Course Title: Intermediate Algebra
Course Prefix and Number: MAT 1033
Name of Faculty Sponsor: Rick Austin
Email: austin@usf.edu

APPROVALS
List appropriate Department Chair, Committee Chair, Faculty Council Chair and Associate Dean
Approving:
Dr. Stephen Thornton
Department Chair

Dr. Rick Austin
Name of Committee Chair

Dr. Bill Young
College Council Chair

Michael Stewart, Ph.D.
Name of Associate Dean

CONCURRENCE
List other units and department of the University that have been consulted, comments and supporting remarks:

UNIT

Name/Title

Signature

Date

UNIT

Name/Title

Signature

Date

UNIT

Name/Title

Signature

Date

UNIT

Name/Title

Signature

Date

COUNCIL/DEAN APPROVALS
Recommndation of Undergraduate Council: Approved: ______ Disapproved: ______
Signature of Undergraduate Council Chair: __________________________ Date: ____________
Action by the Undergraduate Studies Dean: Approved: ______ Disapproved: ______
Signature of Dean: __________________________ Date: ____________
Effective Date (Term): __________________________
NEW UNDERGRADUATE COURSE PROPOSAL

1. DEPARTMENT AND CONTACT INFORMATION
   Department: Secondary Education
   College: Education
   Budget account number: 172400 Secondary Education
   Faculty Contact Name: Rick Austin
   Phone:
   E-mail: austin@usf.edu

2. COURSE INFORMATION
   Prefix: MAT
   Number: 1033
   Full Title: Intermediate Algebra
   The course title is variable? □ Yes □ No
   Is a permit required for registration? □ Yes □ No
   Are the credit hours variable? □ Yes □ No
   Credit hours (list max if variable): 3
   Section Type: Class Lecture (Primarily)
   Grading option: Regular
   Total Clock Hours: 45
   Abbreviated course title: (not to exceed 30 characters)
   Int. Algebra

Prerequisites

MAT 0024 with a grade of "C" or better or appropriate score on the Scholastic Aptitude Test, Mathematics (SATM)

Corequisites

Co-Prerequisites
Course Description (not to exceed 255 characters including spaces)

This course provides students with opportunity to develop algebraic knowledge needed for further study in several fields such as engineering, business, sciences, computer technology, and mathematics.

Please indicate in the description if the course:
* is restricted to majors or nonmajors
* is repeatable for credit and, if so, how many total credits

3. JUSTIFICATION:
(This section is critical since the Council members will make their decision based on the information provided here. The information should be in the following outline form.)

a. Indicate how this course will strengthen the Undergraduate Program. Is this course necessary for accreditation or certification?

This course serves to remediate those students who have not developed a strong mathematics background in high school. The course is important in that it will help prepare those students for successful, further mathematics study at the university level.
b. What specific area of knowledge is covered by this course which is not covered by courses currently listed?

This course covers at a more foundational level those topics needed to succeed in College Algebra and classes at that level and above.

c. What is the need or demand for this course? (Indicate if this course is part of a required sequence in the major.) What other programs would this course service?

The need for this course has been determined to be 5 sections of 30 students each in the fall semester and 2 sections of 30 students in the spring semester each academic year. This course was offered on the USF campus by HCC in the past, however those arrangements are growing to a close by Fall 2010.
d. Has this course been offered as Selected Topics/Experimental Topics course? If yes, what was the enrollment?

This course was offered in the past by HCC on the USF campus. The numbers of 5 sections in the fall and 2 sections in the spring were developed from the past HCC enrollment data.

e. How frequently will the course be offered? What is the anticipated enrollment?

5 sections of 30 students each in the fall semester and 2 sections of 30 students in the spring semester each academic year.

f. Do you plan to drop a course if this course is added? If so, what will be the effect on the program and on the students? (Please forward the nonsubstantive course change form regarding the course to be deleted to the Council Secretary.)

No other courses are affected by this course being created at USF.

g. What qualifications for training and/or experience are necessary to teach this course? (List minimum qualifications for the Instructor.)

