

## Add Undergraduate Course

### Course Attributes

Subject Abbreviation: MATH-Mathematical Sciences  
 Course Number: 3140  
 Effective Term: Fall 2019  
 College: Science  
 Department: Mathematical Sciences

Catalog Title: Foundations of Mathematics for Middle Level Teachers  
 Transcript Title: Found Math for ML Teachers  
 Cross-reference(s):  
 Grade Mode: Standard Letter  
☐ Additional Fee?  
 Justification

### Form

User ID: dbj Name: Debra Jackson  
 Date: 01/29/2018 Number: 35549

### Hours

Fixed Credit Course  
 Credit Hrs Contact Hrs

3 3

Variable Credit Course  
 Credit Hrs Contact Hrs  
 Min Max Min Max

### Rationale for Add Course

- ☐ Strengthen Program Requirement(s)
- ☐ Alignment of Student Learning Outcomes
- ☐ Alternative Delivery of Content
- ☐ Improve Time to Degree
- ☐ Evolution of the Discipline
- ☐ Changing Prerequisites
- ☐ Address DWF Rates
- ☐ General Education Modifications
- ☒ Other (Please specify.)

This course supports the proposed BS degree in Middle Level Education math/science emphasis area.

### Schedule Types

- ☐ Field Course
- ☐ Independent Study
- ☐ Internship
- ☐ Lab No Fee
- ☐ Lab With Fee
- ☒ Lecture
- ☐ Other
- ☐ Seminar
- ☐ Studio
- ☐ Tutorial

### Projected Enrollment

Year 1: 20  
 Year 2: 20  
 Year 3: 20  
 Year 4: 20

### Evaluation

Undergraduate

A 90 - 100  
 B 80 - 89  
 C 70 - 79  
 D 60 - 69  
 F < 60

Course assessments include:

- Problem Sets (40%)
- Quizzes (10%)
- Midterm (20%)
- Final Exam (20%)
- Professionalism (10%)

### Catalog Description

Study of number systems, with emphasis on whole number, rational number, integer, and real number operations and properties, and their links to algebra. Includes number theory, prime and composite numbers, decimals and percents, divisibility, common factors, multiples, and applications. Develops flexibility

with multiple representations of numbers estimation, mental computations.

### Required course for students in

This course will be required for students in the BS in Middle Level Education math/science emphasis area.

### Statement of need and justification based on assessment of student learning outcomes

The course is a foundation for students who plan will be certified to teach mathematics in middle level grades. No existing MATH course is suitable for this audience.

### Textbook(s)

Long, C. T., DeTemple, D. W., & Millman, R. S. (2014). Mathematical reasoning for elementary school teachers. Boston, MA: Pearson Education, Inc.

### Learning Objectives

At the end of this course, students will be able to:

- Use manipulatives, models, and other visual references to perform operations on real numbers.
- Perform various standard and non-standard algorithms for operations on real numbers.
- Perform mental arithmetic and use estimation.
- Demonstrate an understanding of the properties of real numbers.
- Demonstrate mathematical concepts and solve problems related to factors, multiples, primes and composites.
- Demonstrate mathematical concepts and solve problems related to ratio, proportion and percent.

### Topical Outline

1. **Developing Meaning for the Operations**
  - a. Addition and Subtraction Problem Structures: Change, Part-Part-Whole, and Compare Problems (2 hours)
  - b. Properties of Addition and Subtraction (2 hours)
  - c. Multiplication and Division Problem Structure: Equal-Group, Comparison, Area and Array, and Combination Problems (3 hours)
  - d. Properties of Multiplication and Division (2 hours)
  - e. Model Based Problems (2 hours)
  - f. Strategies for Solving Contextual Problems (2 hours)
2. **Developing Whole-Number Place-Value Concepts**
  - a. Integrating Base-Ten Groupings: Counting by Ones, Words, Place-Value Notation (3 hours)
  - b. Base-Ten Models for Place Value: Groupable, Pregrouped, Nonproportional Models (3 hours)
  - c. Developing Base-Ten Concepts (2 hours)
  - d. Oral and Written Names for Numbers (2 hours)
  - e. Patterns and Relationships with Multi-digit Numbers (2 hours)
3. **Developing Strategies for Addition and Subtraction Computation**
  - a. Computational Fluency (2 hours)
  - b. Direct Modeling (2 hours)
  - c. Development of Invented Strategies (2 hours)
  - d. Standard Algorithms (2 hours)
  - e. Computational Estimation in Addition and Subtraction (2 hours)
4. **Developing Strategies for Multiplication and Division Computation**
  - a. Student-Invented Strategies for Multiplication (2 hours)
  - b. Standard Algorithms for Multiplication (2 hours)
  - c. Standard Algorithms for Division (2 hours)
  - d. Computational Estimation in Multiplication and Division (2 hours)
5. **Midterm Exam (2 hours)**

