NEW COURSE PROPOSAL

PROGRAM AREAS ______ MATH

1. Catalog Description of the Course. [Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of ___ units); time distribution (Lecture ___ hours, laboratory ___ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]

MATH 240 LINEAR ALGEBRA (3)
Three hours of lecture per week.
Prerequisite: Completion of MATH 151
Topics include: matrices, linear systems of equations, determinants, vectors in 2 and 3 dimensions, eigenvalues, the vector space \( \mathbb{R}^n \), linear transformations, introduction to general vector spaces and applications.

2. Mode of Instruction.

<table>
<thead>
<tr>
<th>Hours per Benchmark</th>
<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark Enrollment</th>
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<tbody>
<tr>
<td>Lecture</td>
<td><strong><strong>3</strong></strong></td>
<td><strong><strong>1</strong></strong></td>
<td><strong><strong>24</strong></strong></td>
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<td>Seminar</td>
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<td>Laboratory</td>
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<td>Activity</td>
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3. Justification and Learning Objectives for the Course. (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) [Use as much space as necessary]

The course is a required course for Mathematics and Computer Science majors.

Through this course, students will be able to

- Solve general linear systems
- Compute determinants
- Analyze invertibility of matrices and compute inverses
- Use vector techniques in geometric problems
- Compute eigenvalues and eigenvectors and use them in a variety of problems
- Use linear transformations in 2 or 3 dimensions
- Discuss the general concept of vector spaces, linear independence and spanning sets.
- Apply Linear Algebra to a variety of mathematical and non-mathematical disciplines.
- Express ideas of Linear Algebra in oral and written form.

This course is not designed to satisfy the University Writing or Language requirements.

4. Is this a General Education Course  YES  NO
If Yes, indicate GE category:

| A (English Language, Communication, Critical Thinking) |     |
| B (Mathematics & Sciences) |     |
| C (Fine Arts, Literature, Languages & Cultures) |     |
| D (Social Perspectives) |     |
| E (Human Psychological and Physiological Perspectives) |     |
5. **Course Content in Outline Form.**  *Be as brief as possible, but use as much space as necessary*

   Matrices  
   Linear systems of equations  
   Determinants  
   Vectors in 2 and 3 dimensions  
   Eigenvalues  
   $\mathbb{R}^n$  
   Linear transformations  
   Introduction to general vector spaces  
   Applications

6. **References.**  *Provide 3 - 5 references on which this course is based and/or support it.*


7. **List Faculty Qualified to Teach This Course.**

   All Mathematics Faculty

8. **Frequency.**
   a. Projected semesters to be offered:  Fall _X_  Spring _X_  Summer _X_

9. **New Resources Required.**
   a. Computer (data processing), audio visual, broadcasting needs, other equipment
      None
   b. Library needs
      None
   c. Facility/space needs
      None

10. **Consultation.**

    Attach consultation sheet from all program areas, Library, and others (if necessary)

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

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Proposer of Course  
Date

NEWCRSFR 9/30/02