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| Board Approval Date: | 07/22/2009 |
| Technical Review Approval Date: | 03/26/2009 |
| CRC Approval Date: | 04/22/2009 |
| |  | | --- | |  | | **MISSION COLLEGE** | | **Associate and Non-Associate Degree** | | **Credit Course Outline** | |  | | **SECTION ONE - Course Specific Information** | |  | | 1. **Type of Credit Course:**     X    Degree Applicable \_\_\_\_ Non Degree Applicable 2. **Course Number and Title:** MATH 000CM - Intermediate Algebra (MAPS) 3. **General Information:** 5 **Total Units** (Based on 16-18 hours per semester for 1 lecture unit, and 48-54 hours per semester for 1 lab unit)   Number of Lecture Units: 5  Number of Student Contact Hours Per Semester: 90  Total hours of student work required outside of class per semester: 180  Number of Laboratory Units: 0  Number of Student Contact Hours Per Semester: 0  Number of Arranged Lab Units: 0  Number of Student Contact Hours Per Semester: 0  Total Hours of Student Work Required Per Semester: 270  Other Contact Hours: 0  Distance Learning: No   1. **Size of Class:** Optimal Class Size based on instructional methodology described: 25 2. **Grade Type:** Pass/No Pass Option 3. **Repeatability:** This course may be taken a total of No Repeats time(s). 4. **Recommended for Credit By Examination:** Yes 5. **Catalog Description** The students study and demonstrate knowledge of complex fractions, rational equations, quadratic equations, rational exponents and radicals, complex numbers, functions and relations, exponential and logarithmic functions, conic sections, linear systems and inequalities, sequences and series, and applied problems. MATH 000CM is the second course in the MAPS Algebra sequence that will prepare students to meet the math requirement for the associate degree. The course is designed for the student who has had difficulty in mathematics. Extended classroom hours allow students to participate in various conceptual activities to build a stronger foundation in the fundamental concepts. Special attention is paid to presenting the material in various modalities to meet the needs of the students. 6. **Description for the Schedule of Classes** The MAPS program offers students a team approach to succeed in elementary and intermediate algebra. This program is designed for students who have had difficulty in their math course in the past and is the second course in the MAPS sequence. The students study fundamental laws of exponents and radicals, quadratic equations, graphical representations, complex numbers, functions and inverses, logarithmic and exponential functions, conic sections, sequences and series, linear systems and inequalities, and applied problems. Concurrent enrollment in MATH 000CMX is mandatory. 7. **Content Review** List any prerequisites, corequisites, and advisories here. **Advisory** Eligibility for ENGL 001A and READ 053  **Prerequisite**  MATH 903M or  MATH 903 or successful placement into the course based on the Mission College Mathematics Placement Exam and an interview with the MAPS counselor.  **Corequisite**  MATH 000CMX 8. Instructional Methodology:  |  | | --- | | Audio/Visual | | Collaborative Learning | | Demonstrations | | Guest Speakers | | Hands-on Activities/Exercises | | Peer Critique/Evaluation | | Small Group Discussion | | Web-based Activities/Exercises | | Lecture | | Guided Practice | | | **SECTION TWO - Course Content** | |  | | 1. **Course Content and Scope**    1. **Student Course Objectives** Upon completion of the course the student should be able to:       1. Solve rational equations, proportions, variation, and uniform motion problems.       2. Simplify expressions with rational exponents.       3. Solve systems of linear equations by graphing, substitution, addition method, using matrices and determinants.       4. Solve systems of linear inequalities.       5. Simplify, add, subtract, multiply, and divide complex numbers.       6. Simplify and perform operations with radical expressions.       7. Solve radical equations.       8. Solve quadratic equations by factoring, completing the square, and by using the quadratic formula.       9. Solve a nonlinear inequality.       10. Distinguish between function and non-function relations and evaluate functions expressing functional notation.       11. Find the minimum or maximum of a quadratic function.       12. Find the composition of two functions, and the inverse of a function.       13. Graph conic sections.       14. Apply properties of logarithms and exponents to the simplification of expressions and the solution of equations.       15. Identify and evaluate terms and sums of arithmetic and geometric progressions and series.       16. Solve application problems.       17. Add, subtract, multiply and divide radical expressions.    