

CURRICULUM PROPOSAL FORM 2000-2001

**NON-GENERAL EDUCATION PROCESS A**

**\*DEADLINES:** Deadline dates for 2000/2001 submissions: Regular proposals: October 20, 2000 to be implemented in Fall 2001; Short-Term proposals: December 8, 2000 to be implemented in Fall, 2001; Regular proposals February 16, 2001 to be implemented in Spring, 2002; March 23, 2000 for short-term courses to be implemented in Spring 2002.

**PROPOSAL TITLE:** Minor change in catalog description and course content for Linear Algebra and Matrix Theory (See attached)

**SPONSOR(S):** Ming-Sun Li and Chris Simons

**DEPARTMENT:** Mathematics

**COLLEGE:** College of Liberal Arts and Sciences

**IF LAS CHECK ONE:**  History/Humanities  Math/Sciences  Social/Behavioral Sciences

**Check one:**  Undergraduate  Graduate

THE ATTACHED **NON-GEN-ED** PROPOSAL IS BEST DESCRIBED BY THE ITEM(S) CHECKED.

New non-gen-ed course

Short-term non-gen-ed course

Minor curricular changes (fewer than three) to:

existing non-gen-ed course

non-gen-ed degree requirements

major

minor, specialization, concentration, track, certificate program

**DEPARTMENT**  
(Signature indicates approval)

Dept. Curriculum Chair / Date Ubera Abay 5/15/01

Dept. Chairperson / Date Kenneth J. Gordon 5/15/01

**ACADEMIC DEAN**

Approved  Not Approved  Comments:

Dean's Signature/Date Gordon 5/20/01

**COLLEGE CURRICULUM COMMITTEE**

Date of open hearing (if necessary) 12-3-01 Approved  Not Approved \_\_\_\_\_  
Comments:

Signature of College Chair/Date: [Signature] 1-17-02

**UNIVERSITY CURRICULUM COMMITTEE**

Date Received/Processed \_\_\_\_\_  
Comments:

Curriculum Chair Signature [Signature] Date Announced At Senate 1/29/02

**EXECUTIVE VICE PRESIDENT/PROVOST**

Approved  Not Approved \_\_\_\_\_ If no, reasons are as follows:

Student Credit Hours \_\_\_\_\_ Faculty Load Hours \_\_\_\_\_ Equalized Credit Hours \_\_\_\_\_

Official Copy & Approval Sheet Filed (Date): \_\_\_\_\_ Executive VP/Provost Signature/Date [Signature]  
2/22/02

**REGISTRAR**

Date Approved Course Description Received \_\_\_\_\_ Hegis Taxonomy & Course Number Assigned \_\_\_\_\_

Registrar Signature/Date [Signature] 2/27/02

**NOTIFICATION FORWARD**

Senate Curriculum Committee Chairperson  Academic Dean(s) Transmittal 3/6/02  
 Department Chairpersons  Registrar \_\_\_\_\_ Sponsor(s)

1. Details:

a. Change Requested:

i. Minor change in catalog description from:

This course includes linear systems, linear dependence and independence, linear transformation theory, multi-linear forms, matrices, determinants, inner product spaces. This course may not be offered annually.

to:

Linear algebra is about linear objects such as vectors and linear transformations. It consists of the part of mathematics that is most widely used in mathematics and as well as in other fields. Topics include linear systems, matrices, determinants, vector spaces, linear independence, inner product spaces, orthogonality, linear transformations, eigenvalues and eigenvectors, and canonical forms. This course may not be offered annually.

ii. Minor change in course content:

Add the following topics: eigenvalues and eigenvectors, diagonalization and canonical forms.

b. Sponsors: Ming-Sun Li and Chris Simons

2. Rationale:

a. Graduate Linear Algebra was designed more than fifteen years ago. Nowadays the topics listed in 1/a/ii have become standard contents of an advanced course in linear algebra because of their increasing importance in applied mathematics, and other areas such as statistics, engineering, business and economics.

b. This is a first-year graduate course, required for students in the program of M.A. in Mathematics. The proposed change will have no impact on program or curricular design.

3. Results of Consultation: This is a major course required only for M.A. in Mathematics.

a. NA

b. NA

ROWAN UNIVERSITY  
Department of Mathematics

Syllabus  
1701.502 - Linear Algebra and Matrix Theory

CATALOG DESCRIPTION:

1701.502

Linear Algebra and Matrix Theory

3 S.H.

Catalog Description

Linear Algebra is about linear objects such as vectors and linear transformations. It consists of the part of mathematics that is most widely used in mathematics and as well as in other fields. Topics includes linear systems, matrices, determinants, vector spaces, linear independence, inner product spaces, orthogonality, linear transformations, eigenvalues and eigenvectors, and canonical forms. This course may not be offered annually.

Objective:

This course is intended to provide a sufficient background in linear algebra and matrix theory for students in the program of M.A. in mathematics and those in the program of M.A. in Subject Matter Teaching Mathematics.

Contents:

1. Linear Systems and Matrices
  - System of Linear Equations
  - Gaussian Elimination
  - Matrices and Operations on Matrices
  - Reduced Row Echelon Matrices
  - General Solution to a Linear System
  - Elementary Matrices and Non-singular Matrices
2. Determinants
3. 3-dimensional Space
  - Vectors in 3-dimensional Space
  - Inner product
  - Cross Product
  - Lines and Planes in 3-dimensional Spaces
4. Vector Spaces
  - Definition of a vector space
  - Linear Combination, Linear Span and Subspaces
  - Linear Dependence and Independence
  - Bases and Dimensions
  - Transition Matrices