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 320 MATHEMATICS AND FINE ARTS (3)
Three hours of lecture in the lab per week
Prerequisites: A passing score on the Entry Level Mathematics examination, or Math 095.
The course is specially designed for students interested in fine arts, with the emphasis on understanding geometric patterns and concepts by self-explorations. The course creates a vast reservoir of art-related examples and hands-on experiences, and will give an innovative mathematical background for future artistic endeavors of students.

GE- B3

2. Mode of Instruction.

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<tr>
<th></th>
<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 an elective for Mathematics and Arts majors. It is recommended for Liberal Studies students intending to teach. Can be use as mathematics general education course by non science majors.

Through this course, students will be able to

- Recognize and appreciate the beauty of geometric nature of many artistic works
- Identify the mathematical background of patterns and compositions appearing in the arts.
- Classify and generate patterns using symmetry groups
- Design artistic creations following mathematical rules.
- Recognize and appreciate role of color, patterns and symmetry in many works of art
- Apply rules of harmony, ‘golden ratio’, proportion in their compositions
- Use modern software to create designs, analyze computer graphics.
- Use geometric constructions in 2-D and 3-D designs
- Express mathematical concepts and techniques related to Fine Arts 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
If Yes, indicate GE category:

<table>
<thead>
<tr>
<th>GE Category</th>
<th>A (English Language, Communication, Critical Thinking)</th>
<th>B (Mathematics &amp; Sciences)</th>
<th>C (Fine Arts, Literature, Languages &amp; Cultures)</th>
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5. **Course Content in Outline Form.** [Be as brief as possible, but use as much space as necessary]

- Geometric patterns and concepts
- Geometric Constructions
- Geometry of small patterns and Art-related examples
- Strip Paterns and Art-related examples
- Plane paterns and Art-related examples
- Tilings
- The Art of tessellations
- Three dimensional designs and group 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.**

- Ivona Grzegorczyk

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
      - Existing Mac Labs

   b. Library needs
      - Existing resources

   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

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