

# PRE-CALCULUS ALGEBRA (MAC 1140) SPRING 2016 (1106)

## INSTRUCTOR

Name:	Renee Torres
Contact Information:	torres.renee@spcollege.edu (727) 791-2563
Office Hours/Instructor Availability:	MyCourses/Door
Office Location:	NM 108 (Clearwater Campus)

## ACADEMIC DEPARTMENT

Dean:	Jimmy Chang
Office Location:	SA 215B (St. Petersburg/Gibbs Campus)
Office Number:	(727) 341-4305
Academic Chair:	Dr Joy Moore
Office Location:	NM 120 (Clearwater Campus)
Office Number:	(727) 791-2542

## COURSE INFORMATION

### Course Description:

Prerequisite: MAC 1105 or appropriate score on mathematics placement test or program director approval. May be taken concurrently with MAC 1114. Major topics 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.

### Course Goals:

1. The student will demonstrate understanding of relations and functions including conic sections 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).
2. The student will demonstrate ability to solve and graph equations and inequalities and to use matrices and determinants by:
  - a. solving and graphing polynomial and rational equations and inequalities.
  - b. solving systems of equations by matrices and determinants.
3. The student will demonstrate ability to analyze and apply concepts of this course by:
  - a. determining specific terms of arithmetic and geometric sequences and sums of series.
  - b. proving a given statement by use of mathematical induction.
  - c. expanding by the use of the binomial theorem.
  - d. applying knowledge of given functions to real world problems such as curve fitting, modeling, optimization, exponential and logarithmic growth and decay.

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## Prerequisites:

MAC 1105, or appropriate score on the SPC mathematics placement test or program director approval.

## REQUIRED TEXTBOOK & OTHER RESOURCES INFORMATION

Precalculus: Enhanced with Graphing Utilities, Sullivan, Sullivan, Sixth Edition (ISBN: 9780321795465)

Access to a computer and the internet.

Scientific calculator

## MEETING INFORMATION

Course Location: NM 101 (Clearwater Campus)  
Meeting Days: Monday/Wednesday  
Class Times: 3:30<sup>pm</sup> – 4:45<sup>pm</sup>

## IMPORTANT DATES

Course Dates: 1/11/2016 – 5/6/2016  
Drop/Add: 1/15/2016 (Friday)  
Withdrawal Date: **3/23/2016 (Wednesday)**  
Final Exams: 5/2/2016 – 5/5/2016  
College Closed: 1/18/2016 (Mon) Martin Luther King Jr's Birthday;  
3/6/2016 – 3/13/2016 (Spring Break); 3/25/2016 (Good Friday)  
Financial Aid Deadlines: <http://www.spcollege.edu/getfunds>

## DISCIPLINE SPECIFIC INFORMATION

### Conduct:

You are expected to arrive on time and stay for the entire lecture. Turn off cell phones, PDAs, iPods, laptops, and other electronic devices not related to the course. Please be courteous to those around you. I will not tolerate rude or disruptive behavior in this class. Disruptive classroom behavior constitutes any behavior that impedes the teaching/learning process. Examples of such behavior include frequently arriving late for class, frequently leaving class early, talking out of turn, using a cell phone during class, using indecent or abusive language, et cetera.

### Integrity:

Cheating in any form will not be tolerated at St. Petersburg College. The College has an official policy on academic honesty. Please refer to SPC's "[Academic Honesty/Dishonesty Pamphlet](#)" for further details. College policy states that a first offense is given a "zero" for the assignment with no possibility of replacing the score. I take this subject very seriously and will not tolerate academic dishonesty in the classroom.

### Calculator:

**TI-30** Scientific Calculator (or equivalent) is required. Graphing calculators such as the TI-83 and TI-84 (or equivalent) are not mandatory but are permitted on tests, where calculators are allowed. **However, calculators such as TI-89s, TI-92s and TI Nspires are not permitted.**

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## SPRING 2016 (1106)

### SUCCESS GUIDELINES

You may find the pace of this course to be considerably fast. You will not be able to learn everything during the lectures. The goal is not to teach you how to answer each problem individually, but to provide a framework in which to learn the material so that it can be applied. **The average amount of time spent on this subject is 1:4.** For every one hour of class, you will likely need to spend four outside the classroom. I find this to be the minimum for most students. **Attend class regularly.** Take **complete notes** during class and then rewrite your notes as soon after class as possible so you can add things you remember but did not include. **Read the chapter sections before class** and again after the material has been presented. Form a **study group** with other students and meet regularly. **Ask questions** during class and/or office hours for clarity. Keep up with your **homework** and do all the assignment exercises. Please come see me, call me, or email me with any questions you may have. The **Learning Support Commons** has a wealth of resources, including free tutoring. Please visit the web page at <http://www.spcollege.edu/tutoring/> for more information.

