithmic growth and decay.
 - c. proving and using trigonometric identities.
 - d. using the Law of Sines and Law of Cosines for solving applications.

D. Criteria Performance Standard:

Upon successful completion of the course the student will, with a minimum of 70% accuracy, demonstrate mastery of each of the above stated objectives through classroom measures developed by individual course instructors.

REQUIRED TEXTBOOK & TECHNOLOGY:

- [Precalculus](#): Enhanced with Graphing Utilities, Sullivan, Sullivan, Sixth Edition
ISBN: 9780321795465
- A graphing calculator is also required. The Texas Instruments TI-83+ or TI-84+ is recommended. TI-89 or higher is not allowed.

MEETING INFORMATION:

Course Location: SA 240
Meeting Days: T,Th
Class Times: 2:00 – 4:15 PM

IMPORTANT DATES:

IMPORTANT DATES: (<http://www.spcollege.edu/calendar/>)

Course Dates: 8/15/16 – 12/9/16

Drop/Add: Friday, August 19, 2016

Last withdrawal date with a grade of W: October 20, 2016

Financial Aid: <http://www.spcollege.edu/pages/dynamic.aspx?id=800>

DISCIPLINE SPECIFIC INFORMATION:

Internet Usage and Electronic Devices:

Students will use the internet on campus to access class-related resources only. Students using computers and the internet on campus may be subject to electronic monitoring. Inappropriate use will result in disciplinary action.

All electronic devices such as cell phones, beepers, pagers, and related devices are to be turned off prior to entering any classroom, library or laboratory. Use of any device in these areas is a violation of College Policy and subject to disciplinary action.

Calculator Policy:

Scientific calculators are allowed. A graphing calculator may be used on homework and reviews; however, they may not be allowed on some tests and exams. Consult your instructor for restrictions on the use of the graphing calculators.

Class Calendar Policy:

Students are responsible for following the class schedule.

Tutoring:

Tutoring in math, reading, and writing is available free of charge in the Learning Support Commons. Please visit the web page at <http://www.spcollege.edu/tutoring/> for more information.

Technical Support:

SPC helpdesk: (727)341-4357, onlinehelp@spcollege.edu or <http://www.spcollege.edu/helpdesk/>

ATTENDANCE:

The college-wide attendance policy is included in the Syllabus Addendum <http://www.spcollege.edu/webcentral/policies.htm>. The policy notes that each instructor is to exercise professional judgment and define “active participation” in class (and therefore “attendance”), and publish that definition in each syllabus. For this class, attendance is defined as being present during lectures and reviews and completing tests and the final exam on schedule. Students that do not meet the active class participation requirement will be withdrawn from the course with a failing grade.

Student success is directly tied to the level of student involvement in a course, so students are required to attend class regularly and on time. Attendance will be recorded at the start of each period. Students who arrive late are responsible for signing in at the end of the class to avoid being counted absent. Except in an emergency, a student who needs to leave early should notify the instructor at the beginning of class. When absent, it is the student’s responsibility to learn what was missed (assignments, handouts, due dates, etc). Students missing class are strongly encouraged to contact the instructor promptly to avoid an unexcused absence. Documentation will be required in order to excuse an absence. Students will be awarded points for attendance, with a reduction for arriving late or leaving early. These points will combine with quiz scores to make up the participation score (see below). A student who has not attended for at least the two full weeks prior to **October 20, 2016** will be considered to be no longer actively participating in the course, and may be administratively dropped from the course with a grade of WF.

WITHDRAW POLICY:

The last day a student can withdraw from this course and receive a grade of W is **October 20, 2016**.

It is the responsibility of the student to withdraw from the course themselves by the withdrawal deadline. Any student wishing to withdraw from the course should do so online at: <https://my.spcollege.edu>. In accordance with college policy, no student can withdraw from a course after the withdrawal deadline. Do NOT ask your instructor to withdraw you from the course. It is your responsibility.

Third attempts: Students attempting this course for the third time (or more) cannot withdraw (State of Florida regulation), and failing to meet the attendance requirement will result in a grade of WF.

