Syllabus for Math290 Sections 1 and 2:
Differential Equations – Spring 2022

Instructor: Dr. Robin Cunningham
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Office hours: M 1-4 pm
W 10-11:30 am
W 12:30-2:00 pm
or By Appointment

Teaching Assistants: Coral Ling — E-mail: lingyuewei@stu.scu.edu.cn
Amanda Xie — 2019141520165@stu.scu.edu.cn

Office hours and Tutorial: To Be Announced

QQ: Coral and Amanda will provide a QR code in Blackboard for the QQ group and they will manage this group for us.

Lectures: Section 1 – Monday 11:10-11:55, Thursday 8:15-9:55
Section 2 – Tuesday 1:50-4:25

Course URL: learn.scupi.cn

Description: Introduction to analytic methods for solving differential equations. Topics include the numerical Euler's method, qualitative behavior of first order equations, analytic techniques for separable and linear equations, applications to population models and motion problems; techniques for solving high order (mostly second order) linear differential equations with constant coefficients such as the method of undetermined coefficients, reduction of order, and variation of parameters; applications to mass-spring models; the Laplace transform method to solve initial value problems with discontinuous forcing functions; Fourier Series and PDE will be introduced. The use of mathematics software is an integral part of the course.

Materials and Websites for the Class:

Textbook: *Polking, Bogges, and Arnold: Differential Equations with Boundary Value Problems, 2nd ed.*

General Learning Outcomes:

1. Students will be able to identify key concepts in the arts, sciences, humanities, or mathematics to provide a broad perspective.
2. Students will be able to demonstrate effective oral and written communication skills.

Learning Outcomes for This Course:

1. Students will learn to classify an ordinary differential equation in terms of its degree, linear or nonlinear, homogeneous or non-homogeneous and pick the technique most likely to solve it.
2. Students will be exposed to analytical methods for solving nonlinear first-order ordinary differential equations.
3. Students will be able to solve linear second-order ordinary differential equations with nonhomogeneous terms.
4. Students are introduced to the concept of mathematical modeling of simple physical, chemical and biological phenomena.
5. Students will learn how to solve ordinary differential equations indirectly by using Laplace

transforms.

6. Students will be exposed to the Fourier Series and partial differential equations.

GRADE: The final grade will be based on the **score**, which is a number between 0 and 100 determined by

Quizzes: 15% HW and In-class work: 10% Major Exams: 45% Final Exam: 30%

The final letter grade is determined from the following table.

A: 90 – 100	A−: 85 – 90	B+: 80 – 84	B: 76 – 80	B−: 73 – 76
C+: 70 – 73	C: 66 – 70	C−: 63 – 66	D: 60 – 63	F: < 60

HW Assignments:

- You should do all homework assignments. It is your obligation to make sure you understand how to do those assignments correctly. I will grade homework assignments based on completeness only, not on correctness. Homework assignment solutions will be provided a week after the assignments are given.
- On homework, it is ok to work with others, but the work you turn in **should be yours alone. Please do not copy-paste from other students, this is easily detected and defeats the purpose of the homework.**
- The most important rule for homework (or life) is to give attribution when you use someone else's work. Just give them credit. Then there is no way to get into an awkward situation.

Quizzes and Exams:

Quizzes and Exams are required and in general, make-ups are not available. Missing one quiz will not impact your grade significantly, but if you miss three, you may notice an impact on your final grade.

There are two midterm tests and a final exam. Each major test will emphasize material since the previous exam, but may include anything covered previously. The final exam will be comprehensive. There is **NO** Make up for all the exams. Tentative exam dates are the following:

RECITATION: We will decide a common time for a 45-min recitation every week for answering your questions. **Some quizzes** will be held during recitation.

GRADE REBUTTAL: You must receive your own test or quiz paper. For any test or quiz, you have only one week to request correction if you feel your answer is mis-graded. No correction will be made after a week when the test paper is returned.

MAKEUP FOR THE COURSE: Only students who made a score of 40 - 59 are eligible to take a makeup exam for the course. If the makeup course exam is successful, the course grade will be changed to a D. Students whose course scores are lower than 40 are not eligible to have a makeup exam for the course.

ATTENDANCE: You are expected to attend all the classes. I will check the attendance but will not be used toward your grade. A student who misses a class is responsible for finding out what was covered in the class.

ACADEMIC MISCONDUCT: All students in attendance at the SiChuan University are expected to be

honorable and to observe standards of conduct appropriate to a community of scholars. The University expects from its students a higher standard of conduct than the minimum required to avoid discipline. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing or intentional help or attempt to help, or conspiracy to help, another student. These include, but is not limited to, cheating, plagiarism, fabrication of information, misrepresentation, and abetting any of the above. The Academic Misconduct Disciplinary Policy will be followed in the event that academic misconduct occurs. Students should refer to the Student Handbook.

NON-ACADEMIC MISCONDUCT: All cell phones and other electronic devices are to be turned off and out of sight while you are in the classroom. All newspapers and other materials not related to the class are to be put away once class begins. I will follow the same rules. If you see my mobile during class, please call me out! If you have an emergency and need to have your phone turned on during class, please ask your instructor for permission.

WK	DE. Topics
1	1.2, 1.3, 2.1
2	2.2, 2.4
3	2.5 - 2.6
4	2.7 - 2.9
5	3.1 - 3.3
6	4.1 – 4.2
7	Test 1
8	4.5 , 5.1
9	5.2 – 5.4
10	5.5 – 5.7
11	6.1 - 6.2
11	11.1-11.2
12	11.3-11.4
13	11.5-11.6
14	Test 2
14	12.1 – 12.2
15	12.2 – 12.3
16	13.1 – 13.3
17	Review

18	Final Exam