Core Curriculum Course Submission
Criteria: Mathematics

1. General Information			
a. Originating Person	**b. Contact Person's E-mail**	**c. Contact Phone**	**d. Date**
Melissa Hardeman	mahardeman@ualr.edu	((501)569-8100	03/20/2014
e. College/School	**f. Department/Program**		
College of Arts, Letters, & Sciences	Mathematics & Statistics		

☐x **Submission Statement**
By submitting this form, we acknowledge our understanding that the Core Council has the authority to review approved courses to ensure they continue to meet the established goals and outcomes of that category of the core; that the Council has authority to develop a core assessment program; and that the Council will be developing review and assessment policies by the end of 2014. Further, we agree that if this course is approved, we will participate in the university-wide assessment of the core.

☐x **Chair and Dean Awareness**
Your department chairperson and college dean must be made aware of your submission for core. By submitting this form, you are acknowledging that this has occurred.

2. Course Information	
a. Course ID	**b. Current Title**
MATH 1302	College Algebra

c. Catalog Description

Prerequisite: A grade of C or greater in Math 0301 – Intermediate Algebra, a grade of AA, BA or CA in Math 0321 Pre-Core Mathematics, an equivalent transfer course, or an ACT Mathematics score of 21, or SAT Mathematics score greater than or equal to 500. Study of functions, including but not limited to, absolute value, quadratic, polynomial, rational, logarithmic, and exponential; systems of equations; and matrices. Three hours lecture. Three credit hours. (ACTS Course Number MATH 1103)

d. How will your department ensure a level of consistency among sections of this course? Who will be responsible for this?

All sections of College Algebra use a mandatory online homework/quiz delivery system.
The Core Assessment Coordinator creates the online materials that all instructors use for their classes; therefore, all students are working on the same homework and quiz assignments throughout the semester. The same textbook is used for all sections of College Algebra and there is a common syllabus. All College Algebra students take a common final exam on the same day at the same time. This final exam is created by a group of instructors from the Department of Mathematics and Statistics. All students are given the same final exam review/practice materials. For all sections of College Algebra, the final exam must count for at least 20% of a student's final grade in the course.
At the end of the semester and after finals are over, teachers report their percentage of students who made a C or better in the course AND ALSO scored at least 70% on the final exam to the Assessment Coordinator. The coordinator keeps the records and reviews them periodically to see if any changes to the course are warranted.
All teaching assistants, as well as current and new faculty members teaching College Algebra, must attend a mandatory orientation meeting with the coordinator before the start of the semester. In this meeting, these GA's learn how to set up their particular online course, modify the course to fit their needs and are given a copy of the common syllabus that they must adapt to their particular course. The Assessment Coordinator meets with the GA's throughout the semester, handling any questions or concerns they may have regarding their teaching assignment. Each GA is assigned a mentor (full time instructor) to work with the semester before their teaching appointment, as well as during their teaching appointment.
The Assessment Coordinator communicates with the Graduate Coordinator regarding the performance of these GA's. GA's performance evaluation and course evaluations are reviewed by the Graduate Coordinator.
The Core Assessment Coordinator is responsible for ensuring this level of consistency among all sections of College Algebra.

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
Knowledge 1 – Concepts, Methodologies, Findings, and Applications of Mathematics and the Social and Natural Sciences, Engineering, and Technology.	1. understand mathematical relationships among quantities;	**Learning Objectives 1.1** Upon completion of this course..... Students will be able to define and identify a function, and classify if a relationship represents a function or not based on a graph, a set of ordered pairs, a mapping or an equation. Students will be able to analyze the relationships between the graphs of many different functions with respect to their symmetry, translations, asymptotes, domain, range, intervals of increase/ decrease/constant, x and y intercepts.	**Assignments 1.1** Class discussions, homework, quizzes, and exam.	**Explanation 1.1** The learning objectives will be accomplished via in-class problem solving and discussion (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.
	2. understand fundamental mathematical/algebraic operations;	**Learning Objectives 1.2** Upon completion of this course..... Students will be able to find and interpret function values obtained for any defined function such as piece-wise defined functions, quadratic functions, linear functions, cubic functions, logarithmic functions, exponential functions, rational functions, polynomial functions. Students will be able to apply algebraic operations such as addition/subtraction, multiplication/division, long division and synthetic division, and composition on different sets of	**Assignments 1.2** Class discussions, homework, quizzes, and exams	**Explanation 1.2** The learning objectives will be accomplished via in-class problem solving and discussion (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.

		functions including quadratic functions, linear functions, cubic functions, logarithmic functions, exponential functions, rational functions, polynomial functions. Students will be able to apply algebraic operations to the concept of a matrix in order to determine sums, differences, products, inverses and determinants.		
Educational Goals	**Learning Outcomes students will...**	**Learning Objectives: At the end of the course students will be able to...**	**Assignments**	**Explanation**
Skills 1 – Communication	1. use basic mathematical formulas and terminology;	**Learning Objectives 1.1** Upon completion of this course..... Students will be able solve problems involving the usage of the formulas for compound interest, difference quotient, average rate of change, slope, equations of lines, change of base. Students will be able to represent exponential functions in logarithm form and vise versa. Student will be able to apply the properties of logarithms, including the change of base formula, to solve exponential and logarithmic equations. Students will be able to use the definition and properties of quadratics to graph a quadratic function. Students will be able to determine if	**Assignments 1.1** Class discussions, homework, quizzes, and exams.	**Explanation 1.1** The learning objectives will be accomplished via in-class problem solving and discussion (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.