GRADING:

The class grade will be determined by a weighted average of test scores, quizzes, class attendance and participation, and the final exam.

Participation points will be awarded for each class that a student attends. If a student attends and participates constructively in the class, 2 points will be awarded for that day. If a student comes to class tardy, leaves early, or disrupts class, only one point will be awarded for that day. Absences will be awarded no points, but may be excused at the discretion of the instructor.

Homework is assigned but not collected. It is imperative that students do all assigned homework in order to prepare adequately for tests and quizzes.

Quizzes may be given at any time, either announced or unannounced. They will count as part of the class attendance and participation score. **Make-up quizzes will not be given for any reason.**

The participation score will count about half of one test score, and will be derived by adding up the number of points earned by the student for attendance and quizzes and dividing by the total number of possible points to get a percentage.

The cumulative, comprehensive final exam will be combined with the tests and participation to give the class grade. All tests will be graded on a percentage basis. **Make-up tests will not be given for any reason.** The lowest regular test grade will be dropped. **Students who arrive on a test day after the first student has turned in the test and left the room will not be allowed to take the test and will get a grade of 0 for that test.** A student who has exemplary test scores and regular attendance may, at the discretion of the instructor, exempt the final exam. Eligibility for exemption begins with an "A" average, but also requires instructor approval.

The final grade will be a weighted average, and will be computed as follows:

Test 1 – Test 7 (highest 6)	12% each
Participation	6%
Final Exam	22%

Students should bring their own paper and a writing utensil to class each time, especially on test days. Do not use red ink for quizzes or tests. Students enrolled after the withdrawal deadline will receive a grade based on the following scale: (final grades will be rounded to the nearest integer)

90	–	100%	=	A,
80	–	89%	=	B,
70	–	79%	=	C,
60	–	69%	=	D,
0	–	59%	=	F

NOTE: Students receiving a D are strongly encouraged to repeat this class.

UNDER NO CIRCUMSTANCES will a student receive a W grade after the withdrawal deadline. Students on their third attempt cannot withdraw from the class after the first week.

All course work must be completed by the appropriate due dates. A grade of zero will be assigned to any course requirement not completed.

ASSIGNMENTS:

Tests: 7 Unit Tests

Students may only have one (1) attempt on each test. Scientific or graphing calculators are permitted on tests; books, notes and other resources are not permitted. Academic honesty policies will be strictly enforced. It is the responsibility of the student to act above suspicion while taking tests. It is the responsibility of the student to complete the tests on the day designated by the instructor. **Make-up tests will not be given for any reason.**

Final Exam: (covers units 1–7)

Students may only have one (1) attempt on the final exam. Scientific or graphing calculators are permitted on tests; books, notes and other resources are not permitted. Academic honesty policies will be strictly enforced. It is the responsibility of the student to act above suspicion while taking exams. It is the responsibility of the student to complete the exam on the day designated by the instructor.

Note: All OSSD students must provide appropriate documentation if they need special arrangements for testing.

STUDENTS' EXPECTATIONS:

Course Policies and Procedures:

The student is responsible for knowing all course policies listed in the syllabus.

Etiquette:

The student will communicate with others in a courteous and respectful manner at all times, including the instructor.

Due Dates:

The student is responsible for knowing when assignments and reviews are due and when tests and the final exam are to be taken.

Academic Honesty:

The student is expected to know the SPC Academic Honesty Policy and to act above suspicion at all times with regard to academic issues.

STUDENT SURVEY OF INSTRUCTION:

The student survey of instruction is administered in courses each semester. It is designed to improve the quality of instruction at St. Petersburg College. All student responses are confidential and anonymous and will be used solely for the purpose of performance improvement.

SYLLABUS ADDENDUM:

Please visit the Syllabus Addendum web page at <http://www.spcollege.edu/webcentral/policies.htm> for the most current information and policies.

