

Carthage Mathematics Department
Course Summary for Math 2080 (205) Modern Geometry

1. Credits: 4
2. Semesters Offered: Fall
3. Text(s): *Modern Geometries*, Smart, 1998
4. Topics Covered:
 - a. Axiomatic systems
 - b. Finite Geometries
 - c. Geometric Transformations
 - d. Euclidean Geometry
 - e. Symmetry
 - f. Golden ratio and the Fibonacci sequence
 - g. Tessellations and plane coverings
 - h. Construction
 - i. Non-Euclidean geometry, particularly parabolic and hyperbolic geometry
5. Skills Enhanced:
 - a. Axiomatic Construction
 - b. Proof concept and exemplification
 - c. Exploration and discovery in mathematics
 - d. Computer skills:
 1. Geometer's Sketchpad
 2. Mathematica
 3. MS Word
 - e. Technical writing: Students write a teaching lesson plan unit from one area in the course.
6. Sample Syllabus:
 - a. Chapters 1,2,4,5,9
7. Miscellanea
 - a. This course is designed primarily for future elementary and secondary education math majors and minors.
8. Course Goals: By the end of the course, students should be able to do the following.
 - a. Write a multi-step geometric proof.
 - i. Assessment: Questions containing multi-step geometric proofs appear in quizzes and tests.
 - b. Construct basic geometric shapes using a straightedge and compass
 - i. Assessment: Questions containing straightedge and compass appear in quizzes and tests.
 - c. Write an individual lesson plan unit or research project from one area in the course.
 - i. Assessment: Students complete and give a lesson plan on one topic during the course.
 - d. Demonstrate sufficient knowledge of the course content.
 - i. Assessment: Quizzes and Exams. Sufficient knowledge is required to obtain a passing grade. The knowledge must be demonstrated on quizzes and exams.