Course ID: MATH R014
Curriculum Committee Approval Date: 10/11/2017
Catalog Start Date: Fall 2018

COURSE OUTLINE

OXNARD COLLEGE

I. Course Identification and Justification:
   A. Proposed course id: MATH R014
      Banner title: Intermediate Algebra
      Full title: Intermediate Algebra

      Previous course id: MATH R014
      Banner title: Intermediate Algebra
      Full title: Intermediate Algebra

   B. Reason(s) course is offered:
      This course is offered to prepare students for transfer-level mathematics. Math R014 satisfies math competency graduation requirements for associate degrees.

   C. Reason(s) for current outline revision:
      5-year review

   D. C-ID:
      1. C-ID Descriptor:
      2. C-ID Status: Not Applicable

   E. Co-listed as:
      Current: None
      Previous:

II. Catalog Information:
   A. Units:
      Current: 5.00
      Previous: 5.00

   B. Course Hours:
      1. In-Class Contact Hours:
         Lecture: 87.5 Activity: 0 Lab: 0
      2. Total In-Class Contact Hours: 87.5
      3. Total Outside-of-Class Hours: 175
      4. Total Student Learning Hours: 262.5

   C. Prerequisites, Corequisites, Advisories, and Limitations on Enrollment:
      1. Prerequisites
         Current:
         MATH R011: Elementary Algebra or
         MATH R002: Transitional Mathematics II or
         Placement as determined by the college's multiple measures assessment process
         Previous:
         MATH R011: Elementary Algebra or
         MATH R002: Transitional Mathematics II or

Placement as determined by the college's multiple measures assessment process

2. Corequisites
   Current:
   Previous:

3. Advisories:
   Current:
   Previous:

4. Limitations on Enrollment:
   Current:
   Previous:

D. Catalog description:
Current:
This course covers operations with functions, inequalities and absolute value, rational exponents, radical expressions and equations, complex numbers, quadratic functions, exponential and logarithmic functions, conic sections, and sequences and series.

Previous, if different:
Topics include operations with functions, inequalities and absolute value, rational exponents, radical expressions and equations, complex numbers, quadratic functions, exponential and logarithmic functions, conic sections, and sequences and series.

E. Fees:
Current: $ None
Previous, if different: $

F. Field trips:
Current:
Will be required: [ ]
May be required: [ ]
Will not be required: [X]

Previous, if different:
Will be required: [ ]
May be required: [ ]
Will not be required: [ ]

G. Repeatability:
Current:
A - Not designed as repeatable
Previous:
A - Not designed as repeatable

H. Credit basis:
Current:
Letter Graded Only [ ]
Pass/No Pass [ ]
Student Option [X]

Previous, if different:
Letter Graded Only [ ]

Pass/No Pass [ ]
Student Option [ ]

I. Credit by exam:
Current:
Petitions may be granted: [ ]
Petitions will not be granted: [X]

Previous, if different:
Petitions may be granted: [ ]
Petitions will not be granted: [ ]

III. Course Objectives:
Upon successful completion of this course, the student should be able to:
- A. Graph linear functions and write using function notation.
- B. Solve and graph (on a number line) absolute value equations and inequalities.
- C. Solve systems of two (2) and three (3) variable equations.
- D. Simplify radical expressions including those with rational exponents.
- E. Solve radical equations and applications.
- F. Perform operations using complex numbers.
- G. Solve quadratic equations and related applications.
- H. Graph exponential and logarithmic functions.
- I. Solve exponential and logarithmic equations and related applications.
- J. Identify and graph conic sections.
- K. Apply basic formulas for basic sequences and series.
- L. Use the Binomial Theorem to expand binomials with higher powers.

IV. Student Learning Outcomes:
- A. Simplify radical expressions.
- B. Graph non-linear equations, specifically equations whose graphs are conic sections.

V. Course Content:
Topics to be covered include, but are not limited to:
- A. Quick Review of Elementary Algebra
  1. Factoring polynomials
  2. Operating with rational expressions
  3. Solving rational equations and related applications
  4. Solving systems of linear equations in two (2) variables
     a. Graphing
     b. Substitution
     c. Addition (elimination) method
- B. Functions and Relations
  1. Notation, terminology and algebraic operations
  2. Composition of functions
  3. Graphing and writing linear functions
  4. Graphing nonlinear functions
  5. Variation: direct, inverse, joint
- C. Inequalities and Compound Inequalities
  1. Compound inequalities
  2. Absolute value equations
  3. Absolute value inequalities

