College of Education Undergraduate New Course Proposal

Signature Page

Course Title: Intermediate Algebra

Course Prefix and Number: MAT 1033

Name of Faculty Sponsor: Rick Austin Telephone: 

Email: austin@usf.edu

APPROVALS
List appropriate Department Chair, Committee Chair, Faculty Council Chair and Associate Dean Approving:

Dr. Stephen Thornton
Department Chair
SIGNATURE __________ DATE 1/29/10

Dr. Rick Austin
Name of Committee Chair
SIGNATURE __________ DATE

Dr. Bill Young
College Council Chair
SIGNATURE __________ DATE

Michael Stewart, Ph.D.
Name of Associate Dean
SIGNATURE __________ DATE

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
Recommendation 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: 1033L
Full Title: Intermediate Algebra (with Lab)
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): 4
Section Type: Class Lecture (Primarily)
Grading option: Regular
Total Clock Hours: 60
Abbreviated course title: (not to exceed 30 characters)
Int. Algebra w/lab

Prerequisites

MAT 0024 with a grade of "C" or better or appropriate score on the Scholastic Aptitude Test, Mathematics (SATM). Note: students with SATM scores below a cut off score will be assigned into this lab enriched course rather than the "regular" course.

Corequisites

Co-Prerequisites
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?

2 sections of 20 students each in the fall semester and 1 section of 20 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.
1. **Course Prefix and Number:** MAT 1033L

2. **Course Title:** Intermediate Algebra (with lab)

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). Note: students with SATM scores below a cut off score will be assigned into this lab enriched course rather than the “regular” course.

5. **Course Description:** This course provides students with opportunity to develop algebraic knowledge needed for further study in many 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.

Students in this lab enriched version of the course will spend at least 1 hour per week in the “My Math Lab”, working through appropriate exercises to reinforce the content being covered.

8. Criteria for Evaluation of Student Performance:
Students are evaluated on the basis of:
- Homework, projects, and labs 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 Hopf. 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.