

2008 2009

## COUNTY COLLEGE OF MORRIS

### Course Information Outline

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**Course Title** Mathematics for Liberal Arts - Honors **PREFIX&NUMBER** MAT 182

**Lecture Hours** 45 **Laboratory Hours** 0 **Credit Hours** 3 **Course Fee** \_\_\_\_\_

**Department Chairperson Approval** J. R. Monaghan  **Date** 02-14-2011

**Division Dean Approval** P. J. Enright   **Date** 2-15-11

**1. Catalog Course Description**

This course is specifically designed to partially fulfill the mathematics/science requirement of liberal arts majors and to provide a mathematics elective for students in any discipline who have been admitted to the Honors Program. Topics include a history of mathematics, geometry, logic and probability. This course will be an integration of classroom lectures, selected readings, and investigations on the World Wide Web. A research paper will be required.

**2. Prerequisite(s)**

MAT 016 or MAT 060 or equivalent. Acceptance into the Honors Program.

**3. Co-requisite(s)**

None

**4. Textbooks**

Smith, The Nature of Mathematics, 10<sup>th</sup> ed. (Brooks, Cole 2004)

**5. Supplementary Books and/or Materials**

Calculator

**6. Specialized equipment, supplies, facilities, for classes limited by enrollment or restricted by accreditation and/or equipment limitations.** (Information will be used to determine differential funding category.)

None

**7. Course Content (List of Topics)**

- History of mathematics, including contributions of women and minorities. The unit will be an integration of classroom lectures, selected readings and sources on the World Wide Web. A research paper will be assigned.

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- Geometry – topics from Euclidean and non-Euclidean geometry: angles, polygons, similar triangles, right-triangle trigonometry, Euler circuits and Hamiltonian cycles, topology, fractals.
- Logic—deductive reasoning, truth tables and the conditional, operators and the laws of logic, the nature of proof, problem-solving using logic, logic circuits.
- Probability—empirical and theoretical probability, mathematical expectation, probability models, permutations and combinations, calculated probabilities..
- Presentation and discussion of research projects.

**8. Statement of Course LEARNING OUTCOMES**

- **Translate** numerals between the Hindu-Arabic System and the Egyptian, Roman, Mayan, and Chinese Systems
- **Name** significant historical contributions in the development of mathematics
- **Compute** measures of descriptive statistics
- **Compute** the areas and volumes of basic geometric shapes
- **Use** basic rules of probability to calculate theoretical and empirical probabilities

**9. Statement of Relation to Curriculum(s)**

This course is specifically designed to partially fulfill the mathematics/science requirement of liberal arts majors and to provide a mathematics elective for students in any discipline who have been admitted to the Honors Program.