4. Systems of compound inequalities

D. Systems of Linear Equations and Inequalities
   1. Systems of linear equations in three (3) variables
   2. Matrix solving techniques; elementary row operations
   3. Determinants
   4. Cramer's Rule
   5. Graphing linear inequalities in two (2) variables
   6. Graphing systems of linear inequalities in two (2) variables

E. Radicals and Complex Numbers
   1. Simplifying radical expressions
   2. Rational exponents
   3. Operations with radicals
   4. Rationalizing
   5. Solving radical equations and related applications
   6. The arithmetic of complex numbers

F. Quadratic Equations and Functions
   1. Square root method
   2. Completing the square method
   3. Quadratic formula method
   4. Solving equations reducible to quadratic methods
   5. Nonlinear inequalities in one (1) variable
   6. Quadratic functions and their graphs

G. Exponential and Logarithmic Functions
   1. Inverse functions
   2. Exponential functions
   3. Properties of logarithms
   4. Calculator approximations
      a. Common logarithms
      b. Natural logarithms
      c. Change of base
   5. Solving exponential and logarithmic equations
   6. Applications

H. Conic Sections
   1. Distance and midpoint formulas
   2. Parabolas
   3. Circles
   4. Ellipses
   5. Hyperbolas
   6. Solving and graphing applications

I. Sequences, Series, Binomial Theorem
   1. Sequences
   2. Arithmetic and geometric sequences
   3. Series
   4. Partial sums
   5. Binomial Theorem

VI. Lab Content:
None

VII. Methods of Instruction:
Methods may include, but are not limited to:

A. Instructor-guided discussions involving definitions and processes for course objectives, such as simplifying radical expressions.
B. Instructor demonstrating examples of correct process and notation, encouraging active student participation.
C. Collaborative work among students to practice learned skills.
D. Teacher summarization to show how topics interrelate.
E. Instructor-guided use of scientific calculators to reinforce concepts.
F. Online interactive practice problems.

VIII. Methods of Evaluation and Assignments:

A. Methods of evaluation for degree-applicable courses:
Essays [ ]
Problem-Solving Assignments (Examples: Math-like problems, diagnosis & repair) [X]
Physical Skills Demonstrations (Examples: Performing arts, equipment operation) [ ]

For any course, if "Essays" above is not checked, explain why.
This course is mainly computational in nature.

B. Typical graded assignments (methods of evaluation):
1. Homework exercises, such as those involving the graphing of conic sections.
2. Assessments on course objectives.
3. In-class group and/or independent activities reinforcing course objectives, such as solving radical equations.

C. Typical outside of classroom assignments:
1. Reading
   a. Textbook readings of definitions, rules, properties, and processes. For example, “An ellipse is the set of points in a plane such that the sum of the distances of those points from two fixed points is constant."
2. Writing
   a. The course is primarily computational, but students must present written worked out homework solutions using correct mathematical notation on problems such as writing equations of lines in function notation.
3. Other
   a. Mathematical problem solving. For example, "Find the equation of a line perpendicular to y=2x+4 and passing through the origin."

IX. Textbooks and Instructional Materials:

A. Textbooks/Resources:
1. K. Elayn Martin-Gay (2016). *Beginning & Intermediate Algebra* (6th/e). Pearson Prentice Hall.
2. "MyMathLab student access." Pearson Prentice Hall, current ed.

B. Other instructional materials:

X. Minimum Qualifications and Additional Certifications:

A. Minimum qualifications:
1. Mathematics (Masters Required)

B. Additional certifications:
1. Description of certification requirement:

2. Name of statute, regulation, or licensing/certification organization requiring this certification:

XI. Approval Dates
Curriculum Committee Approval Date: 10/11/2017
Board of Trustees Approval Date: 10/11/2017
State Approval Date:
Catalog Start Date: Fall 2018

XII. Distance Learning Appendix

A. Methods of Instruction
Methods may include, but are not limited to:

1. Regular effective contact will be achieved through multiple means such as: weekly announcement, emails, synchronous office hours via online conference tool, interactive lectures with asynchronous questions and answers, asynchronous discussion in which the instructor participates, individual feedback on the written assignments using District approved LMS.

B. Information Transfer
Methods may include, but are not limited to:

1. Chat/IM
2. Collaborative projects: group blogs, wikis
3. Course announcements
4. Discussion boards
5. E-Mail
6. Instructor-provided online materials
7. Lectures (recorded/streaming)
8. Messaging via the LMS
9. Modules on the LMS
10. Personalized feedback
11. Phone/voicemail
12. Podcasts/webinars/screencasts
13. Textbooks
14. Videoconferencing/CCCConfer/Skype