

# Department of Mathematics

## Proposed Catalog Changes

September 8, 2015

### 1. MATH 105, Pre-Calculus with Trigonometry

**Proposed:** Delete the class

**Justification:** MATH 105 was a combined version of MATH 103 and MATH 104 that was offered in the distant past. Students would complete MATH 103 in the first half of the term and MATH 104 in the second half of the term rather than attempting to take both courses in parallel. MATH 105 has not been offered in recent years. A problem that arose with MATH 105 is that students who failed MATH 103 or 104 and then took MATH 105 would not have the previous "F" excluded from their GPA calculation. A better way to arrange this is to offer MATH 103 and MATH 104 as separate "part of term" courses. A student could take MATH 103 in the first half of the term and MATH 104 in the second half of the term (or only take MATH 104 in the second half term if that was all they needed.) Now that "part of term" courses are possible there's no reason to have a separate MATH 105 course.

### 2. MATH 254, Introduction to Applied Linear Algebra

**Proposed:** Change the description

**Justification:** Course description changed to better describe what is currently taught in the course.

Change from:

Solution of linear systems. Matrix algebra. Rank. Determinants. Eigenvalues and eigenvectors. Numerical aspects of matrix calculation. Introduction to vector spaces and linear transformations. Applications. (Same as BCS 254)

Change to:

Linear systems, matrix algebra, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, inner products and orthogonality, least squares problems.

3. **MATH 336, Introduction to partial Differential Equations**

**Proposed:** Change the prerequisites

**Justification:** Both MATH 254 and MATH 337 provide adequate background in linear algebra for the MATH 336 course.

Change from:

*Prerequisites: MATH 231, 254 and 335, each passed with grade C or better*

Change to:

*Prerequisites: Math 231, Math 335, and one of Math 254 or Math 337, each passed with a grade of C- or higher*

4. **MATH 410, Numerical Methods for Scientists and Engineers**

**Proposed:** Change the prerequisites and the description

**Justification:** Course description changed to better describe what is currently taught in the course.

Change from:

*Prerequisite: CS 113 or ES 111*

*Corequisite: MATH 335*

Floating point arithmetic, solution of linear and nonlinear systems of equations, interpolation, numerical differentiation and integration, numerical solution of ordinary differential equations.

Change to:

**MATH 410, Numerical Methods, 3 cr, 3 cl hrs**

*Prerequisite: CSE 107, CSE 113, or ES 111 Corequisite: MATH 335*

Floating point arithmetic, solution of nonlinear equations, interpolation and approximation of functions, numerical differentiation and integration, numerical solution of ordinary differential equations.

5. **MATH 430, Mathematical Modeling**

**Proposed:** Change the prerequisites

**Justification:** Both MATH 254 and MATH 337 provide adequate background in linear algebra for the MATH 430 course.

Change from:

*Prerequisites: MATH 254 and 335, MATH 382, passed with grade C or better*

Change to:

*Prerequisites: Math 335 and one of Math 254 or Math 337, each passed with a grade of C- or higher*

## 6. **MATH 454, Linear Algebra**

**Proposed:** Change the description

**Justification:** Course description changed to better describe what is currently taught in the course.

Change from:

Finite dimensional vector spaces. Linear transformations. Equivalence and similarity of matrices. Eigenvectors and eigenvalues, canonical forms.

Change to:

Vector spaces, linear transformations, linear systems, eigenvalues and eigenvectors, Jordan canonical forms, inner product spaces, least squares problems, normal, unitary, and Hermitian transformations.