MATH 484. ALGEBRAIC GEOMETRY AND CODING THEORY (3)
Three hours of lecture per week.
Prerequisite: MATH 333
Study of algebraic varieties over algebraically closed fields. Modern application to coding theory.

2. Mode of Instruction.

<table>
<thead>
<tr>
<th>Hours per Benchmark</th>
<th>Units</th>
<th>Hours per Unit</th>
<th>Enrollment</th>
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<tbody>
<tr>
<td>Lecture</td>
<td>3</td>
<td>1</td>
<td>24</td>
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<tr>
<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 an elective for Mathematics majors.

Through this course, students will be able to

- Discuss and apply the basic notion of algebraic variety over an algebraically closed field
- Apply elementary concepts from algebraic geometry to coding theory
- Present concepts and techniques of elementary Algebraic Geometry 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

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
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<tr>
<td>A (English Language, Communication, Critical Thinking)</td>
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<tr>
<td>B (Mathematics &amp; Sciences)</td>
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<td>C (Fine Arts, Literature, Languages &amp; Cultures)</td>
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<td>D (Social Perspectives)</td>
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<td>E (Human Psychological and Physiological Perspectives)</td>
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5. Course Content in Outline Form. [Be as brief as possible, but use as much space as necessary]
Algebraic varieties over algebraically closed fields
Function fields
Local rings
Divisors
Homology and Cohomology groups
Modern application to coding theory.

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 ______

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.

Proposer of Course ___________________________ Date _____________