Course: MA42/MA45

Title: Honors Calculus III/ Differential Equations

Location: McClintock High School

Instructor Name and Degrees: Kristina Tomasi BAE, Med., gifted endorsed

Contact Information: Kristina Tomasi

>   Phone 480-839-4222 ext.68186; email ktomasi@tuhsd.k12.az.us

Office Hours: 7:00-7:45 am and 2:30-3:15 pm

Materials: Calculus: Early Transcendentals, Variable, James Stewart, 6th edition

>   TI-83 or better graphing calculator

Course Description:
This course is designed as an advanced follow-up course to AP CalculusBC. This course will cover the third semester of college calculus and differential equations. This course will be taught utilizing a graphing calculator. Computer graphing will be used to enhance visualization and conceptualization. Real life application and examples will reinforce problem-solving skills. The course will combine graphical, numerical, and algebraic techniques toward the solutions of problems involving the techniques of calculus.

Course Competencies:
1. Solve geometry and physics problems using vectors.
2. Analyze the motion of an object using vector-valued functions.
3. Classify and analyze the behavior of functions of several variables.
4. Interpret the geometry of rectangular, polar, cylindrical and spherical coordinate systems.
5. Solve optimization and other applied problems using partial derivatives.
6. Set up and compute double and triple integrals in any order of integration using rectangular, polar, cylindrical, and spherical coordinates.
7. Solve physical problems using line integrals and vector fields.
8. Compare alternate solution strategies, including technology.
9. Communicate process and results in written and verbal formats.
Solve analytically and numerically ordinary differential equations, primarily of first or second order, using exact, implicit, or discrete
approximation solution types.
10. Solve analytically and numerically systems of ordinary linear differential equations using matrix methods and Laplace Transforms or
differential operator methods.
11. Solve application problems using differential equations.
12. Linearize non-linear systems and describe the long-term behavior of solutions.
13. Read and interpret quantitative information when presented numerically, analytically or graphically.
14. Compare alternate solution strategies, including technology.
15. Justify and interpret solutions to application problems.
16. Communicate process and results in written and verbal formats.

Class Structure:

- Each day I will answer questions, explain the next lesson, and give time to work (if there is any time left).
- An assignment sheet will be given out each chapter.
- If you are absent on the day of a quiz or test, you will take it in class the day you return.
- NO LATE WORK WILL BE ACCEPTED.

Attendance: See MHS student handbook

Grading: Grades will be assessed according to three categories.

1. Tests: One or two per chapter (50 - 100 pts).
2. Quizzes: one or none per chapter. (50 pts).
3. Homework: Homework approximately four to five times per week (1 - 2 pts per problem). All assignments are due the following day unless otherwise noted.

The grades will be weighted as follows:
> 10% homework
> 90% Tests and Quizzes.

The grading scale is 90-80-70-60, and grades are updated frequently on-line.

The Semester grade is calculated as a 40-40-20. This means that each quarter grade will count as 40% of the semester grade and the final exam will count as 20%.

Rio Salado college credit: Students may choose to enroll for college credit through Rio Salado Community College. By successfully completing the first semester, the student can earn college credit for MAT 241 – Calculus with Analytic Geometry III (4 credit hours). Second semester, the student may choose to enroll again for college credit for MAT 276 – Differential Equations (4 credit hours). The grade obtained in my class will be the grade given for college transcript. You cannot take MAT 241 without having passed MAT 231 or scoring a 4 or 5 on the AP exam.