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 448. SCIENTIFIC COMPUTING (3)**

Three hours of lecture in the lab per week. 
Prerequisites: MATH 350 or COMP 151 and Math 151.

Topics include: techniques of applied mathematics, solution of equations, finite differences, and wavelets.

GenEd: B3, B4 and Interdisciplinary

2. Mode of Instruction.

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<tr>
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<th>Units</th>
<th>Hours per Unit</th>
<th>Benchmark 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]

This course is required for Computer Science students according to accreditation guidelines and is an elective for Mathematics majors who are specializing in Computer Science. Can be used as a general education course.

Students will be able to:

- discuss analysis and development of numerical algorithms
- apply scientific computing methods to the solution of differential equations, nonlinear equations, as well as interpolation,
- apply numerical differentiation and methods for evaluating definite integrals
- discuss the errors involving numerical methods
- implement numerical methods on computers.

4. Is this a General Education Course  YES

If Yes, indicate GE category:

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<tbody>
<tr>
<td>A (English Language, Communication, Critical Thinking)</td>
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<tr>
<td>B (Mathematics &amp; Sciences)</td>
<td>B3 , B4</td>
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<tr>
<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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<tr>
<td>INTERDISCIPLINARY</td>
<td>X</td>
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</table>

5. Course Content in Outline Form. [Be as brief as possible, but use as much space as necessary]
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
      Access to computer labs required
   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.

    Ivona Grzegorczyk 1/8/03

    Proposer of Course Date