Tentative Schedule

Unit	Date	Section	Topic	Homework Assignment
1	8/16	4.1	Polynomial Functions and Models	15-93 odd
		4.2	The Real Zeros of a Polynomial Function	11-77 odd
	8/18	4.3	Complex Zeros; Fundamental Theorem of Algebra	7-39 odd
		4.4	Properties of Rational Functions	13-53 odd
	8/23	4.5	The Graph of a Rational Function	7-51 odd
		4.6	Polynomial and Rational Inequalities	9-47 odd
		5.3	Exponential Functions	15-87 odd
	8/25	5.4	Logarithmic Functions	9-109 odd
		5.5	Properties of Logarithms	13-83 odd
		5.6	Logarithmic and Exponential Equations	5-73 odd
8/30	5.7	Financial Models	7-55 odd	
	5.8	Exponential Growth and Decay; Newton's Law; Logistic Models	1-25 odd	
9/1		Test 1		
2	9/6	11.2	Systems of Linear Equations: Matrices	5-49 odd
		11.3	Systems of Linear Equations: Determinants	7-45 odd
		11.4	Matrix Algebra	9-73 odd
	9/8	11.5	Partial Fraction Decomposition	5-41 odd
		11.6	Systems of Nonlinear Equations	5-61 odd
	9/13	11.7	Systems of Inequalities	11-51 odd
9/15		Test 2		
3	9/20	12.1	Sequences	11-81 odd
		12.2	Arithmetic Sequences	5-51 odd
		12.3	Geometric Sequences; Geometric Series	7-65 odd
	9/22	12.4	Mathematical Induction	1-19 odd
		12.5	The Binomial Theorem	5-41 odd
9/27		Test 3		
4	9/29	6.1	Angles and Their Measure	1-103 odd and 111
		6.2	Trigonometric Functions: Unit Circle Approach	13-115 odd, 121 and 123
	10/4	6.3	Properties of the Trigonometric Functions	11-37 odd, 43, 45, 53, 55 and 59-91
		6.4	Graphs of the Sine and Cosine Functions	11-45 odd, 59-71 odd and 87
	10/6	6.5	Graphs of Tangent, Cotangent, Cosecant, and Secant Functions	21-31 odd and 33-36
		6.6	Phase Shift; Sinusoidal Curve Fitting	3-27 odd
10/11		Test 4		
5	10/13	7.1	The Inverse Sine, Cosine, and Tangent Functions	13-35 odd, 37-52 all and 61-67
		7.2	The Inverse Trigonometric Functions (continued)	9-65 odd
	10/18	7.3	Trigonometric Equations	1-83 odd, 93 and 103
		7.4	Trigonometric Identities	9-79 odd
	10/20	7.5	Sum and Difference Formulas Last day to withdraw with a grade of "W"	1-39 odd, 47-69 odd, 73-83 odd
		7.6	Double-Angle and Half-Angle Formulas	7-27 odd, 47-65 odd, 69-93 odd, 94 and 95
	10/25	7.7	Product-to-Sum and Sum-to-Product Formulas	1-39 odd, 43 and 45
10/27		Test 5		
6	11/1	8.1	Applications Involving Right Triangles	9-43 odd, 49-57 odd, 61, 63 and 71
		8.2	The Law of Sines	9-43 odd and 47-53 odd
		8.3	The Law of Cosines	9-51 odd
	11/3	8.4	The Area of a Triangle	5-21 every other odd and 27-35
		8.5	Simple Harmonic Motion; Damped Motion; Combining Waves	5-39
11/8		Test 6		
7	11/10	9.1	Polar Coordinates	1-81 odd
		9.2	Polar Equations and Graphs	13-53 odd
		9.3	The Complex Plane; DeMoivre's Theorem	11-59 odd
	11/15	9.4	Vectors	9-69 odd, 73 and 75
		9.5	The Dot Product	7-29 odd
	11/17	10.2	The Parabola	7-29 odd
		10.3	The Ellipse	7-29 odd
	11/22	10.4	The Hyperbola	7-29 odd
10.7		Plane Curves and Parametric Equations	7-17 odd, 27-31 odd	
11/29		Test 7		
12/1		Review for Final Exam		
12/6?		Final Exam		

SIGNATURE:

I have read, understand, and agree to abide fully by the parameters set in this syllabus and Syllabus Addendum.

Student Signature:

Date: