

# **Ordinary Differential Equations A**

## **Syllabus**

**Spring 2019, SUSTC**

**Instructor:** 王勇 Assistant Professor Yong Wang

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**Office hours:** Wednesday 16:30-18:00, Thursday 16:30-18:00 or by appointment

**Teaching Assistant:**

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**Textbook:**

Elementary Differential Equations and Boundary Value

Problems, 10<sup>th</sup> edition, William E. Boyce and Richard C. DiPrima, Wiley, 2012.

**Reference:**

常微分方程教程, 第二版, 丁同仁, 李承治, 高等教育出版社, 2004 年.

**Course Description:** This course mixes theory with applications, and uses softwares to aid the understanding on theoretical

results and to help to solve application problems. The course aims to nurture the ability of the student to use ODE to solve problems arising in applications and other branches of mathematics. The theoretical part of the course covers: first order linear equations, separation of variables, direction fields, Euler's method, existence and uniqueness theorem, phase line analysis, second order linear equations, variation of constants, asymptotic behavior of solutions, first order linear systems, first order nonlinear autonomous systems, linear stability and types of equilibria, local and global phase plane analysis.

### **Course Policies:**

- The **semester grade** will be given according to performance in homework (20%), weekly quizzes (20%), mid-term test (25%) and the final exam (35%);
- Calculators and cell phones will not be allowed in quizzes, mid-term test and final exam;
- **Homework** will be assigned every week and collected in class next Wednesday. Three worst homework will be dropped before calculating the semester grade;
- The **quizzes** will be given weekly in tutorial classes, each lasting about 10-20 minutes. The problems on the quizzes will be similar to the examples that I work on in

my lectures and to the homework problems. There will be NO make-up quizzes. Three worst quizzes will be dropped before calculating the semester grade;

- There will be **one mid-term test**, lasting two hours and given in the lecture class. No make-up test will be given. However, if you have a written excuse from your doctor or school official, and if you notify me within 3 days of the date of the test that you are forced to miss, your other tests will weigh more. Tentative date of the mid-term test is

➤ **Someday, April**

- Missing the **final exam** without prior notification to and approval of me will automatically result in the "0" grade for the exam.