淡江大學 Tamkang University

Syllabus

Prof. Der-Ming Ma, Ph.D.
E750, Engineering Building, Department of Aerospace Engineering
Tel: (02)2621-5656 ext. 3316; Fax: (02)2620-9746
E-mail: derming@mail.tku.edu.tw, Course Web Site：http://dctsp.ec.tku.edu.tw/aerospace

Course: Engineering Mathematics I   3 credits
Prerequisite: Calculus
Class: Class 2008-A, Aerospace Eng. (sophomore)
Lecture: Tue: 1:10 ~ 3:00 PM, Thr: 4:10 ~ 5:00PM
Office hours: Mon, Tue, Thr, and Fri.: 11:00AM ~ 6:00PM or by appointment
Textbook:

> Robert L. Borrelli, and Courtney S. Coleman, *Differential Equations, A Modeling Perspective*, 2nd ed., John Wiely & Sons, Inc., 2004. （Imported by 新月圖書公司）

References:

> 1. Michael Greenberg, *Advanced Engineering Mathematics*, 2nd ed., Prentice Hall, 1998.（Imported by 滄海書局）
> 2. Peter V. O'Neil, *Advanced Engineering Mathematics*, 5th ed., Brooks/Cole Publishing Company, 2002.（Imported by 新月圖書公司）
> 3. Henry Edwards, and David E. Penney, *Differential Equations and Boundary Value Problems, Computing and Modeling*, 3rd ed., Pearson Education, 2004.（Imported by 新月圖書公司）.

Course Objective:

> First-order differential equations. Second-order differential equations. Series solutions of differential equations,. Laplace transforms, and Fourier series.

Course Schedule:

Week	Dates	Material covered
1st week	09/13, 09/15	Syllabus, Review Integration by Parts, Modeling and Differential Equations
2nd week	09/20, 09/22	Modeling and Differential Equations, First-Order Differential Equations.
3rd week	09/27, 09/29	First-Order Differential Equations.
4th week	10/04, 10/06	First-Order Differential Equations.
5th week	10/11, 10/13	1st Exam (7:00~9:00 PM, 10/11, Tuesday), Second-Order Differential Equations
6th week	10/18, 10/20	Second-Order Differential Equations
7th week	10/25, 10/27	Applications of Second-Order Differential Equations.
8th week	11/01, 11/03	The Laplace Transform
9th week	11/08, 11/10	The Laplace Transform
10th week		2nd Exam (11/15)
11th week	11/22, 11/24	Linear Systems of Differential Equations
12th week	11/29, 12/01	Linear Systems of Differential Equations
13th week	12/06, 12/08	Nonlinear Differential Systems
14th week	12/13, 12/15	3rd Exam (7:00~9:00 PM, 12/12, Monday), Series Solution
15th week	12/20, 12/22	Series Solutions, Fourier Series
16th week	12/27, 12/29	Fourier Series
17th week	01/03,	Nonlinear Differential Equations (selected sections from Chapter 8 and 9)
18th week		4th Exam (01/10)

Grading Policy*:

> 1. Quizzes (held every Monday night), Homework Assignments, and Class Attendance take 20% of course grade.
> 2. Exams, there are four exams and each takes 20% of course grade.
>> 1st Exam includes: Modeling and Differential Equations (Chapter 1), and First-Order Differential Equations (Chapter 2),
>> 2nd Exam includes: Second-Order Differential Equations (Chapter 3), Applications of Second-Order Differential Equations (Chapter 4), and The Laplace Transform (Chapter 5),
>> 3rd Exam includes: Linear Systems of Differential Equations (Chapter 6), and Nonlinear Differential Equations (Chapter 7),
>> 4th Exam includes: Nonlinear Differential Equations (selected sections from Chapter 8 and 9), Fourier Series (Chapter 10) and Series Solutions (Chapter 11).

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* I reserve the right to change the policy.