

Math 141-PO1 Syllabus

Precalculus

(# Credit Hours: 5 # Class Hours/Week: 5)

Class Time: TU/TH 12:50 pm – 3:25 pm

Building /Class Room: Cooper St. School

Instructor: Terry Cox

Purpose and Learning Objectives

**"The function of education is to teach the student to think intensively and critically.
Intelligence plus character.... that is the goal of education."**

Dr. Martin Luther King

Course Description: Major emphasis is on the concept of functions. Students will study polynomial, rational, exponential, logarithmic, trigonometric and inverse trigonometric functions, their properties, graphs, and related equations and applications. Additional topics include systems of equations, matrices, conic sections, sequences and series, and probability. A graphing calculator is required.

Prerequisite(s): Math 131, Math 139 or equivalent

Please note: To be enrolled in Math 141, you should have received a 2.0 or better in Math 139 (or its equivalent). Also, to be successful, you must receive a grade of at least 2.0 in Math 141 to enroll in a subsequent math course, if Math 141 is a prerequisite to that subsequent course.

Course Goals: The purpose of this course is to develop an understanding of functions, advanced concepts of algebra and trigonometry. We will also learn to use problem solving techniques to obtain a sense of how and why algebra is used, and to be able to relate these problems and use the learned problem-solving techniques to real life applications. We will integrate the use of technology throughout the course by making use of the Graphing Calculator (TI-84 Plus). Great emphasis will be placed on understanding of terms, concepts, principles and theories rather than cramming and memorization.

Course Materials

The following are the **required** materials for Math 141 - Precalculus:

- Consistent with the Text Book Zero program, a hard copy textbook is not required. However, the following is the information to select the correct text, if you desire.

Text: Precalculus Graphs and Models, 5th edition
Author: Bittinger, Beecher, Ellenbogen, and Penna
Publisher: Pearson
ISBN: 13: 978-0-13-417905-6 (Student Copy)
Or 10: 0-13-417905-6 (Student Copy)

Please Note: This textbook is available in digital format within MyMathLab.

Text Book Zero - The textbook is available in a digital format and may be purchased in the bookstore. or online at <http://www.pearsonmylabandmastering.com/northamerica/mymathlab/>

- **Course Pack:**
Purchase in the bookstore.
- **Calculator**
 - A graphing calculator will be used throughout the course.
 - The TI-84plus is recommended.
 - This is the calculator that is used in the textbook examples and illustrations, and by the instructor.
 - Thus, it would be to your advantage to have the same model.
 - I will be able to assist people in the usage of their calculators, if they have one of the Texas Instruments graphing calculators.

Performance Objectives:

I. Core Course Objectives

Students completing Math 141-Precalculus will be able to:

1. Simplify polynomial, radical, and rational expressions, and algebraic expressions involving radicals, integer exponents, rational exponents, trigonometric functions, combinations, permutations, factorials, series, sequences, and matrices using appropriate algebraic properties, algebraic skills, and algorithmic processes.
2. Use appropriate algorithmic processes (this includes processes that involve matrices) to solve:
 - linear, absolute value, quadratic, radical, rational, exponential, and logarithmic equations
 - linear, absolute value, polynomial, and rational inequalities
 - linear and nonlinear systems of equations
 - trigonometric and inverse trigonometric equations
3. Manipulate and identify functions graphically, symbolically, and numerically.
4. Solve application problems involving many different subject areas using algebraic processes, counting techniques, and the binomial theorem.
5. Apply fundamentals of right triangle trigonometry and solve application problems.

6. Use appropriate technology (such as a graphing calculator) to enhance the understanding of objectives.
7. Have an awareness of the historical background of topics covered in the course.

II. General Education Outcomes (GEO) & Essential Competencies (EC)

General education outcomes and essential competencies assesses the student's attainment of skills obtained during their completion of a degree. These skills are defined consistent with the college mission, and dispersed across a multitude of courses in the student's program. Courses fulfilling one of more of these outcomes assess for achievement once/year.

Because the vision of Jackson College includes a variety of educational, cultural and economic goals, the general education requirements involve both traditional intellectual pursuits and practical skill development. As the general education requirements are designed to ensure breadth and depth of knowledge, they are met through carefully designed programs of study. Programs of study help students meet these goals by addressing each of the skill areas identified in the **General Education Outcomes**. These are skills which the Jackson College Board of Trustees has determined students should develop or enhance while enrolled in the college.

