

**MAT 187 – Chandler-Gilbert Community College  
2014-2015**

**Instructor Name and Degrees**

John Melis, BA (1976), Occidental College, BEd (1978), Arizona State University, MEd (1992), Arizona State University

**Office Hours and Room Number:**

4th period all lunches M-W room C-122 or Conference Period Th room C-123 or after school M-Th room C-122.

**Contact Information:**

email: [melis.john@cusd80.com](mailto:melis.john@cusd80.com)

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**Official Course Description**

A precalculus course combining topics from college algebra and trigonometry. Preparation for analytic geometry and calculus. May receive

credit for only one of the following: MAT150, MAT151, MAT152, or MAT187.

**Official Course Prerequisites**

Prerequisites: Grade of B or better in MAT120, or MAT121, or MAT122, or equivalent, or satisfactory score on a placement test.

**Official Course Competencies**

**Official Course Description: MCCCCD Approval: 11-27-2012**

**MAT187 2013 Spring - 9999**

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**Precalculus**

A precalculus course combining topics from college algebra and trigonometry.

Preparation for analytic geometry and calculus.

**Prerequisites:** Grade of B or better in MAT120, or MAT121, or MAT122, or equivalent, or satisfactory score on a placement test.

**Course Notes:** Strongly recommended that students have some knowledge of trigonometry. Students may receive credit for only one of the following: MAT150, MAT151, MAT152, or MAT187.

**Course Attribute(s):**

Arizona Shared Unique Number : MAT 1187

General Education Designation: Mathematics - [MA]

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**MCCCCD Official Course Competencies:**

**MAT187 2013**

**Precalculus**

**Spring - 9999**

1. Find real and complex zeros of polynomial functions. (I-II)
2. Calculate and interpret average rate of change. (I-III)
3. Determine the inverse of a relation when represented numerically, analytically, or graphically. (I-IV)
4. Analyze and interpret the behavior of functions, including domain and range, end behavior, increasing and decreasing intervals, extrema, asymptotic behavior, and symmetry. (I-V)
5. Determine whether a function is one-to-one when represented numerically, analytically, or graphically. (I-V)

6. Determine whether a relation is a function when represented numerically, analytically, or graphically. (I-V)
7. Graph polynomial, rational, exponential, logarithmic, power, absolute value, piecewise-defined, and trigonometric functions. (I-V)
8. Perform operations, including compositions, on functions and state the domain of the resulting function. (I-V)
9. Solve polynomial, rational, exponential, logarithmic, and trigonometric equations analytically and graphically. (I-V)
10. Use transformations to graph functions. (I-V)
11. Communicate process and results in written and verbal format. (I-IX)
12. Compare alternative solution strategies. (I-IX)
13. Justify and interpret solutions to application problems. (I-IX)
14. Model and solve real-world problems. (I-IX)
15. Read and interpret quantitative information when presented numerically, analytically, or graphically. (I-IX)
16. Find and evaluate inverse trigonometric functions. (IV-V)
17. Use the definition and properties of trigonometric functions and formulas to solve application problems. (IV-VII)
18. Verify trigonometric identities. (VI)

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### **MCCCD Official Course Outline:**

**MAT187 2014      Precalculus**  
**Spring - 9999**

- I      Behavior and Nature of Functions
  - A      Graphic, numeric, and algebraic representations
  - B      Characteristics of basic functions
  - C      Properties, operations, transformations, and inverses of functions
- II     Polynomial and Rational Functions
  - A      Polynomial and rational equations
  - B      Graphs of polynomial and rational functions
  - C      Applications
- III    Exponential and Logarithmic Functions
  - A      Properties of logarithms
  - B      Exponential and logarithmic equations
  - C      Graphs of exponential and logarithmic functions
  - D      Applications
- IV    Definition and Properties of Trigonometric Functions
  - A      Acute and general angles
  - B      Right-triangle trigonometry
  - C      Graphs of trigonometric functions
  - D      Inverse trigonometric functions
  - E      Applications
- V     Circular Functions and The Unit Circle

- A Radian measure
- B Length of an arc
- C Area of a sector
- D Linear and angular velocity
- VI Trigonometric Identities
  - A Fundamental identities
  - B Sum and difference identities
  - C Double-angle identities
- VII Trigonometric Formulas
  - A Law of sines
  - B Law of cosines
  - C Applications
- VIII Departments must include one or more of the following topics in their courses
  - A Matrices, including solving systems of three linear equations in three variables.
  - B Combinatorics
  - C Sequences and series
  - D Conics
- IX Departments may include one or more of the following topics in their courses
  - A Complex Numbers (Trigonometric Form of Complex Numbers, DeMoivre's Theorem, Roots of Complex Numbers)
  - B Vectors (Definitions, Operations, and Applications)
  - C Polar Coordinates, Equations and Graphs
  - D Parametric Equations and Graphs

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### Required Course Materials

## Standards And Expectations

### Course Requirements

Precalculus

Chandler-Gilbert Community College | MAT187 Fall 2014

Instructor: John Melis

Hamilton High School

Graphing Calculator TI-83 or TI-84

Glencoe Advanced Mathematical Concepts : Precalculus with Applications

[Student

ed.]