2. **Outline of Topics to be Addressed**   1. Operations with and applications of rational expressions including complex fractions  2. Rational equations, variation and applications  3. Rational exponents  4. Operations with radical expressions  5. Definition and operations with complex numbers  6. Methods of solution of quadratic equations  7. Quadratic inequalities  8. Graphing equations and inequalities in two variables  9. Solving systems of equations in two and three variables  10. Relations and functions including functional notation  11. Properties of exponential functions and equations  12. Properties of logarithmic functions and equations  13. Equations and graphs of conic sections  14. Introduction to sequences and series and the binomial theorem  Additional topics may include:  15. Scientific notation  16. Linear Inequalities   * 1. **Cultural Pluralism/Diversity**   Students will study and discuss the historical and current development and use of algebra throughout the world and solve culturally diverse applications.   1. **Student Preparation and Evaluation**    1. **Textbooks and Readings**       1. **Textbooks**   Martin-Gay, Elayn . Beginning and Intermediate Algebra. 4th ed. Pearson Education, 2009.   * + 1. **Manuals**     2. **Periodicals**     3. **Other**   1. **Writing/Skill Building** Students will use the concepts and technical skills learned in the class to analyze and solve practical problems in intermediate algebra from the course objective areas, for example:  A mining company has determined that the cost (C) in dollars per ton of mining a mineral is given by the equation C(x)=0.2x2-2x+12, where x is the number of tons of mineral that are mined. Find the number of tons of the mineral that should be mined to minimize the cost. What is the minimum cost?   2. **Outside Assignments** Students will read material from the textbook and other sources and will solve assigned problems, for example:  A mining company has determined that the cost (C) in dollars per ton of mining a mineral is given by the equation C(x)=0.2x2-2x+12, where x is the number of tons of mineral that are mined. Find the number of tons of the mineral that should be mined to minimize the cost. What is the minimum cost?   3. **Critical Thinking Assignments** MATH 000CM provides assignments that will focus on the understanding of fundamental concepts of the course and will have specific assignments designed to involve students in cooperative problem solving sessions, for example:  Joe can landscape a yard by himself in 20 hours and Teri can landscape the same yard in 30 hours. How long would it take them to landscape the yard together?   4. **Student Evaluation** Grades will include the following factors: 1. Participation in class activities, such as quizzes. 2. Assigned homework problems. 3. At least two tests and a final examination. These tests will include problems requiring written solutions involving intermediate steps and analysis. | | **SECTION THREE - Course Support** | |  | | 1. **Rationale for Course/Needs Assessment** This is an existing course that is a fundamental part of basic mathematics education. This course is necessary for students who do not have the math background to continue onto higher mathematics. The skills taught in this class are also used in courses offered by other disciplines. This course will serve the needs of those students who have had difficulty grasping the concepts due to the pace and lack of developmental time for concept building necessary to succeed in MATH 000C. The additional graduation requirement for the Associate degree, as recommended by the California State Academic Senate, requires the satisfactory completion of MATH 000C. This course is the second part of a sequence of two courses (MATH 903M and MATH 000CM) which provide students a pathway to the completion of the requirement. 2. **Discipline Area** (List all acceptable disciplines from state discipline list) Mathematics 3. **Resources Needed or Anticipated** The math lab is an important resource for this course. 4. **Plan for Evaluation of Course** **In addition to Program Review, this course will be evaluated by:**   This course will be evaluated by student questionnaires given at the end of the course, the instructor's written comments, and scheduled observations by the Department Chair. Student enrollment and completion will also be tracked on an ongoing basis and during Program Review. | | **SECTION FOUR - Transferability and Classification** | |  | | 1. **Request for Transferability** (Note: Applicable to Associate Degree Level courses only.)    * **California State University (Baccalaureate level):** No    * **University of California (To be submitted to U.C.):** No 2. **Classification of Course for Major and/or General Education** (Note: Necessary for Associate Degree courses only.)    * **Are you requesting that this course be added to the requirements for a major?** No    * **Are you requesting that this course satisfy a General Education requirement?** No | | Curriculum Approval Date: 04/22/2009 | | CID: 2701 | |  |