### TECHNICAL SUPPORT

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

### ATTENDANCE

Students are expected to attend class regularly and on time. Except in an emergency, a student who needs to leave early should notify the instructor at the beginning of the period. Failure to do so may result in an absence. When absent, it is your responsibility to learn what was missed. Arriving late or leaving early counts as an absence.

The college-wide attendance policy is included in the Syllabus Addendum located at: <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, active participation means that students have not missed more than **four** classes during the entire semester **and** have taken all scheduled tests.

Instructor will verify that students are in attendance at least once each week during the first two weeks of classes. Students classified as “No Show” for both of the first two weeks will be administratively withdrawn. Students will be withdrawn automatically at the beginning of the term for non-payment of course fees. Immediately following the 60% point of the term, instructor will verify which students are actively participating in class as defined above. Students classified as not meeting the criteria for active class participation will be administratively withdrawn with a “WF”.

The last day a student can withdraw from this course and receive a grade of W is 3/23/2016. 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.

### TESTING AND GRADING

Your semester grade will be measured by the average of the five tests (100 points each), assignments/quizzes (100 points) and a mandatory comprehensive final examination (100 points).

No Make-Up tests will be given. If you miss a test, your final exam score will replace the missed test score. If you have taken all the tests, your lowest test score will be replaced by your score on the final exam, if this is higher than your lowest test score. If more than one test is missed, a zero will be recorded for the score. Extremely extenuating circumstances may be discussed with your instructor. Documentation **must** be provided.

The grade scale is **A (100-90), B (89-80), C (79-70), D (69-60), F (59-0)**

**PRE-CALCULUS ALGEBRA (MAC 1140)  
SPRING 2016 (1106)**

**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.

**LEARNING SUPPORT CENTER & LIBRARY HOURS:**

Monday-Thursday: 7:30 a.m. – 9:00 p.m.  
Friday: 7:30 a.m. – 4:00 p.m.  
Saturday: 10:00 a.m. – 5:00 p.m.

\*: You need to be early enough to finish your test before the Testing Center closes.

**BOOKSTORE HOURS:**

Monday-Thursday: 7:45 a.m. – 7:00 p.m.  
Friday: 8:30 a.m. – 6:00 p.m.  
Saturday: 10:00 a.m. – 2:00 p.m.

**ACADEMIC TEST HOURS\*:**

Monday & Thursday: 9 a.m. – 6:00 p.m.  
Tuesday & Wednesday: 9 a.m. – 3:30 p.m.  
Friday: 9 a.m. – 11:00 p.m.(noon)

**SYLLABUS ADDENDUM**

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

**SIGNATURE**

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

Student Signature:

Date:

A **Tentative Schedule** is provided on the next page. This schedule may be changed as some material can be covered more quickly while other topics may require more time to cover in sufficient detail. Also note that the final exam is comprehensive and designed to assess an overall understanding of the material covered in this course.

