MATH 245: MATHEMATICS OF PHYSICS AND ENGINEERING
SYLLABUS, FALL 2017

Disclaimer: This syllabus does not constitute a contract. The Instructor reserves the right to make changes at his discretion throughout the semester.

General information:

- **Course instructor:** Dr. Guillaume Dreyer
  Office: KAP 406K
  Email: `dreyfactor@gmail.com`
  Office hours: TBA

- **Prerequisites:** Math 226 or Math 227

- **Textbook:** James R. Brannan, William E. Boyce, *Differential Equations: An Introduction to Modern Methods and Applications, 3rd Edition*

- **Lectures:** 12:00–12:50 pm, MWF in VKC 100

- **Discussions:** 8:00–8:50 pm, and 9:00–9:50 pm, TTh in VHE 206

- **Teaching Assistant:** Pengbin Feng, `pengbinf@usc.edu`

Course content: first-order differential equation; second-order linear differential equation; systems of linear differential equations; Laplace transforms; nonlinear differential equations and stability.

Learning objectives: By the end of the semester, you will be familiar with most of the essential techniques and concepts of the theory of differential equations. There are many fundamental and interesting topics around differential equations. We will have to make some choices during the semester regarding some of the more advanced chapters we want to cover.

Blackboard: Official announcements for the course, including homework assignments and grades, will be posted on Blackboard `http://blackboard.usc.edu`. It is everyone's responsibility to visit this website on a regular basis.

Grading breakdown: Homework 15%, Quiz 10%, Midterms 20% each, Final 35%.

Quizzes: There will be a weekly 15–20 min quiz during Tuesday's discussion. There will be no quiz during midterm weeks. **No make-ups will be allowed under no circumstances**. You are allowed to drop one quiz score. (Keep that one-time deal for that day you find yourself sick.)

Homework: Weekly homework will be posted on BB every Monday. You will submit your assignment a week later on Tuesday at the beginning of your discussion. Only a few chosen questions will be graded. However, every exercise must be treated. (It will be part of the grading rubric.) Late and electronically submitted homework will not be accepted, no exceptions. You are allowed to drop one HW score. (Keep that one-time deal for that day you find yourself sick.)

You are strongly encouraged to discuss homework problems with your peers and to work in groups. This is the most efficient and rewarding way to learn and work. However, you must write your own solutions. **Homework which is simply copied from another source (friend, another textbook, internet, etc.) will be considered as plagiarism, a serious offense to USC honor codes.**

Exams: There will be two midterms and one final exam.
- **Midterm 1:** Friday, February 17th, in class.
- **Midterm 2:** Wednesday, March 29th, in class.
- **Final:** Friday, May 5th, 11:00 am–1:00 pm. You must take the final exam at the scheduled time.

If there is a scheduling conflict for an exam, **you must let ME know (NOT the TA) at least 2 weeks before the examination.**. A scheduling conflict must involve an activity sponsored and approved by USC (marching band, athlete event, etc.). In particular, the university club or organization in question must send an official request, with the Dean's approval, to all faculty. Personal activities do not qualify. **FAILURE TO ATTEND AN EXAMINATION WILL NOT BE EXCUSED UNDER NO CIRCUMSTANCES.**

NO cheat sheet, calculator, cell/smart phone or other electronic device will be allowed during an examination.

Grading and evaluation standards: You will be evaluated based on your ability to deliver articulate, organized, unambiguous answers with proper justifications. This requires a clear understanding and knowledge of both the material and methodology, memorization of the definitions, formulae, theorems and hypotheses under which those results apply. Exams are fast paced. They require proper training and preparation. In particular, timing yourself when working is absolutely necessary. A question that can be solved in 4 min (after proper training) should not take you 15 min.

I am your point of reference: What is covered during lectures–topics, methodology, examples, exercises and way to solve them–is your point of reference. Failure to attend lectures is extremely likely to significantly impact your performance in this course.

Extra credit: Students who participate in the JEP program as a Math Mentor can earn up to 2% extra credit. This is a semester-long commitment to work with K–12 students, mentoring them on math-related subjects. You must register with JEP to earn extra credit; there is an online application: `uscdornsife.usc.edu/secure/JEP/`. More details will be announced in class.

Resources: The Math Center is located in KAP 263 and is open weekdays from 8 am to 7 pm (it closes earlier, around 5 pm, on Fridays). For up-to-date information on the consulting hours, go to the Math Center homepage `http://dornsife.usc.edu/mathcenter`. Its purpose is to provide an environment where students can stop by to get help on their math classes. The office hours of your TA will be held in the Math Center. It is probably better to attend office hours of TAs who are teaching Math 245 this term. However, you are welcome to stop by the Math Center at any time and ask for help from any of the Instructors or TAs who are present at that time.

Students with disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the instructor as early in the semester as possible. DSP is located in STU 301 and is open 8:30 am – 5:00 pm, Monday through Friday. The phone number for the DSP office is (213) 740–0776.