### Syllabus

Upload File: [Revised MATH 3140 Course Description 1-15-18 NB-20180129153943.docx](#)

Description: MATH 3140

*Chetyle Lox*

Chair, Department Curriculum Committee

*1/30/18*

Date

*Chetyle Lox*

Department Chair

*1/30/18*

Date

*Robert J. Kowinski*

Chair, College Curriculum Committee

*2/8/18*

Date

*Calvin L. Williams*

College Dean

*2/8/18*

Date

000003

Director, Calhoun Honors College

Date

*John D. Hilfi*

*3/2/2018*

Chair, Undergraduate Curriculum Committee

Date

Chair, Graduate Curriculum Committee

Date

*Robert S. Jones*

*5/7/2016*

Provost

Date

President

Date

## Add Undergraduate Course

### Course Attributes

**Subject Abbreviation:** MATH-Mathematical Sciences  
**Course Number:** 3130  
**Effective Term:** Fall 2019  
**College:** Science  
**Department:** Mathematical Sciences

**Catalog Title:** Algebra for Middle Level Teachers ☐ **Additional Fee?**  
**Transcript Title:** Algebra for ML Teachers Justification  
**Cross-reference(s):**  
**Grade Mode:** Standard Letter

### Form

**User ID:** dbj      **Name:** Debra Jackson  
**Date:** 01/29/2018      **Number:** 35598

### Hours

**Fixed Credit Course**  
**Credit Hrs Contact Hrs**

3      3

**Variable Credit Course**  
**Credit Hrs Contact Hrs**  
**Min Max Min Max**

### Rationale for Add Course

- ☐ Strengthen Program Requirement(s)
- ☐ Alignment of Student Learning Outcomes
- ☐ Alternative Delivery of Content
- ☐ Improve Time to Degree
- ☐ Evolution of the Discipline
- ☐ Changing Prerequisites
- ☐ Address DWF Rates
- ☐ General Education Modifications
- ☒ Other (Please specify.)

This course supports the proposed BS degree in Middle Level Education math/science emphasis area.

### Schedule Types

- ☐ Field Course
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- ☐ Lab With Fee
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- ☐ Other
- ☐ Seminar
- ☐ Studio
- ☐ Tutorial

### Projected Enrollment

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**Year 2:** 20  
**Year 3:** 20  
**Year 4:** 20

### Evaluation

Undergraduate

**A** 90 - 100  
**B** 80 - 89  
**C** 70 - 79  
**D** 60 - 69  
**F** < 60

Course assessments include:

- Problem Sets (40%)
- Quizzes (10%)
- Midterm (20%)
- Final Exam (20%)
- Professionalism (10%)

### Catalog Description

Study of elementary algebra, solution of equations and inequalities; properties and applications of parent functions and models (linear, quadratic, polynomial, exponential, absolute value, logarithmic, square root); graphical analysis and curve fitting of data; systems of equations; and history of algebra. Develops symbol sense and algebraic reasoning. Computational tools are used.

**Required course for students in**

This course is required for students in the BS in Middle Level Education math and science emphasis area.

**Statement of need and justification based on assessment of student learning outcomes**

The course is required for students who plan to be certified to teach mathematics and science in middle level grades. No existing MATH course will be suitable for this audience.

**Textbook(s)**

Lloyd, G. M., Herbel-Eisenmann, B. A., & Star, J. R. (2011). Developing Essential Understanding of Expressions, Equations, and Functions for Teaching Mathematics in Grades 6-8. Reston, VA: National Council of Teachers of Mathematics.

**Learning Objectives**

At the end of this course, students will be able to:

- Use manipulatives, models, tables, and other mathematical tools to explore patterns, make conjectures, and generalize relationships.
- Make connections between verbal, tabular, symbolic, geometric, and graphical representations of mathematical relationships.
- Develop and interpret a model that describes the relationship between relevant quantities for a given context. Justify choice of model based on key features of the parent function.
- Translate between different but equivalent forms of expressions, equations, and functions.
- Given a function in graphical, symbolic, or tabular form, describe the effect of the transformations  $kf(x)$ ,  $f(x)+k$ , and/or  $f(x+k)$  on a function  $y=f(x)$  for any real number  $k$ .
- Situate middle school algebra in context of k-12 algebra standards, modern algebra, and a history of algebra.

