Syllabus: MTH 139 Plane Analytic Geometry

Department of Mathematics and Statistics

Fall 2012, Section .002

Instructor: Dr. Sarah T. Stovall  
E-mail address: sstovall@sfasu.edu  
Office Phone: 936.468.1684  
Office Hours: MW 9-11, 1:30-3; TTh 2-3, F 9-10

Class Times & Place: 12:30-1:45 in Math 212

Required Materials
Book: Analytic Geometry 6th edition, by Douglas F. Riddle is the required textbook. Each student will need a scientific calculator to use during exams. (No graphing calculators will be allowed during exams.)

Course Description
This is a beginning course in plane analytic geometry emphasizing the correspondence between geometric curves and algebraic equations. This correspondence makes it possible to reformulate problems in geometry as equivalent problems in algebra, and vice versa. Curves studied include straight lines, circles, parabolas, ellipses, and hyperbolas. Coordinate transformations, polar coordinates, and parametric equations are also studied. The course assumes a sound background in algebra, geometry, and trigonometry.

Course Requirements
Exams: There will be three exams and a comprehensive final exam. If a student must miss an exam due to an excused absence, special arrangements should be made in advance. Student ID with photo may be required for all exams. This is a departmental policy.

Homework: Homework assignments consisting of textbook exercises will be made on a regular basis but will not be turned in for a grade. Completing the homework is important for success in the course.

Quizzes: There will be weekly quizzes, some will be in class and some may be completed outside of class on d2l (http://d2l.sfasu.edu).

Final Grade Components

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Component</th>
<th>Grading Scale</th>
<th>Tentative Test Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>Quizzes</td>
<td>90% - 100%: A</td>
<td>Exam 1: Thurs 9/20</td>
</tr>
<tr>
<td>60%</td>
<td>Tests (3 @ 20% each)</td>
<td>80% - 90%: B</td>
<td>Exam 2: Thurs 10/18</td>
</tr>
<tr>
<td>25%</td>
<td>Comprehensive Final Exam</td>
<td>70% - 80%: C</td>
<td>Exam 3: Thur 11/20</td>
</tr>
<tr>
<td>100%</td>
<td>Final Course Grade</td>
<td>60% - 70%: D</td>
<td>Final: 10:30-12:30 on Tuesday 12/11</td>
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General Policies and Information
- You earn your grade by communicating your understanding of the material through the homework and online quizzes. Clearly communicating mathematics will be essential in this course.
- I will send e-mails to the entire class during the semester. Check your titan e-mail account frequently.
- Please read the department syllabus at http://www.sfasu.edu/math/courses/syllabi/MTH139Syllabus.pdf

Testing, Grading, and Make-up Policies
- If you miss a test, have a valid excuse, and contact me prior to missing the exam, I will replace your missed test grade by your final exam grade. However, your final may only replace one other score.
- Attendance Policy: You are expected to attend class.
- Since you have a full semester to arrange any travel plans, they are not an excuse for missing the final.
Course outline:

- Introduction to plane analytic geometry: 20%
- Vectors in the plane: 5%
- Lines: 10%
- Conic sections: 25%
- Coordinate transformations 1: 15%
- Curve sketching: 15%
- Polar coordinates and parametric equations: 10%

University Policies

- **Academic Integrity (A-9.1)**: Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism. [Definition of Academic Dishonesty](http://www.sfasu.edu/policies/academic_integrity.asp)

- **Withheld Grades Semester Grades Policy (A-54)**: Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

- **Students with Disabilities**: To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilitieservices/](http://www.sfasu.edu/disabilitieservices/)

- **Acceptable Student Behavior**: Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

**Student Learning Outcomes (SLO):** At the end of MTH 139, a student who has studied and learned the material should be able to:

1. Solve problems involving lengths and distances in the plane, including midpoint and point-of-division formulas.
2. Demonstrate understanding of the notions of slope and inclination of lines, including angles between lines, parallel lines, and perpendicular lines.
3. Recognize the relationship between equations in two variables and graphs in the plane and use the equations to find pertinent information such as points of intersection, and intercepts.
4. Perform arithmetical and geometric operations involving vectors in the plane.
5. Use vectors to solve geometric and physical problems.
6. Sketch graphs and discuss relevant features of curves in the plane determined by certain equations (including lines, circles, parabolas, ellipses, hyperbolas, polynomial functions, rational functions, and features such as slope, inclination, center, radius, vertices, foci, axes, eccentricity, intercepts, asymptotes).
7. Determine equations of curves when given information that determines the curves.
8. Perform translations and rotations of the coordinate axes to eliminate certain terms from equations.
9. Model real world situations with equations of conics.
10. Use the polar coordinate system, relate it to the rectangular coordinate system, and graph equations using polar coordinates.
11. Sketch graphs in the plane determined by parametric equations by direct sketching as well as elimination of the parameter to obtain a rectangular equation.

There are no specific program learning outcomes for this major addressed in this course. It is a general education core curriculum course and/or a service course.

**Exemplary Educational Objectives (EEO):**

1. To apply arithmetic, algebraic, geometric, higher-order thinking, and statistical methods to modeling and solving real-world situations.
2. To represent and evaluate basic mathematical information verbally, numerically, graphically, and symbolically.
3. To expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
4. To use appropriate technology to enhance mathematical thinking and understanding and to solve mathematical problems and judge the reasonableness of the results.
5. To interpret mathematical models such as formulas, graphs, tables and schematics, and draw inferences from them.
6. To recognize the limitations of mathematical and statistical models.
7. To develop the view that mathematics is an evolving discipline, interrelated with human culture, and understand its connections to other disciplines.