

Course Description

INTRO TO DIFFERENTIAL EQUATIONS MA 252-2A

Spring 2020

Department of Mathematics
University of Alabama at Birmingham

Course Instructor: Dr. Michael Hofbauer-Tsiflakos

E-mail: hofbauer@uab.edu

Office: University Hall 4037

Phone: (205) 934-8541

Office Hours: Tuesday/Thursday 09:15am-10:00am (right after class)

Course Info

Meeting times: Tuesday/Thursday 08:00am-09:15am

Meeting location: HHB 221

Course material: The course will mainly follow the open, free text book *Elementary differential equations* by William F. Trench, which can be found by clicking on the following link: <https://digitalcommons.trinity.edu/mono/8/>.

I can also recommend the following two beginner text books:

- William A. Adkins, Mark G. Davidson, *Ordinary differential equations*, Link to Springer (publisher),
- William E. Boyce, Richard C. DiPrima, Douglas B. Meade, *Elementary differential equations and boundary value problems*, Link to Wiley (publisher).

Important Dates

First day of our class: January 14, 2020

Last day to drop without paying full tuition: January 21, 2020

Spring Break: March 16 – March 22, 2020

Last day of our class: April 23, 2020

Midterm Dates: February 11, 2020, March 12, 2020 and April 21, 2020

Course Policies

- Please make sure that you are able to receive e-mail through your Blazer-ID account.
- If you are contacted by the Early Alert Program, you should consider taking advantage of the services it offers.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at dss@uab.edu.

Course Content

- *First order differential equations*: Difference between linear and nonlinear differential equations, separable differential equations, existence and uniqueness of solutions, direction fields, exact differential equations, integrating factors, Laplace transform, applications.
- *Second order linear differential equations*: Homogeneous differential equations, nonhomogeneous differential equations, differential equations with constant coefficients, method of undetermined coefficient, reduction of order, variation of parameter, incomplete partial fraction method, power series solutions, Laplace transform, applications.
- *Linear systems of n differential equations*: Equivalence to a linear differential equation of order n , homogeneous linear systems with constant coefficients, variation of parameter for nonhomogeneous linear systems, fundamental matrices, stability of the origin for homogeneous linear systems, applications.

Class Management via Canvas

- Homework problems will be posted on canvas (<http://www.uab.edu/online/canvas>). Other class materials (class announcements, codes, grades and etc.) will be posted on canvas. Students should log in to canvas at least once a day!
- Homework assignments will be collected on canvas.

Assessment Procedures

- Student achievement will be assessed by the following measures:
 - **Weekly homework.** Homework will be due weekly. There will be no extension of deadlines for any reason. Homework contributes 10% to the course average.
 - **Midterm exam.** There will be three midterm exams. Each midterm exam contributes 30% to the course average.
 - **Retaking a midterm exam.** In case of absence, a midterm exam might be retaken at a later point in time, if the affected student presents a justified, written and signed confirmation from a third party (e.g. a medical doctor in case of illness).

Grading Scheme: 10% home work, 30% each midterm exam

- Your final grade is determined according to the following table:

Course performance:	88-100	75-87	62-74	50-61	below 50
Final Grade:	A	B	C	D	F

Academic Honor Code

The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Academic misconduct undermines the purpose of education. Such behavior is a serious violation of the trust that must exist among faculty and students for a university to nurture intellectual growth and development. Academic dishonesty and misconduct includes, but is not limited to, acts of abetting, cheating, plagiarism, fabrication, and misrepresentation. Candidates are expected to honor the UAB Academic Honor Code as detailed in the most current UAB Student Catalog. Please consult this resource (<https://www.uab.edu/students/one-stop/policies/academic-honor-code>) for additional information regarding the specific procedures to be undertaken when a student violates the UAB Academic Honor Code.

Non-harassment, Hostile Work/Class Environment

The UAB College of Arts and Sciences expects students to treat fellow students, their Course Instructors, other UAB faculty, and staff as adults and with respect. No form of hostile environment or harassment will be tolerated by any student or employee.