**Topical Outline**1. **Structure in the Number System: Connecting Number and Algebra**

- a. Number Combinations (2 hours)
- b. Place-Value Relationships (2 hours)
- c. Algorithms (2 hours)

2. **Study of Patterns and Functions**

- a. Repeating Patterns (3 hours)
- b. Growing Patterns (3 hours)
- c. Relationships in Functions (2 hours)
- d. Graphs of Functions (2 hours)
- e. Describing Functions (2 hours)

3. **Parent Functions and Models**

- a. Linear (3 hours)
- b. Quadratic (3 hours)
- c. Polynomial (2 hours)
- d. Exponential (3 hours)
- e. Absolute Value (1 hours)
- f. Logarithmic (1 hour)
- g. Square Root (1 hour)
- h. Mathematical Modeling (2 hours)
- i. Systems of Equations (2 hours)
- j. Curve Fitting (2 hours)

4. **Meaningful Use of Symbols**

- a. Equal and Inequality Signs (2 hours)
- b. The Meaning of Variables (1 hour)

5. **Algebraic Thinking Across the Curriculum** (1 hour)6. **History of Algebra** (1 hour)7. **Midterm** (2 hours)

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**Syllabus**

Upload File: Revised MATH 3130 Course Description \_1-15-18\_NB-20180129155709.docx

Description: MATH 3130

Chair, Department Curriculum Committee

Date

Department Chair

Date

Chair, College Curriculum Committee

Date

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College Dean

Date

Director, Calhoun Honors College

Date

Chair, Undergraduate Curriculum Committee

Date

Chair, Graduate Curriculum Committee

Date

Provost

Date

President

Date

*John D. Hippi*

*3/2/2018*

*Robert S. Jones*

*5/7/2018*

## Change Undergraduate Course

### Change a Course

**Subject:** MATH-Mathematical Sciences

**Number:** 3080

**Effective Term:** Fall 2019

**Title:** College Geometry

Honors Course:

☐ Add Honors Course:

**Last Term Course was taught:** 201701

#### Brief Statement of Change Based on Assessment Results:

Delete course prerequisites in order to eliminate restriction in the Middle Level Education Program. MATH 3080 is a required course for students in Middle Level Education who pursue dual certification in math and science.

### Rationale for Changing a Course

- ☐ Strengthen Program Requirement(s)
- ☐ Alignment of Student Learning Outcomes
- ☐ Alternative Delivery of Content
- ☐ Improve Time to Degree
- ☐ Evolution of the Discipline
- ☒ Changing Prerequisites
- ☐ Address DWF Rates
- ☐ General Education Modifications
- ☐ Other (Please specify.)

### ☒ Change Prerequisite(s) / Corequisite(s)

**From** MATH 1060 or MATH 1070

**To** None

### Learning Objectives

No changes.

### Topical Outline

No changes.

### Evaluation

Undergraduate

**A** 90 - 100

**B** 80 - 89

**C** 70 - 79

**D** 60 - 69

**F** < 60

No changes.

### Syllabus

Upload File: Syllabus Word Doc-20180115103558.docx

### Form

**User ID:** dbj **Name:** Debra Jackson

**Date:** 01/15/2018 **Number:** 35552

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*Chetyn Cox*

Chair, Department Curriculum Committee

Date

*1/30/18*

*Chetyn Cox*

Department Chair

Date

*1/30/18*

*Robert J. Kuricki*

Chair, College Curriculum Committee

Date

*2/8/18*

*Calvin J. Della*

College Dean

Date

*2/8/18*

Director, Calhoun Honors College

Date

*John D. Hilfi*

*3/2/2018*

Chair, Undergraduate Curriculum Committee

Date

Chair, Graduate Curriculum Committee

Date

*Robert Y. Jones*

*5/7/2018*

Provost

Date

President

Date



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Delete Undergraduate Course

Delete a Course

Subject: STAT-Statistics  
Number: 4620  
Effective Term: Fall 2018  
Title: Statistics Applied to Economic

☐ Delete Honors Course:

Last Term Course was taught: 201108

Brief Statement of Change Based on Assessment Results:

This was a service course taught in the old "Applied Economics and Statistics" department. In 2012, the stats folks from this department joined the Math. Sci. department, and the course was taken over by Economics Faculty and is taught out of the Economics department.

Rationale for Delete Course

- ☐ Strengthen Program Requirement(s)
- ☐ Alignment of Student Learning Outcomes
- ☐ Alternative Delivery of Content
- ☐ Improve Time to Degree
- ☒ Evolution of the Discipline
- ☐ Changing Prerequisites
- ☐ Address DWF Rates
- ☐ General Education Modifications
- ☐ Other (Please specify.)

Form

User ID: rebholz Name: Leo Rebholz  
Date: 11/14/2017 Number: 34831

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11/20/17

Chetgler Lbx

Chair, Department Curriculum Committee

Date

Chetgler Lbx

11/20/17

Department Chair

Date

Robert J. Kasinski

2/8/18

Chair, College Curriculum Committee

Date

Calvin J. Dillion

2/8/18

College Dean

Date

Director, Calhoun Honors College

Date

John D. Hippi

3/2/2017

Chair, Undergraduate Curriculum Committee

Date

Chair, Graduate Curriculum Committee

Date

Robert S. Jones

5/7/2018

Provost

Date

President

Date