TEXAS A&M UNIVERSITY COMMERCE
COLLEGE OF SCIENCE, AGRICULTURE AND ENGINEERING
DEPARTMENT OF MATHEMATICS

CALSS SYLLABUS

Instructor: Tingxiu Wang, Ph.D.   Semester: Fall 2015
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I.   Course: MATH 315, Ordinary Differential Equations, 3 credit hours

II.   Course Description: First order differential equations, higher order differential equations, series solutions, the Laplace transformations, systems of first order linear equations, initial-value problems. Prerequisites: Math 314.

III. Textbook: Elementary Differential Equations with Boundary Value Problems, previously published by Brooks/Cole Thomson Learning, 2000. Free download at
      http://digitalcommons.trinity.edu/mono/9/

      Student Solutions Manual for Elementary Differential Equations with Boundary Value Problems, previously published by Brooks/Cole Thomson Learning, 2000.
      http://digitalcommons.trinity.edu/mono/10/

      Tentatively, we will cover Chapters 1, 2, 3.1-3.2, 4.1-4.4, 5, 6.1-6.2, 7.1-7.4, 8.1-8.5, 9, and 10.1-10.4.

IV.   Technology: We will use Mathematica or TI-89 to solve a differential equation. TI-89 is highly recommended.

V.   Student Learning Outcomes: Upon successful completion of this course, students will be able to:
      1. Classify differential equations into partial differential equations and ordinary differential equations, linear or nonlinear, homogeneous or nonhomogenous, first order, second order or higher order differential equations.
      2. Explain a general solution and a particular solution, an initial-value problem, the Existence and Uniqueness Theorem; Wronskian Determinants and fundamental set of solutions; Explain Growth-Decay Model and Predator-and-Prey Model that use differential equations to model real world problems.
      3. Use methods such as Separating Variables, Variation of parameters, Finding a Potential Function, Substitution and Euler's Method to solve 1st order differential equations for explicit solutions and approximation solutions.
      4. Explain the solution structure of higher order linear differential equations and solve some higher order linear differential equations with constant coefficients, some second order linear differential equations with general coefficients, and some system of first order linear differential equations.

VI.   <u>Methods of Instruction</u>**:** Instruction will include lecture, demonstration and models, and some group work, based on time available.

VII.   <u>Methods of Evaluation:</u>

Evaluation methods can include grading homework, chapter or major tests, quizzes, and computer assignments.

Attendance: It is essential. You are responsible for all announcements and materials presented in the class.

Homework: There are daily assignments throughout the semester. This also includes some computer assignments.

Quizzes: There will be 9 take-home quizzes in this semester. The last quiz is cumulative. Attend every class to find out when a quiz is given. The due date of each quiz will be specified when it is given. No late quiz will be accepted. The lowest quiz will be dropped. Each quiz is worth 10 points.

Tests: There will be 3 exams. Each exam is worth 80 points. A make-up exam (except the last one) will be given only under a very special circumstance and if I am notified before the exam. The make-up exam may be *more difficult* than the classroom exam and must be made up within one week.

Final Test: The Final exam will be comprehensive and is worth of 120 points. Please mark your calendar for the final exam schedule: 10:30am-12:30pm, Tuesday, December 15, 2015.

Extra Credit: The Mathematics Department offers colloquia and math club activities. You will receive 3 points of extra credit for each colloquium and a math club activity you attend up to 15 points. You need to watch flyers posted in the hallways. There is no make-up for extra credit.

Grades: The maximum possible points available in this course are:

Quizzes	80 points
Tests	240 points
Final	120 points
Total	440 points

You course grade will be based on the percentage of the points you make to the total points available in the course:

A>=90%,   B>=80%,   C>=70%   D>=60%   F<60%.

VIII.   <u>Other Information</u>
- The information for students with disability: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for

persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services, Texas A&M University-Commerce, Gee Library, Room 132, Phone (903) 886-5150 or (903) 886-5835, Fax (903) 468-8148, email: StudentDisabilityServices@tamuc.edu

- Basic Tenets of Common Decency: "All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (Student's Guide Handbook, Policies and Procedures, Conduct.) This means that rude and/or disruptive behavior will not be tolerated.
- Free tutoring service is provided by the Math Skill Center (Binnion Hall Room 328) with the following hours: M and W, 8am–8pm; T and R, 8am–6pm; and F 8am–12pm.

Welcome to This Class