

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: MAC 1140

COURSE TITLE: Precalculus Algebra

PREREQUISITE(S): MAC 1105 with a grade of "C" or better; or a satisfactory score on the placement test

COREQUISITE(S): None

CREDIT HOURS: 4

CONTACT HOURS/WEEK: 4

CONTACT HOUR BREAKDOWN:

Lecture/Discussion:	4
Laboratory:	
Other _____:	

FACULTY WORKLOAD POINTS: 4

STANDARDIZED CLASS SIZE ALLOCATION: 27

CATALOG COURSE DESCRIPTION:

The major topics included in this course are linear equations and inequalities; quadratic equations and inequalities, relations, functions, and graphs; exponential and logarithmic functions; systems of equations and inequalities; higher degree polynomial equations; matrices and determinants; applications; sequences, series, and the binomial theorem; and mathematical proof. A review of algebraic techniques and operations as well as a review of exponents, radicals, complex numbers, and absolute value is also included in this course.

SUGGESTED TEXT(S):

Larson, College Algebra: Graphing Appr., Houghton-Mifflin Co, current ed., ISBN 0-618-138838 package.

Sullivan, College Algebra: Enhanced, etc., Pearson Education (Prentice Hall), current ed., ISBN 0-13-083335-5.

Munem, College Algebra w/appl., Worth/VHPS, current ed., ISBN 0-87901-499-7

Cohen, Pre-Calculus, Thomson Learning, Current ed., ISBN 0-34006921-6.

SUGGESTED TEXT(S): (CONTINUED)

Thinkwell's Precalculus, current ed., ISBN
0-9678357-1-2 (CD ROMS).

IMPLEMENTATION DATE:

Fall Term, 1993 (941) (was MAC 1104)

REVIEW OR MODIFICATION DATE:

Fall Term, 1999
Fall Term, 2002 (20031)
Spring Term, 2005 (20052)
Fall Term 2006 (20061)
Fall Term, 2008 (20091) - Outline Review 2007

COURSE TOPICS	<u>CONTACT HOURS PER TOPIC</u>
I. Review of Algebraic Techniques	4
A. Exponents, Radicals, Complex Numbers, and Absolute Value	
B. Equations and Inequalities	
1. Polynomial Inequalities	
2. Rational Inequalities	
II. Relations, Functions, and Graphs	8
A. Functions and Their Graphs	
1. Properties of Functions	
2. Polynomial Functions	
3. Rational Functions	
4. Inverse Functions	
5. Piece-Wise Defined, Greatest Integer	
B. Algebra of Functions	
C. Graphing	
1. Methods	
2. Linear Equations and Inequalities	
3. Conic Sections	
D. Variation	
E. Translations	
III. Exponential and Logarithmic Functions	7
A. Exponential Functions	
B. Logarithmic Functions	
C. Natural and Common Logarithms	
D. Exponential and Logarithmic Equations	
E. Applications	
IV. Systems of Equations and Inequalities	9
A. Linear Systems of Equations	
B. Linear Systems of Inequalities	
C. Linear Programming (<u>Optional</u>)	
D. Nonlinear Systems	
V. Higher Degree Polynomials and Equations	10
A. Remainder, Factor, and Rational Root Theorems	
B. Synthetic Division	
C. Roots of Higher Degree Polynomial Equations	

COURSE TOPICS (CONTINUED)	CONTACT HOURS <u>PER TOPIC</u>
D. Fundamental Theorem of Algebra E. Partial Fractions F. Curve Sketching	
VI. Matrices and Determinants	10
A. Matrix Algebra B. Systems of Linear Equations C. Inverses of Square Matrices D. Determinants and Cramers Rule E. Nonlinear Systems F. Gauss-Jordan Method	
VII. Sequences, Series, and the Binomial Theorem	8
A. Summation Notation B. Arithmetic and Geometric Sequences and Series C. Binomial Theorem	
VIII. Mathematical Proof	4
A. Axioms of Real Numbers B. Techniques-Mathematical Proofs C. Mathematical Induction D. Real Number Theorems	



**Florida State College
At Jacksonville**

**General Education Requirements
Categories & Courses Review Checksheet**

Course Prefix and Number: MAC 1140	Semester Credit Hours: 4
Course Title: Precalculus Algebra	

Discipline Area for the Course:

<input type="checkbox"/> Communication	<input checked="" type="checkbox"/> Mathematics	<input type="checkbox"/> Social & Behavioral Sciences
<input type="checkbox"/> Humanities & Visual/Performing Arts	<input type="checkbox"/> Natural Sciences	<input type="checkbox"/> Other-Designated Option

