SPRING ELEMENTARY DIFFERENTIAL EQUATIONS: COURSE OUTLINE

1. Basic Course information

- <u>Course title</u>: Elementary differential equations
- <u>Course code</u>: 640:252:03
- <u>Course schedule</u>: 10:20-11:40 Monday and Thursday
- <u>Instructor</u>: John Ma (Hill 336, john.ma311@rutgers.edu)
- <u>TA</u>: Terence Coelho (Hill 533, tjc210@scarletmail.rutgers.edu)
- <u>Office hours</u>: 13-14 Monday, Thursday (John), 11-12 Tuesday, Friday (Terence)
- <u>Textbook</u>: Blanchard, Differential Equations with DE Tools Printed Access Card, 4th edition, 2012 Cengage 978-1133109037.

<u>Content</u>: In this course, we introduce different techniques in solving first and second order differential equation, and system of first order linear differential equations. We will cover most of chapter 1-5 of the textbook. You can find more details, together with supplementary notes, in the common webpage: https://www.math.rutgers.edu/academics/under graduate/courses/950-01-640-252-elementary-differential-equations.

After the reading week, we will cover:

- Chapter 3: Linear system: Which include the sketching of phase portrait for linear systems, the study of harmonic oscillator, and bifurcations of linear systems.
- Chapter 4: Forced harmonic oscillators
- Chapter 5: Phase sketching for nonlinear systems.

<u>Grading policies</u> Homework (10%), two midterms (20+20%) and one final exam (50%).

<u>Homework</u>: Homework will be posted on Canvas, but will not be collected. Concerning the 10% score, there are two options:

- It will be your HW1 or HW2 score, whichever is higher. This is the default choice for students who handed in at least one homework set.
- You can request to move all the weight to the final examination. This is your default choice if you did not hand in both HW1 and HW2.

For those who did hand in at least one HW set, but wishes to choose the second option, please send me an email to indicate your option **before April 30th**.

<u>Midterms</u> : First midterm was held at Feb. 27th in class. The second midterm will be a take-home midterm. More details will be given later.

<u>Final exam</u> TBA.