The instructor will hold at least a masters degree and have at least 18 graduate level credits in mathematics or mathematics education.
4. OTHER COURSE INFORMATION – Required for submission to the Statewide Course Numbering System

a. Course Objectives

Performance objectives by content focus:

Factoring:
• Students will be able to factor quadratic expressions.
• Students will be able to factor sums and differences of cubes.
• Students will be able to factor polynomials having common factors.

Algebraic Fractions and Rational Expressions:
• Students will be able to determine values for which an algebraic fraction is undefined.
• Students will be able to perform operations and express results in simplest form.
• Students will be able to solve rational equations.
• Students will be able to solve problems involving variation.

Radicals and Rational Exponents:
• Students will be able to write expressions in simplest radical or rational exponent form.
• Students will be able to perform operations involving radicals and rational exponents.
• Students will be able to rationalize denominators.
• Students will be able to solve rational equations.

Complex Numbers:
• Students will be able to define complex numbers.
• Students will be able to perform operations involving complex numbers.

Quadratic Equations:
• Students will be able to solve by factoring, taking roots, completing the square, quadratic formula.
• Students will be able to use the discriminant to determine the nature of the roots.

Linear Equations and Inequalities in two variables:
• Students will be able to graph the solution set.
• Students will be able to write equations given various criteria.
• Students will be able to solve systems of inequalities graphically.

Introduction to Functions:
• Students will be able to define a function.
• Students will be able to write functions numerically, symbolically, and graphically.

Absolute Value Equations and Inequalities in one variable
• Students will be able to solve and write solutions graphically
• Students will be able to solve and write solutions using interval notation.

Applications:
• Students will be able to solve application problems involving all of the types already listed above.
b. Student Learning Outcomes

- Students will be able to factor quadratic expressions.
- Students will be able to factor sums and differences of cubes.
- Students will be able to factor polynomials having common factors.
- Students will be able to determine values for which an algebraic fraction is undefined.
- Students will be able to perform operations and express results in simplest form.
- Students will be able to solve rational equations.
- Students will be able to solve problems involving variation.
- Students will be able to write expressions in simplest radical or rational exponent form.
- Students will be able to perform operations involving radicals and rational exponents.
- Students will be able to rationalize denominators.
- Students will be able to solve rational equations.
- Students will be able to define complex numbers.
- Students will be able to perform operations involving complex numbers.
- Students will be able to solve by factoring, taking roots, completing the square, quadratic formula.
- Students will be able to use the discriminant to determine the nature of the roots.
- Students will be able to graph the solution set.
- Students will be able to write equations given various criteria.
- Students will be able to solve systems of inequalities graphically.
- Students will be able to define a function.
- Students will be able to write functions numerically, symbolically, and graphically.
- Students will be able to solve and write solutions graphically.
- Students will be able to solve and write solutions using interval notation.
- Students will be able to solve application problems involving all of the types already listed above.
c. Major Course Topics

Factoring:
Introduction to Functions:
Absolute Value Equations and Inequalities in one variable
Algebraic Fractions and Rational Expressions:
Radicals and Rational Exponents:
Complex Numbers:
Quadratic Equations:
Linear Equations and Inequalities in two variables:
Applications of algebra in problem solving:
d. Course Textbooks

5. Course Syllabus - please attach the syllabus to this form.
UNIVERSITY OF SOUTH FLORIDA  
COLLEGE OF EDUCATION  
DEPARTMENTAL COURSE SYLLABUS  

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The College of Education CAREs  
The College of Education is dedicated to the ideals of Collaboration, Academic Excellence, Research, and Ethics/Diversity. These are key tenets in the Conceptual Framework of the College of Education. Competence in these ideals will provide candidates in educator preparation programs with skills, knowledge, and dispositions to be successful in the schools of today and tomorrow. For more information on the Conceptual Framework, visit: www.coedu.usf.edu/main/qualityassurance/ncate_visit_info_materials.html

