

## Multiple Course Revisions

### USE FOR CATALOG YEAR CHANGES ONLY

This form is for presenting changes to Curriculum Committee; the information will still need to be entered in ECAS.  
Sending this form to Curriculum Committee for Approval means Department and Discipline approval has been received.

Date: 9/2/08

Discipline: Mathematics

Curriculum Committee Approval Date:

#### Course Revision #1

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)(see instructions)

#### ~~MATH 1011 - Pre-Calculus~~

~~(4.0 cr; Prereq: high school higher algebra, geometry; intended to prepare students for Math 1101; fall, spring, every year)~~

~~Polynomial, rational, exponential, logarithmic, and trigonometric functions; trigonometric identities and equations; polar coordinates and topics from analytic geometry; systems of equations; geometric series; binomial theorem.~~

Rationale: Course is inactivated and replaced by 1012 and 1013.

#### Course Revision #2

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)(see instructions)

#### **MATH 1021 - Survey of Calculus (M/SR)**

(4.0 cr; Prereq: **1012 or placement**; ~~high school higher algebra, geometry or 1011~~; fall, every year)

Short course for students in social sciences, biological sciences, and other areas requiring a minimal amount of calculus. Topics include basic concepts of functions, derivatives and integrals, exponential and logarithmic functions, maxima and minima, partial derivatives; applications.

Rationale: Update course prereq

#### Course Revision #3

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)(see instructions)

#### **MATH 1101 - Calculus I (M/SR)**

(5.0 cr; Prereq: **1012, 1013 or placement**; ~~high school higher algebra, geometry, trigonometry or 1011~~; fall, spring, every year)

Limits and continuity; the concepts, properties, and some techniques of differentiation, antidifferentiation, and definite integration and their connection by the Fundamental Theorem. Partial differentiation. Some applications. Students learn the basics of a computer algebra system.

Rationale: Update course prereq

#### Course Revision #4

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)(see instructions)

#### **MATH 2401 - Differential Equations (M/SR)**

(4.0 cr; Prereq-1102 or #; fall, every year)

First-order and second-order differential equations with methods of solution and applications, Laplace transforms, systems of equations, series solutions, existence and uniqueness theorems, the qualitative theory of differential equations.

Rationale: Update content of course

#### Course Revision #5

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)(see instructions)

#### **MATH 4452 - Mathematical Modeling (M/SR)**

(4.0 cr; Prereq-#; fall, spring, offered when feasible)

~~Mathematical modeling using discrete and continuous models.~~ Mathematical topics include, but are not limited to, curve fitting, statistical testing, regression analysis, differential and difference equations, and discrete and continuous dynamical systems, predator-prey models, discrete and continuous optimization models, probabilistic models, stochastic and Poisson processes, and queuing models. Application are drawn from different areas in the sciences and social sciences. ~~Topics drawn from population growth, interacting populations, biology, genetics, traffic flow, or finance.~~

Rationale: Update content of course.

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#### Course Revision #6

Give complete UMM catalog entry (deletions in strikethru font, additions underlined)(see instructions)

#### **MATH 4901 - Senior Seminar (M/SR)**

(~~1.0~~ **2.0** cr; Prereq-sr; full year course begins fall; fall every year)

This is a full-year course, required for all mathematics majors in their senior year. Students must attend year round and present one of the seminars.

*Rationale:* The amount of work students put into Math 4901 is representative of a 2cr course. To leave the number of credits in the math major unchanged, the number of elective credits required is reduced from 5cr to 4cr.