NEW YORK CITY COLLEGE OF TECHNOLOGY
The City University of New York

DEPARTMENT:	Mathematics
COURSE:	MAT 2680
TITLE:	Differential Equations
DESCRIPTION:	An introduction to solving ordinary differential equations. Applications to various problems are discussed.
TEXT:	Elementary Differential Equations 10^{th} edition Boyce and DiPrima John Wiley & Sons, Inc.
CREDITS:	3 (3 class hours)
PREREQUISITE:	MAT 1575

Prepared by:
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A. Testing Guidelines:

The following exams should be scheduled:

1. Four one session exams.
2. A one session Final Examination.

Course Intended Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Classify differential equations.	Exams
2. Solve first and second order ordinary differential equations using various techniques.	Exams
3. Use numerical methods to approximate solutions, when appropriate.	Exams
4. Apply methods of solving differential equations to answer questions about various systems (such as mechanical and electrical).	Exams

General Education Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Gather, interpret, evaluate, and apply information discerningly from a variety of sources.	Exams
2. Understand and employ both quantitative and qualitative analysis to solve problems.	Exams
3. Employ scientific reasoning and logical thinking.	Exams
4. Communicate effectively.	Exams

Mathematics Department Policy on Lateness/Absence

A student may be absent during the semester without penalty for 10% of the class instructional sessions. Therefore,

If the class meets:	The allowable absence is:
1 time per week	2 absences per semester
2 times per week	3 absences per semester

Students who have been excessively absent and failed the course at the end of the semester will receive either

the WU grade if they have attended the course at least once. This includes students who stop attending without officially withdrawing from the course.

the WN grade if they have never attended the course.

In credit bearing courses, the WU and WN grades count as an F in the computation of the GPA. While WU and WN grades in non-credit developmental courses do not count in the GPA, the WU grade does count toward the limit of 2 attempts for a developmental course.

The official Mathematics Department policy is that two latenesses (this includes arriving late or leaving early) is equivalent to one absence.

Every withdrawal (official or unofficial) can affect a student's financial aid status, because withdrawal from a course will change the number of credits or equated credits that are counted toward financial aid.

New York City College of Technology Policy on Academic Integrity

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

Session	MAT 2680 Differential Equations: Boyce & DiPrima 10th Ed	Pages	Homework
1	**1.1** Some Basic Mathematical Models; Direction Fields **1.2** Solutions of Some Differential Equations (include y'=y+k)	1-7 10-15	P.7:3,15-20 P.16: 1,3
2	1.3 Classification of Differential Equations	14-24	P. 24: 1-19 odd
3	2.1 Linear Equations; Method of Integrating Factors	31-39	P. 40: 1, 3, 13-19 odd
4	2.2 Separable Equations	42-48	P. 48: 1-19 odd
5	2.2 Separable Equations (Homogeneous)		P. 47: 30-37 all
6	2.4 Difference between Linear and Nonlinear Equations (Existence and Uniqueness)	68-76	P. 75: 1, 3
7	2.4 Difference between Linear and Nonlinear Equations (Existence and Uniqueness, Bernoulli Equations)		P. 75: 27-31 all
8	2.6 Exact Equations and Integrating Factors	95-100	P. 100: 1-15 odd, 18
9	First Examination		
10	2.7 Numerical Approximations: Euler's Method	101-109	P. 110: 1, 3, 11, 13
11	3.1 Homogeneous Equations with Constant Coefficients (second order linear)	137-143	P. 144: 1-17 odd
12	3.3 Complex Roots (of the Characteristic Equation)	158-164	P. 164:1-21 odd
13	3.4 Repeated Roots; Reduction of Order	167-172	P. 172: 1-13 odd
14	3.5 Non-homogeneous Equations; Method of Undetermined Coefficients	175-184	P. 184: 1-19 odd
15	3.7 Mechanical and Electrical Vibrations	192-203	P. 203 1-7 odd, 12
16	Midterm Examination		
17	5.2 Series Solutions Near an Ordinary Point, Part I	254-263	P. 263: 1, 2, 3, 5
18	5.2 Series Solutions Near an Ordinary Point, Part II		P. 263: 7, 9, 11, 15
19	6.1 Definition of the Laplace Transform	309-314	P. 315: 1, 5
20	6.2 Solution of Initial Value Problems (Inverse Transform), Part I	317-324	P. 324: 1-9 odd
21	6.2 Solution of Initial Value Problems (Inverse Transform), Part II	317-324	P. 324: 11-17 odd

Session	MAT 2680 Differential Equations: Boyce & DiPrima 10th Ed	Pages	Homework
22	6.6 The Convolution Integral (Optional)	350-354	P. 354: 5, 7, 9
23	Third Examination		
24	8.1 The Euler or Tangent Line Method	451-459	P. 460: 1-7 odd
25	8.2 Improvements on the Euler Method	462-466	P. 466: 1, 3, 5
26	8.3 The Runge-Kutta Method	468-471	P. 471: 1, 3, 5
27	8.4 Multistep Methods	472-477	P. 478: 1, 3, 5
28	Fourth Examination		
29	Review		
30	Final Examination		