		a function has an inverse and find the inverse function (if it exists). Students will use the theorems associated with polynomial functions to find real and complex zeros.		
	2. explain orally and in writing the mathematical "reasonableness" of a statement that is presented as being implied by data	**Learning Objectives 1.2** Upon completion of this course..... Students will be able to explain why an obtained answer may not make sense in a given application problem. Students will use estimation skills to determine the reasonableness of an answer obtained when solving equations (logarithm and exponential) and application problems.	**Assignments 1.2** Class discussions, homework, quizzes, and exams	**Explanation 1.2** The learning objectives will be accomplished via in-class problem solving and discussion (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.
	3. communicate about math precisely orally and in writing	**Learning Objectives 1.3** Upon completion of this course.... Students will be able to communicate, orally and in writing, their solutions to problems or their procedures for solving problems.	**Assignments 1.3** Class discussions, homework, quizzes, and exams.	**Explanation 1.3** The learning objectives will be accomplished via in-class problem solving and discussion (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
Skills 2 – Critical Thinking, Quantitative Reasoning, and Solving Problems Individually and Collaboratively	1. interpret, analyze, and identify appropriate applied math models, data and graphs;	**Learning Objectives 2.1** Upon completion of this course..... Students will be able to analyze polynomial functions using the following theorems: Remainder, Factor, Rational Zeros and The Fundamental Theorem of Algebra. Students will be able to explain the characteristics of rational functions and their asymptotic behavior. Students will be able to interpret and analyze graphs and mathematical models based on important characteristics such as shape, parent function, transformations, symmetry, asymptotes, initial conditions. Students will be able to explain the end behavior of a polynomial function. Students will be able to model exponential growth and exponential decay.	**Assignments 2.1** Class discussions, homework, quizzes, and exams	**Explanation 2.1** The learning objectives will be accomplished via in-class problem solving and discussion (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.

	2. develop abstract and quantitative reasoning ability;	**Learning Objectives 2.2** Upon completion of this course.... Students will be able to make predictions regarding any general function based on their understanding of functions and the operations on functions. Students will be able to estimate and check answers to the mathematical problems encountered in the course in order to determine reasonableness, identify alternatives, and select optimal results. Students will understand how real-world problems and social issues can be analyzed using the power and rigor of mathematical models.	**Assignments 2.2** Class discussions, homework, quizzes, and exams	**Explanation 2.2** The learning objectives will be accomplished via in-class problem solving and discussion (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.
Educational Goals	**Learning Outcomes students will...**	**Learning Objectives: At the end of the course students will be able to...**	**Assignments**	**Explanation**
Skills 3 – Information Technology	1. make appropriate decisions regarding the use of technology when solving problems, recognizing both the insight to be gained and the limitation;	**Learning Objectives 3.1** Upon completion of this course.... Students will be able to effectively use a graphing calculator to work with matrices and to analyze the graphs of functions and systems of equations. Students will be able to determine when the use of the technology is appropriate and when it is not.	**Assignments 3.1** Class discussions, homework, quizzes, and exams	**Explanation 3.1** The learning objectives will be accomplished via in-class problem solving where instructors share their strategies and insights on proper use of the technology (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.

	2. use information resources like the internet reflectively for inquiry, exploration, and communication;	**Learning Objectives 1.2** Upon completion of this course.... Students will be able to use the internet to complete required online homework and quizzes, to communicate via email, and as a resource for supplemental explanations.	**Assignments 1.2** Online homework and quizzes	**Explanation 1.2** This learning objective will be accomplished via the internet. Students are encouraged to seek alternate explanations via the internet. Instructors may communicate with students via email at any time during the semester.
Educational Goals	**Learning Outcomes students will...**	**Learning Objectives: At the end of the course students will be able to...**	**Assignments**	**Explanation**
Values 1 – Personal Responsibility and Ethical Behavior	1. take responsibility for completing assignments in an honest and ethical manner, working on their own when required and acknowledging resources when used;	**Learning Objectives 1.1** Upon completion of this course.... Students will understand the importance of following the UALR policies on academic dishonesty.	**Assignments 1.1** Proctored exams	**Explanation 1.1** Throughout the semester, students are reminded of the importance of following the UALR, departmental and course (stated on the syllabus) policies of academic dishonesty to accomplish this objective.
	2. understand the duty to be precise and accurate with data;	**Learning Objectives 1.2** Upon completion of this course.... Students will understand that precision and accuracy are critical components of interpreting data and solving problems correctly, and will be precise and accurate when communicating to others the conclusions of their results.	**Assignments 1.2** Class discussions, homework, quizzes, and exams	**Explanation 1.2** The learning objectives will be accomplished via in-class problem solving where instructors share their strategies and insights on proper use of the technology (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.

Educational Goals	Learning Outcomes students will...	Learning Objectives: At the end of the course students will be able to...	Assignments	Explanation
Values 3 – Global and Cultural Understanding	1. analyze "real world" implications and develop mathematical models that aid in the understanding of current global issues.	**Learning Objectives 2.1** Upon completion of this course.... Students will understand how real-world problems and social issues can be analyzed using the power and rigor of mathematical models. Students will recognize that many mathematical models will only work under a given set of initial conditions.	**Assignments 2.1** Class discussions, homework, quizzes, and exams	**Explanation 2.1** The learning objectives will be accomplished via in-class problem solving and discussion (online Q&A discussion boards) and will be assessed via online homework assignments, tests, quizzes and the final exam.

Additional Comments:

Belinda Blevins-Knabe — Approved by Core Curriculum Committee

4-14-14 — Date

Approved by Provost

4/16/2014 — Date

Approved by Chancellor

4-23-14 — Date