

**SUFFOLK COMMUNITY COLLEGE  
MATHEMATICS DEPARTMENT  
STUDENT COURSE OUTLINE/SYLLABUS  
MAT204/MA90 – Fall 2008**

<b>INSTRUCTOR:</b>	Dr. James Fulton	<b>OFFICE:</b>	R345
<b>COURSE:</b>	MAT204/MA90- Elementary Differential Equations	<b>OFFICE HOURS:</b>	
<b>SECTION:</b>	1893		M 2:00-3:00
	M, W 9:30-11:10 AM		T 11:00-12:00
<b>CLASSROOM:</b>	R201		W 8:00-9:00, 2:00-3:00
<b>PREREQUISITE:</b>	C or better in MAT142/MA88 or equivalent		Th 11:00-12:00
<b>TELEPHONE:</b>	451-4784 (Prof. Fulton)		By Appointment
	451-4270 (Secretary)		
<b>E-MAIL:</b>	<a href="mailto:fultonj@sunysuffolk.edu">fultonj@sunysuffolk.edu</a>		

Copies of the detailed departmental syllabus for this course are available in the Math Office (R352).

**COURSE PHILOSOPHY:**

This course provides an introduction to differential equations and their applications. It will be a mixture of definitions, concepts, and techniques, but the emphasis will be on understanding the concepts. It turns out that many laws governing natural phenomena are relations (equations) involving rates at which things happen (derivatives). Thus, knowing how to solve these equations, or what potential solutions “look like,” or how they might “behave,” is an important problem. As we shall see, differential equations can take many forms, and their solutions can be quite challenging to find. It is hoped that the student will gain a greater appreciation for the utility and beauty of mathematics, as we move beyond finding point-wise numerical solutions to algebraic equations, to finding function that are solutions of equations involving derivatives. It is through differential equations that the calculus comes to life. Since we will find that it is usually difficult to obtain “closed-form” solutions to equations involving derivatives, we must often settle for an approximate solution. Thus, we will also develop and explore both algebraic and numeric approximation techniques for finding solution.

**COURSE OBJECTIVES:**

Upon successful completion of this course, students will be able to:

1. identify and solve various types of first-order differential equations;
2. recognize properties of solutions of various differential equations obtained by graphing and the use of phase portraits;
3. solve  $n$ th order homogenous and non-homogeneous linear differential equations with constant coefficients;
4. solve homogenous and non-homogeneous systems of linear differential equations;
5. obtain power series expressions for the solutions of ordinary differential equations;
6. derive and use Laplace transforms to solve initial value problems and systems of differential equations;
7. locate equilibria and determine their stability; linearize a nonlinear system; sketch the phase portrait of a nonlinear system;
8. construct differential equations and linear systems of differential equations that model evolutionary processes

COLLEGE-WIDE ATTENDANCE POLICY:

All students are expected to attend every session of each course for which they are registered. Students are responsible for all that transpires in class whether or not they are in attendance. The College defines excessive absence or lateness as more than the equivalent of one week of class meetings during the semester. Excessive absence or lateness may lead to failure in a course or removal from the class roster.

GRADING POLICY:

1. There will be four (4) exams. The lowest exam grade will be dropped.
2. There are **no** make-up exams.
3. There will be several on-line homework assignments
4. There will be a comprehensive final examination. The final exam grade may **not** be dropped.
5. Your course average will be determined as follows:
 

Exams.....	60%
Homework.....	20%
Final Exam.....	20%

TEXTBOOK:

Elementary Differential Equations, 8<sup>th</sup> Edition,  
with ODE Architect, and WileyPlus,  
by Boyce & DiPrima  
Wiley Publishers, 2005

TENTATIVE SCHEDULE:

	<u>Date</u>	<u>Sections in Text</u>	<u>Date</u>	<u>Sections in Text</u>
August	25	1.1-1.3	27	2.1-2.2
September	1	Holiday	3	2.3-2.4
	8	2.5-2.6	10	2.7-2.8
	15	Holiday	17	2.9/Review
	22	<b>TEST 1</b>	24	3.1-3.2
	29	Holiday		
October			1	Holiday
	6	3.3-3.4	8	3.5-3.6
	13	3.7	15	5.1-5.2
	20	5.3-5.4	22	5.5/Review
	27	<b>TEST 2</b>	29	6.1-6.2
November	3	7.1-7.2	5	7.3-7.4
	10	7.5-7.6	12	7.7-7.8
	17	7.9/Review	19	<b>TEST 3</b>
	24	9.1-9.2	26	Holiday
December	1	9.3-9.4	2	9.5-9.6
	8	9.7-9.8/Review	10	<b>TEST 4</b>
	15	Review for Final	17	<b>FINAL EXAM</b>