[authors, Berchie Holliday ..

[et al.]] 0028341759

### Week # Assignment

1 Proportionality

2 Rate of Change

3 Functions

4 Composite Functions

5 Interpreting Functions

6 Linear and Exponential Behavior

7 Growth & Decay

8 Logarithmic Functions

9 Polynomial Functions

10 Quadratic Functions

11 Rational Functions

12 Angle Measure

13 Trigonometric Functions

14 Period, Amplitude & Translations  
15 Solving Trig Functions  
16 Right Triangle Trig  
17 Basic Trig Identities  
18 Trig Identities  
19 Polar Coordinates  
20 Polar & Rectangular Coordinates  
21 Simplify Complex Numbers  
22 Products & Quotients of Complex Numbers  
23 Powers & Roots of Complex Numbers  
Grading Standards:(Modify as Needed)

**Attendance Standards:**

See Hamilton High School Student Handbook

**Late/Missed Work Policy:**

See Hamilton High School Student Handbook

**Equipment Use Policies:**

See Hamilton High School Student Handbook

**Extra Credit Policy:**

Extra Credit is not available for this class. It is the belief of Chandler-Gilbert Community College that all work done for a class should receive regular credit and is more than sufficient to assess the understanding of material presented in the course.

**Plagiarism Warning:**

Plagiarism includes, but is not limited to, the use of paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling or sharing of term papers or other academic materials. Information gathered from the Internet and not properly identified is also considered plagiarism. We expect every student to produce his/her original, independent work. Any student whose work indicates a violation of the MCCC

Academic Misconduct Policy (including cheating and plagiarism) can expect sanctions as specified in the college catalog (2.3.11), or online at the following site: [http://www.maricopa.edu/publicstewardship/governance/adminregs/students/2\\_3.php](http://www.maricopa.edu/publicstewardship/governance/adminregs/students/2_3.php)

Chandler-Gilbert Community College uses software that uncovers plagiarism from student to student and other data sources on the Internet. If a student is found to have plagiarized content, grade consequences will be applied in accordance with departmental policies.

**Civility Policy:**

The faculty of Chandler-Gilbert place a high value on the importance of general ethical standards of academic behavior and expect that communication between students and instructors or among students shall maintain the level of formality and mutual respect appropriate to any college teaching/learning situation. Language or behavior that is rude, abusive, profane, disruptive, or threatening will not be tolerated. Activity of this type is Academic Misconduct as defined in MCCC Policy AR 2.3.11. Students engaging in such behavior will be removed from the course with a failing grade. Additional sanctions may be applied pursuant to AR 2.3.11.

**Refund Policy:**

Refunds are not automatic. Students who drop courses within the refund period are eligible for a reimbursement of appropriate tuition and fees.

Please see the refund policy online for deadlines and details.

**Disability Statement:**

Chandler-Gilbert Community College will make reasonable accommodations for persons with documented disabilities. Notify Disability Services and Resources and your instructor of any special needs. Contact Disability Services and Resources at (480) 857-5188. Tuition Assistance is available to students enrolled in a Chandler-Gilbert Community College dual enrollment course who demonstrate financial need. Please refer to: <http://www.cgc.maricopa.edu/student-affairs/financial-aid/Pages/financial-aid-home.aspx>

The student is responsible for the information outlined in the syllabus. The student is also responsible for knowing the Chandler-Gilbert Community College policies in the college catalog and the student handbook. Please refer to: <http://www.cgc.maricopa.edu/academic-affairs/Course%20Catalog/Maricopa%20Community%20College%20District%20Policies.pdf>

Course content and syllabus may vary from the course calendar listed above in order to meet the needs of the particular group in this course section.

I, \_\_\_\_\_, have read the course syllabus.

(print student name)

Student signature \_\_\_\_\_ date \_\_\_\_\_

Parent signature \_\_\_\_\_ date \_\_\_\_\_

20 Polar & Rectangular Coordinates

21 Simplify Complex Numbers

22 Products & Quotients of Complex Numbers

23 Powers & Roots of Complex Numbers

24 Conic Sections

25 Conic Sections

26 Real Exponents

27 Exponential Functions

28 The Number  $e$

29 Arithmetic Sequence & Series

30 Geometric Sequence & Series

A 90-100%

B 80-89%

C 70-79%

D 60-69%

F Below 60%