**PRE-CALCULUS ALGEBRA (MAC 1140)**  
**SPRING 2016 (1106)**

**Tentative Weekly Schedule**

Week	Date	Section	Topics	Page	Problems
1	1/11	2.4	Library of Functions; Piecewise-defined Functions	100	1-16 all, 21, 25, 29, 33, 41,-45 odd, 47
		2.5	Transformations	112	1-7 all, 9-17 odd, 23, 27, 35, 39, 43-51 odd, 59, 61, 69, 77
	1/13	4.1	Polynomial Functions & Models	193	1-14 all, 15, 19, 27, 33, 37, 41, 47, 49, 51, 55, 57, 61, 65, 67,69, 73, 79, 87, 91, 105
<b>2</b>	<b>1/18</b>		<b>NO CLASS</b>		<b>Martin Luther King Jr's Birthday</b>
	1/20	4.2	Real Zeros of a Polynomial Function	209	1-11 all, 15,19, 21, 27, 33, 35,37, 39, 45, 47, 53, 57, 63, 65,71, 75, 79, 93
		4.3	Complex Zeroes	215	1-7 all,11,13,15, 17, 25,27, 33, 39
3	1/25	4.4	Properties of Rational Functions	224	1-12 all, 15, 23, 25, 27, 33, 39, 43, 45, 47, 51
	1/27	4.5	Graph of Rational Function	234	1-7 all, 9, 15, 17, 33, 35, 45, 55
4	2/1	4.6	Polynomial & Rational Inequalities	241	1-4 all, 7, 9, 15,21, 25, 33, 39, 51, 55, 59, 73, 77
	<b>2/3</b>	<b>TEST 1</b>	<b>2.4,2.5,4.1-4.6</b>	<b>125 244</b>	<b>29-37 odd, 36 1-45 odd</b>
5	2/8	5.3	Exponential Functions	282	1-15 all, 21, 25, 27, 33-39 odd, 41, 47, 49, 53, 57, 61-79 odd, 87, 95, 107
	2/10	5.4	Logarithmic Functions	297	1-9 all, 11-29 odd, 39, 45, 47, 53, 59, 63-69 odd, 71, 79, 87, 99, 111, 121
6	2/15	5.5	Properties of Logarithms	308	1-12 all, 15, 19, 23, 29, 37 – 51 odd, 57-71 odd, 79, 97
	2/17	5.6	Logarithmic & Exponential Equations	315	1-4 all, 13, 21, 31, 35, 39, 41, 53, 63, 81, 87
		5.7	Financial Models	324	1-7 all, 13, 15, 23, 31, 35, 39, 41, 55
7	2/22	5.8	Exponential Growth & Decay Models	335	1, 3, 7, 13, 23, 27, 29
	<b>2/24</b>	<b>TEST 2</b>	<b>5.3-5.8</b>	<b>348</b>	<b>15-55 odd</b>
8	2/29	1.5	Circles	50	1-7 all, 9-47 odd
		10.1 10.2	Conics (Introduction) The Parabola	643	1-10 all, 11-63 odd
	3/2	10.3	The Ellipse	654	1-12 all, 13-63 odd, 71, 79
<b>9</b>	<b>3/7 3/9</b>		<b>NO CLASS</b>		<b>Spring Break!</b>
10	3/14	10.4	The Hyperbola	667	1-12 all,13-63 odd, 71, 75, 79, 81
	3/16		Review		
<b>11</b>	<b>3/21</b>	<b>TEST 3</b>	<b>1.5, 10.1-10.4</b>	<b>54 698</b>	<b>29-35 odd (excl 33) 1-19 odd, 20, 39-41</b>

**PRE-CALCULUS ALGEBRA (MAC 1140)  
SPRING 2016 (1106)**

Week	Date	Section	Topics	Page	Problems
11	3/23	11.1	Systems of Linear Equations: Substitution & Elimination	713	1-6 all, 19, 23, 25, 29, 37, 41-53 odd, 59, 69
		11.2	Systems of Linear Equations: Matrices	728	1-4 all, 5-47 odd, 51, 53, 59, 69, 71, 75, 79
12	3/28	11.3	Systems of Linear Equations: Determinants	740	1-6 all, 7-41 odd, 45, 53, 55
	3/30	11.5	Partial Fraction Decomposition	764	1-4 all, 5, 11, 13, 19, 21, 23, 33, 35
13	4/4	11.6	Systems of Nonlinear Equations	772	1-4 all, 13, 15, 23, 29, 33, 39, 43, 47, 49, 67, 73, 85
	<b>4/6</b>	<b>TEST 4</b>	<b>11.1-11.3,11.5,11.6</b>	<b>793</b>	<b>1-11 odd, 27-43 odd</b>
14	4/11	12.1	Sequences	808	5-10 all, 13, 19, 21, 29-37 odd, 45, 53, 61, 63, 65, 71, 75-87 odd
	4/13	12.2	Arithmetic Sequences	816	1-4 all, 5,17, 19, 23, 27, 29, 33, 37, 41, 49, 53,57, 59
15	4/18	12.3	Geometric Sequences; Geometric Series	824	1-6 all,7, 9,11, 17, 21-51 odd, 57, 63, 69, 71, 77, 85, 87
	4/20	12.4	Mathematical Induction	830	1-21 odd
16	4/25	12.5	The Binomial Theorem	836	1-5, 9,11, 17,19,21, 23,29-41 odd, 49
	<b>4/27</b>	<b>TEST 5</b>	<b>12.1-12.5</b>	<b>838</b>	<b>1-37 odd</b>
17	<b>5/2</b>	<b>3:00<sup>pm</sup>- 4:50<sup>am</sup></b>	<b>FINAL EXAM</b>		