

Math 244-F1: Differential Equations for Engineering and Physics
Summer 2017

Instructor: Anthony Zaleski, Hill Center 512 TTh 9-10

Meeting times: MTWTh 10:10-12:10, ARC 105

Prerequisites: Calc I-III

Course site: <http://www.math.rutgers.edu/courses/244>

Textbook: *Elementary Differential Equations* by William Boyce and Richard DiPrima, 10th edition, ISBN: 978-0-470-45832-7.

Important dates:

Lab 1 due	July 10
Exam 1	July 13
Lab 2 due	July 31
Exam 2	August 1
Lab 3 due	August 14
Final Exam	August 16

Grading breakdown:

Quizzes	10%
Maple labs	10%
Exam 1	20%
Exam 2	20%
Final Exam	40%

- A short attendance quiz will be given at the start of most classes. Quiz problems will resemble those of the homework.
- Maple labs are on the course site. (Make sure you use the *summer* labs.) Lab 0 is an optional warmup, but the other three will be graded.

- The two 80-minute in-class midterms will not be cumulative. The final will be cumulative. It will start at the beginning of the last class period and continue for three hours.
- Homework problems will be posted in class and on the course site. Homework will not be collected.

Make-up policy: There will be absolutely no make-up quizzes or midterm exams, and late Maple labs will not be accepted. However, I will drop your two lowest quiz grades. If you have a serious, verifiable excuse for missing a midterm (e.g., a doctor's note), I will weight your final exam score more heavily to compensate.

If you have a final exam conflict with another class, let me know as soon as possible!

Academic integrity policy:

<http://academicintegrity.rutgers.edu/policy-on-academic-integrity>.

Special accommodations:

<http://disabilityservices.rutgers.edu/>.

Tentative calendar:

Date	Topics	Sections
M 6/26	Intro to ODEs	1.1-3
T 6/27	Integrating factors	2.1
W 6/28	Separation of variables	2.2
Th 6/29	Linear vs nonlinear DEs, existence & uniqueness	2.4, 2.8
M 7/3	Autonomous DEs, exact DEs	2.5-6
T 7/4	<i>Independence Day (no class)</i>	
W 7/5	Numerical methods	2.7, 8.1
Th 7/6	Numerical methods, difference equations	8.2-3, 2.9
M 7/10	2nd order linear DEs; LAB 1 DUE	3.1-2
T 7/11	Complex roots	3.3
W 7/12	Repeated roots	3.4
Th 7/13	EXAM 1 (80 minutes)	1.1-3.4
M 7/17	Euler equations, series	5.4, 5.2
T 7/18	Undetermined coefficients	3.5
W 7/19	Variation of parameters	3.6
Th 7/20	Mechanical vibrations	3.7
M 7/24	Forced vibrations	3.8
T 7/25	Higher order linear DEs, linear systems	4.1, 7.1
W 7/26	Matrices & eigenvalues	7.2-3
Th 7/27	Theory of linear systems, constant coefficients	7.4-5
M 7/31	Complex eigenvalues; LAB 2 DUE	7.6
T 8/1	EXAM 2 (80 minutes)	3.5-7.6
W 8/2	Repeated eigenvalues	7.8
Th 8/3	Fundamental matrices, nonhomogeneous systems	7.7, 7.9
M 8/7	Phase planes, autonomous systems	9.1-2
T 8/8	Locally linear systems	9.3
W 8/9	Competing species, predator-prey	9.4-5
Th 8/10	Periodic solutions & limit cycles	9.7
M 8/14	Chaos; LAB 3 DUE	9.8
T 8/15	Review for Final Exam	
W 8/16	FINAL EXAM (3 hours)	1.1-9.5