INTELLECTUAL COMPETENCIES:

<input checked="" type="checkbox"/> Reading	<input type="checkbox"/> Speaking	<input checked="" type="checkbox"/> Critical Analysis	<input checked="" type="checkbox"/> Quantitative Skills	<input type="checkbox"/> Scientific Method of Inquiry
<input type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening	<input type="checkbox"/> Information Literacy	<input type="checkbox"/> Ethical Judgment	<input checked="" type="checkbox"/> Working Collaboratively

KNOWLEDGE	Primary	Secondary	N/A	VALUE	Primary	Secondary	N/A
A. Global and Historical Knowledge & Understanding				Intellectual honesty	<input checked="" type="checkbox"/>		
• Comprehends a general knowledge of the nature, origins and contributions of major civilizations				Curiosity and openness to new ideas	<input checked="" type="checkbox"/>		
• Comprehends the workings and interrelations of personal, business and government economies		<input checked="" type="checkbox"/>		Recognition of one's own creative potential		<input checked="" type="checkbox"/>	
• Comprehends political, social and economic systems and their effects upon society				Acceptance of and respect for differences among people and cultures		<input checked="" type="checkbox"/>	
B. Cultural and Aesthetic Knowledge and Understanding				Civic Engagement			
• Comprehends the contributions of the arts and humanities to the human experience on a personal, national or global level				Lifelong Learning		<input checked="" type="checkbox"/>	
• Comprehends the historical development of the arts and sciences							
• Comprehends religious and cultural systems and their effects upon society							
C. Human Awareness and Understanding							
• Comprehends the dynamics of human behavior and the process of increasing self-awareness, growth and development							
• Comprehends the stages of human development and the dynamics of human relationships in diverse cultures							
• Comprehends the factors that promote physical, mental and social well-being							
D. Mathematics, Science and Technology							
• Comprehends the basic concepts and investigative processes of the natural sciences		<input checked="" type="checkbox"/>					
• Comprehends the breadth, significance and development of the mathematical sciences	<input checked="" type="checkbox"/>						
• Comprehends the ways science and technology have shaped and continue to reshape human cultures and the environment		<input checked="" type="checkbox"/>					

Name of Person Completing This Form: Pierre Satkowiak, Phil Petersen
 Signature: _____ Date: 02/06/2004
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Course Prefix and Number: MAC1140	Semester Credit Hours: 4
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Course Title: Precalculus Algebra
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Discipline Area for the Course:		
<input type="checkbox"/> Communication	<input checked="" type="checkbox"/> Mathematics	<input type="checkbox"/> Social & Behavioral Sciences
<input type="checkbox"/> Humanities & Visual/Performing Arts	<input type="checkbox"/> Natural Sciences	<input type="checkbox"/> Other-Designated Option

INTELLECTUAL COMPETENCIES:					
<input checked="" type="checkbox"/> Reading	<input type="checkbox"/> Speaking	<input checked="" type="checkbox"/> Critical Analysis	<input checked="" type="checkbox"/> Quantitative Skills	<input type="checkbox"/> Scientific Method of Inquiry	
<input type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening	<input type="checkbox"/> Information Literacy	<input type="checkbox"/> Ethical Judgment	<input checked="" type="checkbox"/> Working Collaboratively	

Learning Outcomes

Method Of Assessment

1		Students demonstrate critical thinking skills by solving problems on tests, class assignments, and projects.
2	1. Simplify algebraic expressions and solve algebraic equations and inequalities.	
3	2. Understand the theories and applications of exponential and logarithmic functions.	
4	3. Interpret and draw inferences from mathematical models such as formulas, graphs, and tables.	
5	4. Solve systems of linear and nonlinear equations and solve applications involving linear programming.	Students utilize a variety of approaches when solving mathematical problems including analytical, numerical, and technological.
6	5. Solve higher degree polynomial equations and graph polynomial functions.	Students apply their knowledge of mathematical principles to make a connection between course work and real world problems by successfully completing a project.
7	6. Use matrix algebra to solve linear and nonlinear systems of equations.	Students are successful in the subsequent mathematics classes in which they enroll.
8	7. Determine arithmetic and geometric sequences and series.	
9	8. Demonstrate comprehension of the Binomial Theorem.	
10	9. Use techniques of mathematical proof.	

Name of Person Completing This Form: **Pierre Satkowiak, Phil Petersen**

Signature: _____ Date: 02/06/2004