GEO	Description
1	Write clearly, concisely and intelligibly
2	Speak clearly, concisely and intelligibly
3	Demonstrate computational skills and mathematical reasoning
4	Demonstrate scientific reasoning
5	Understand human behavior and social systems and the principles which govern them
6	Understand aesthetic experience and artistic creativity
7	Understand and respect the diversity and interdependence of the world's peoples and cultures

Essential Competencies (EC)

In addition to the GEOs, the college is committed to helping students develop three Essential Competencies. These skills are embedded in each program of study, and are shaped by the program focus and the pathway within which the program is hosted.

EC	Description
1	Think critically and act responsibly
2	Work productively with others, recognizing individual contributions to group success
3	Exhibit technological literacy

MATH 141 addresses GEO 3: Demonstrate computational skills and mathematical reasoning

Instructional Techniques and Procedures

This course usually consists of mostly instruction, group work and classroom demonstrations using the graphing calculator (TI84 Plus).

Course Information and Requirements Attendance and Withdrawal Policy

"A person who neglects his education neglects his most valuable and vulnerable resource. He neglects his future."

"Education is the best provision for old age."
Aristotle

1. **Support:**

I strongly encourage you to come to me first to get help before/after class. Please do not ever get behind because of lack of understanding. I always want to do my best to help you understand this thing called math.

2. **Study Groups:**

I strongly encourage you to make a friend or friends in class that you can get together with outside of class. One of the best ways to study and to learn is by helping one another. Like "they" say, "Two heads are better than one."

Your success is of utmost importance to all of us here. There is never a need to feel lost because of lack of understanding. There is always some type of math help available. As long as you are being responsible for your learning by attending class, doing the assigned homework and other classroom activities, asking questions in class, and seeking help outside of class from the instructor and your fellow classmates, success will be yours!!!

4. **You are responsible for the homework assignments.** Try to do the homework assignments before attending lectures. The lecture will be used to clarify and re-emphasize previous material and to introduce new material. If you fail to come to class, you will not only miss the lectures, but will also miss the quizzes and the homework review. You will consequently receive a poor grade, not because you cannot do math, but because you failed to show up in class. Remember, there is a strong positive correlation between attendance and performance. It has also been determined that for each hour spent in class, one should spend at **least** two hours studying and reviewing outside of class. Be sure to allow time to do your coursework, to ensure success.

5. **Calculators:** **Graphing Calculators are required for MAT 031, 033, 035, 131, 141, 151, 154, 251 and 254. The TI-84 calculator is the preferred calculator for MAT 039, 033, 035, 131, 139, 141, and 151. The TI-84, TI-89 or TI-NSpire CAS calculator may be used for MAT 154, 251, and 254.**

6. **Attendance is required and will be taken in some fashion daily (either by roll call or quiz).** Attendance will be included as a grade item. If you do not plan to attend lectures regularly, you are advised to withdraw.

7. You bear the sole responsibility for your withdrawal from this course just as you did when you registered for the course. **Official dates can be found on the JC website and by talking to your navigator.**

8. **Classroom Behavior:** As stated in the Student Handbook, “misconduct for which students or visitors are subject to discipline are as follows:

- 1) **Dishonesty, such as cheating, plagiarism,** or knowingly furnishing false information to the College.
- 2) **Forgery, alteration, or misuse** of College documents, records or identification.
- 3) **Obstruction or disruption of teaching, lecturing,** research, administration, disciplinary procedures, or other authorized activities on College premises...”

I would like to specifically address the highlighted words in this section:

If I ever have any suspicions of dishonesty, the students involved will receive no credit for that assignment.

I will not tolerate the classroom teaching/learning process to be disrupted. When I am teaching, I expect my students to be actively listening, in order to answer questions that I may ask of them. **Talking to one another while I am teaching is not permitted.** If you have a question while I am lecturing, ask that question of me, not your friend beside you. If you feel the need to come to class and visit with your friends, **I will ask you to leave class and not return until you've met with me to discuss a plan for improved classroom behavior.** If your behavior does not improve after this, then I will visit with the dean of students or the dean of instruction to determine appropriate measures to be taken at that time.