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1. **Course Prefix and Number:** MAT 1033  
2. **Course Title:** Intermediate Algebra  
3. **Regular Instructor(s):** PhD. Students in Mathematics Education Program or instructors who have a masters degree and 18 graduate credits in mathematics / mathematics education.  
4. **Course Prerequisites:** MAT 0024 with a grade of “C” or better or appropriate score on the Scholastic Aptitude Test, Mathematics (SATM)  
5. **Course Description:** This course provides students with opportunity to develop algebraic knowledge needed for further study in several fields such as engineering, business, sciences, computer technology, and mathematics.  
6. **Course Objectives:**  
   Factoring:  
   - Students will be able to factor quadratic expressions.  
   - Students will be able to factor sums and differences of cubes.  
   - Students will be able to factor polynomials having common factors.  

   Algebraic Fractions and Rational Expressions:  
   - Students will be able to determine values for which an algebraic fraction is undefined.  
   - Students will be able to perform operations and express results in simplest form.  
   - Students will be able to solve rational equations.  
   - Students will be able to solve problems involving variation.  

   Radicals and Rational Exponents:  
   - Students will be able to write expressions in simplest radical or rational exponent form.  
   - Students will be able to perform operations involving radicals and rational exponents.  
   - Students will be able to rationalize denominators.  
   - Students will be able to solve rational equations.  

   Complex Numbers:  
   - Students will be able to define complex numbers.  
   - Students will be able to perform operations involving complex numbers.  

   Quadratic Equations:  
   - Students will be able to solve by factoring, taking roots, completing the square, quadratic formula.  
   - Students will be able to use the discriminant to determine the nature of the roots.
Linear Equations and Inequalities in two variables:
• Students will be able to graph the solution set.
• Students will be able to write equations given various criteria.
• Students will be able to solve systems of inequalities graphically.

Introduction to Functions:
• Students will be able to define a function.
• Students will be able to write functions numerically, symbolically, and graphically.

Absolute Value Equations and Inequalities in one variable
• Students will be able to solve and write solutions graphically
• Students will be able to solve and write solutions using interval notation.

Applications:
• Students will be able to solve application problems involving all of the types already listed above.

7. Course Content:
Topics include sets, relations, functions, polynomial operations, factoring, absolute value, algebraic fractions, equations (linear, quadratic, radical), systems of equations, inequalities, exponents, radicals, graphs, complex numbers. Applications involve logarithmic, exponential, inverse, composite, modeling applied problems and curve fitting techniques.

8. Criteria for Evaluation of Student Performance:
Students are evaluated on the basis of:
   Homework and projects               10%
   Tests covering assigned work         70%
   A Cumulative Final Examination       20%

At least 5 tests will be administered in addition to the final exam.

9. Proposed Grading Scale:
   Grades will be based on the total number of points earned throughout the semester

   90% - 100%  – A
   80% – 89.9% – B
   70% – 79.9% – C
   60% – 69.9% – D
   Below 60%   – F

10. Textbook:
A current text will be selected. The two following are examples of possible texts to be considered.
Bello, Ignacio and Fran Hoph. Intermediate Algebra, 3rd Ed.

Notes of particular Interest:

11(a) ADA Statement: Students with disabilities are responsible for registering with the Office of Student Disabilities Services in order to receive special accommodations and services. Please notify the instructor during the first week of classes if a
reasonable accommodation for a disability is needed for this course. A letter from the USF Disability Services Office must accompany this request.

11(b). **USF Policy on Religious Observances:**
*Students who anticipate the necessity of being absent from class due to the observation of a major religious observance must provide notice of the date(s) to the instructor, in writing, by the second class meeting.*

11(c). **A reminder:**
*In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to: Blackboard, Elluminate, Skype, and email messaging and/or an alternate schedule. It’s the responsibility of the student to monitor Blackboard site for each class for course specific communication, and the main USF, College, and department websites, emails, and MoBull messages for important general information.*