Mathematics 1321 – Analytic Geometry

Course Objectives

1. **Gaining factual knowledge including the mathematical notation and terminology used in this course.** Learn the vocabulary, graphing, and algebraic techniques used in analytic geometry including distance, lines, circles, parabolas, ellipses, hyperbolas, asymptotes, vectors, and parameters.

2. **Learning fundamental principles including the laws and theorems arising from the concepts covered in this course.** Become familiar with the laws and formulas that result directly from the definitions, for example directed distance, conics, translation, and rotations of axes, algebraic functions, polar coordinates, parametric equations, and vectors. By means of coordinate systems, use algebraic methods to study geometry and to make graphical representations of algebraic equations.

3. **Learning how to apply course material along with techniques and procedures covered in this course to solve problems.** Use the facts, formulas, and techniques learned in this course to prove geometric theorems analytically, and recognize and graph conics, algebraic curves, polar equations, and parametric equations.

4. **Developing specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields.** Acquire a level of proficiency in the fundamental concepts and applications necessary for further study in academic areas requiring analytic geometry as a prerequisite. Understanding of analytic geometry is essential in applications found in such diverse disciplines as astronomy, physics, chemistry, biology, engineering, business, medicine, social sciences, psychology, statistics, agriculture, and economics as well as mathematics.

Course Content

**Textbook:** *Analytic Geometry*, Seventh Edition, by Fuller/Tarwater. The following chapters including the particular sections listed are covered. (See textbook “Contents”)

1. **Fundamental Concepts.** Basic concepts (absolute value, graphing, distance formula), inclination and slope of a line, division of a line segment, analytic proofs of geometric theorems, relations and functions.

2. **The Straight Line and the Circle.** Lines and first-degree equations, other forms of first-degree equations, intersection of lines, directed distance from a line to a point, families of lines, circles, families of circles.

3. **Conics.** The parabola, parabola with vertex at \((h, k)\), the ellipse, the hyperbola (and symmetry).

4. **Simplification of Equations.** Simplification by translation, rotation of axes, simplification by rotations and translations, identification of a conic.

5. **Algebraic Curves.** Polynomials, rational functions, slant asymptotes, irrational equations.

6. **Polar Coordinates.** The polar coordinate system, relations between rectangular and polar coordinates, graphs of polar coordinate equations, aids in graphing polar coordinate equations.

7. **Parametric Equations.** Parametric equations.

8. **Space Coordinates and Surfaces.** Space coordinates.

9. **Vectors, Planes, and Lines.** Operations on vectors, vectors in space, the scalar product of two vectors, the equation of a plane, vector equation of a line.

Additional Content

Any section or chapter not listed previously.
Math 1321.020 Analytic Geometry
Juan P. Montemayor
Spring 2006

Office: MCS 219 F email: Juan.Montemayor@angelo.edu
Phone #: 942 – 2317 ext. 232 webpage: www.angelo.edu/faculty/jmontema/

Code of Conduct:
Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is available on the web at http://www.angelo.edu/forms/pdf/honorcode5.pdf.

Statement on Disability:
"Persons with disabilities which may warrant academic accommodations must contact the Student Life Office, Room 112 University Center, in order to request such accommodations prior to any accommodations being implemented. You are encouraged to make this request early in the semester so that appropriate arrangements can be made."

Other Classes:
Math 130B.080 TTh 9:30-10:45 MCS 214 Math 1302.020 MWF 9:00-9:50 MCS210
Math 130B.110 TTh 2:00-3:15 MCS 214 Math 1312.040 MW 12:00-1:15 MCS 110

Office Hours

<table>
<thead>
<tr>
<th>Monday:</th>
<th>8:45-9:00, 10:00-11:30, 1:15-2:15</th>
<th>Wednesday:</th>
<th>8:45-9:00, 10:00-11:30, 1:15-2:15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday:</td>
<td>8:45-9:30, 10:45-11:15, 1:30-2:00</td>
<td>Thursday:</td>
<td>8:45-9:30, 10:45-11:15</td>
</tr>
<tr>
<td>Friday:</td>
<td>10:00-11:30</td>
<td>Math Lab:</td>
<td>MCS211 Tues. 3:30-4:00, Thurs. 1:00-2:00</td>
</tr>
</tbody>
</table>

Math Lab:
All classes Developmental Classes
MCS 215 M-Th: 2:00 – 5:00, F: 2:00-4:00 MCS 211: M – F 1:00-4:00
MCS 211 M – Th 6:00 – 8:00 PM

Important Dates:
Look on the webpage for exam dates, drop date and holidays (Calendar)

Grading:
A: 90 and above B: 80 – 89 C: 70 – 79 D: 60 – 69 F: below 60

Exams: You will have four short exams - 2-4 pages (20-45 minute tests) – drop the lowest of four 40% of grade
Midterm: comprehensive up to the first half of the semester: 20 % of grade
Final Exam: comprehensive (all semester ) 25 % of grade

Attendance: 5 % of grade

95 if 0-2 absences
85 if 3-4 absences
75 if 5-6 absences
65 if 7-10 absences
0 if more than 10 absences

Homework: 5 % of grade
(Five-ten) problems to be turned in the NEXT Class day after it is assigned unless told otherwise.
Use the form posted on webpage to turn in the daily HW problems.
(answer sheet (Word or PDF)
(maximum grade you will receive will be a 95 )

Rest of HW: 5 % of grade
Other assigned problems not turned in with original problems
1) in a folder 2) followed proper instructions
(maximum grade you will receive is a 95 )
Homework Policy on webpage.

Final Exam: Comprehensive – everybody must take exam – no exceptions

Quizzes: short quizzes – part of HW – should be turned in with HW (folder)

NOTES: Notes are extra – sometimes they are available – sometimes they are not. When they are available you should bring them to class.
There may be times that I will ask to see your notes (in addition to /or instead of) your HW

Bonus:
Being late to class will be considered as being absent
Encouragement – be in class and do the HW

1. If you miss 0 or 1 day (either excused or unexcused) and have turned in all HW
I will add 1 point to your overall average and add four points to your final exam.

2. If you miss 2 or 3 days (excused or unexcused) and have turned in all HW
add 1 point to your overall average and – add two points to your final exam.

NOTE: No Make-Ups of any kind. Graphing Calculators are discouraged and in most cases not allowed.

You may or may not have reviews (tests ) or review sessions.