It is extremely important for each student to be in class on time. Not only is the class disrupted by latecomers, the late student misses out on enough time to take quizzes, misses being counted for attendance, and any instructions given at the beginning of class.

It is also extremely important that students do not get up and leave in the middle of class. (It is very disruptive, to my teaching and others learning, for students to get up and leave or wander in and out of class at any given time.)

I will not tolerate the learning process of any student to be interrupted by lack of respect and consideration from a small few.

It takes all of us working together in a positive fashion to get the most out of our class. I am looking forward to sharing with you, a very positive and rewarding semester of mathematics. Not only do I look forward to your success, but I also hope you enjoy the learning process along the way.

Other General Information

***Attendance:**

My experience is that good attendance generally correlates highly with success on homework and tests. A student who misses class is responsible for any material presented or assignments given at the missed class

***Academic Honesty:**

(Excerpt from JCC policy; see instructor for a copy of the complete policy.) Academic Honesty is expected of all students. It is the ethical behavior that includes producing their own work and not representing others' their own, either by plagiarism, by cheating or by helping others to do so. Faculty members who suspect a student of academic dishonesty may penalize the student by assigning a failing grade for the paper, project, report, exam or the course itself.

***Audits:**

Must be registered during the first week of class. You will not receive a grade or credit for the course.

***Withdraw**

If you do not wish to complete the class and receive a grade, because you are not happy with your grade or for any other reason, you must withdraw by the official dates listed in the JC website. I may withdraw any student who does not attend class for three consecutive classes, who misses exams or who does not do the homework. However, **do not assume that I will withdraw you, if you want to withdraw.**

***Incompletes** will be given only in accordance with JCC policy. (Excerpt from JCC policy; see instructor for a copy of the complete policy.) A student may request an incomplete from the instructor. The incomplete will be granted only if the student can provide documentation that his or her work up to that point is sufficient in quality, but lacking in quantity, due to circumstances beyond the student's control. Furthermore, a written plan for making up the missing work within one semester must be completed by the student. Final determination of whether an incomplete will be given is the instructor's decision.

Please Note: *I will not give an incomplete simply to avoid a failing grade.*

***General College Policies:** You should read the policies and procedures of the college as specified in the "Student Handbook".

***Extra Credit:** The mathematics department strongly recommends that extra credit not be offered in mathematics courses. To foster a collegiate environment, maintain the integrity of student grades, and provide for proper student placement and advancement through sequenced courses, the department believes this to be in the best interests of both students and faculty. Extra credit is understood to include bonus points on a test or assignment, separate extra credit assignments, and other forms of providing opportunities for more than 100% credit.

Please Note: *I do not give an extra credit on any assignments.*

*** Instructional Philosophy:** Education is a self-initiated, active, goal-directed process, leading to a change and/or expansion of the students understanding of and ability to use the subject material. The student is expected to be accountable for the learning process. The instructor should be viewed as a facilitator and resource person to assist in the process.

Calculator Help

- We will also be learning the calculator in class as we progress through the course material.

Grading Procedures

ATTENDANCE:

1. Accounts for 5% of your grade. We may do worksheets or have quizzes during class that will count toward your worksheet grade and will not be able to be turned in for credit later.

HOMEWORK:

1. WORKSHEETS:

Accounts for 15% of your grade. These are not graded just for a correct answer. You will receive 100% for the assignment if it is complete and turned in on time. You will receive a 10% reduction for each class that it is late. Incomplete worksheets or just answers will receive a 50% or less.

EXAMS:

1. Chapter exams account for 50% of your grade. (5% for exam 1 and 15% for each of the others)
- 2, The final exam accounts for 20% of your grade.
 - There will be four exams that cover the topics of the text.
 - Any exam may be taken early if you notify me in advance.
 - Any missed exam will count as zero.

*****EXAMS AS A GENERAL RULE MAY NOT BE TAKEN LATE FOR ANY REASON!!!!!!!!!!

- Exams may not be missed and then made up in the testing lab.

I realize that situations sometimes occur that are beyond our control. These times are generally infrequent and not usually on test days. These times may happen once a semester to only one or two people (and usually not to the same person). Therefore, in case of an extreme situation, if you must miss on the day of exam, the following procedure must be followed to be able to make up the exam:

1. I must be notified before class begins, that you will be missing the exam. You must call me so that we can discuss options.
2. The missed exam must be taken before I return the exams to the class.

(Since you know the dates of the exams for the entire semester, it is expected that all appointments and activities that you need to attend should be made at times other than test day.)

FINAL GRADE: The final grade is calculated by adding:
(10% of Practice Exams) + (15% of the worksheets) +
(5% of attendance) + (45% of the exam average) + (5% of exam 1)+
(20% of the final exam score).

GRADES WILL BE BASED APPROXIMATELY ON THE FOLLOWING SCALE:

<u>Weighted Average</u>	<u>Course Grade</u>
90 - 100	4.0
85 - 89	3.5
80 - 84	3.0
75 - 79	2.5
70 - 74	2.0
65 - 69	1.5
60 - 64	1.0
50 - 59	0.5
0 - 49	0.0

MAT 141-PO1 Pre-Calculus Calendar/Content WN 2019		
Day	Sections	Topics
1 15-Jan	2.1 2.2	Course Introduction Exam #1-Take Home Exam-Review and Prerequisite Material Increasing, Decreasing, and Piecewise Functions The Algebra of Functions
2 17-Jan	2.3 2.4	The Composition of Functions Symmetry
3 22-Jan	2.5 2.6	Transformations Variation and Applications
4 24-Jan	3.1 3.2	The Complex Numbers Quadratic Equations, Functions, Zeros, and Models
5 29-Jan	3.3 3.4	Analyzing Graphs of Quadratic Functions Solving Rational Equations and Radical Equations
6 31-Jan	3.5	Solving Equations and Inequalities with Absolute Value
7 5-Feb	Review Exam	Review for Exam 2- Chapters 2 and 3 Exam 2- Chapters 2 and 3
8 7-Feb	4.1 4.2	Polynomial Functions and Modeling Graphing Polynomial Functions
9 12-Feb	4.3 4.5	Polynomial Division (Only cover long division) Rational Functions
10 14-Feb	4.6	Polynomial and Rational Inequalities
11 19-Feb	5.1 5.2	Inverse Functions Exponential Functions and Graphs
12 21-Feb	5.3 5.4	Logarithmic Functions and Graphs Properties of Logarithmic Functions
13 26-Feb	5.5	Solving Exponential and Logarithmic Equations
14 28-Feb	5.5 5.6	Solving Exponential and Logarithmic Equations Applications and Models: Growth and Decay, and Compound Interest
15 5-Mar	Review Exam	Review for Exam 3- Chapters 4 and 5 Exam 3- Chapters 4 and 5
16 7-Mar	6.1 6.2	Trigonometric Functions of Acute Angles Applications of Right Triangles

Day	Sections	Topics
17 19-Mar	6.3	Trigonometric Functions of Any Angle
18 21-Mar	6.4	Radians, Arc Length, and Angular Speed
19 26-Mar	6.5 6.6	Circular Functions: Graphs and Properties Graphs of Transformed Sine and Cosine Functions
20 28-Mar	6.6 7.1	Graphs of Transformed Sine and Cosine Functions Identities: Pythagorean and Sum and Difference Proving
21 2-Apr	7.2 7.3	Identities: Cofunction, Double-Angle, and Half-Angle Proving Trigonometric Identities
22 4-Apr	7.4	Inverses of the Trigonometric Functions
23 9-Apr	7.5 8.1	Solving Trigonometric Equations The Law of Sines
24 11-Apr	8.2 8.4	The Law of Cosines Polar coordinates
25 16-Apr	Review Exam	Review for Exam 4-Chapters 6, 7, and 8 Exam 4-Chapters 6, 7, and 8
26 18-Apr	9.1 9.2 9.3	Systems of Equations in Two Variables Systems of Equations in Three Variables Matrices and Systems of Equations (Just use calculator)
27 23-Apr	9.3 10.1 10.2	Matrices and Systems of Equations (Just use calculator) The Parabola The Circle and the Ellipse
28 25-Apr	10.2 10.3 10.7	The Circle and the Ellipse The Hyperbola Parametric Equations
29 30-Apr	Review	Comprehensive Final Exam Review
30 2-May	Exam	Final Exam (Will be taken in Class) Date is cast in stone and cannot be pulled ahead