

MAE 3316/MAE 4314 – Fall 2009

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Office Hours: 2:00 – 3:30 TTh or by appointment or any other time I'm and available.

Course Number, Section Number, and Course Title: MAE 3316 Aerospace Structural Dynamics / ME 4314 Mechanical Vibration

Time and Place of Class Meetings: 12:30 – 1:50, TTh, 210 WH

Description of Course Content: This course consists of a study of the principles of structural dynamics and vibration in mechanical and aerospace engineering systems. Harmonic and periodic motion including both damped and undamped free and forced vibration; single- and multidegree-of-freedom systems are covered. Includes an introduction to the finite element method for structural dynamics.

Student Learning Outcomes: Course goals include development of an understanding of the basic principles of structural dynamics and vibration their application in mechanical & aerospace engineering practice.

Requirements: Prerequisites: MAE 2312, 2323, 3360; MATH 3330.

Required Textbooks and Other Course Materials: Roy R. Craig Jr & Andrew J. Kurdila, *Fundamentals of Structural Dynamics*, 2nd Ed, John Wiley, 2006, ISBN-10: 0471430447, ISBN-13: 978-0471430445

Descriptions of major assignments and examinations with due dates: HomeWork throughout the semester; Exam 1, Week 6; Exam 2, Week 11; Project, Week 13; Final Exam.

Week Topic

1	Introduction, Free Vib SDOF
2	Harmonic Response
3	Transient Response
4	Numerical Methods
5	Continuous Systems
6	EXAM 1
7	Multidegree Of Freedom Systems
8	Frequency Domain Analysis
9	2-Degree of Freedom Systems
10	Free Vibration MDOF
11	Mode Superposition EXAM 2
12	Finite Element Modeling
13	Eigen Problems
14	Direct Integration for Transients
15	Applications

Final Exam

Key Assignment – The home work assigned for Week 13 will be the key assignment for this course and will be used to evaluate students' ability to identify, formulate and solve engineering problems. In order to pass this class, students must submit and pass all key assignments. If any key assignment is not submitted and passed, the student will not pass the class even if he/she scores perfectly on all exams and other assignments.

Grading Policy: Homework - 25%, Exams - 25%, Project - 25%, Final Exam - 25%.

Drop Policy: See university drop policy.

Americans With Disabilities Act: University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 - The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled *Americans with Disabilities Act (ADA)*, pursuant to section 504 of the Rehabilitation Act,

there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty of their need for accommodation and in providing authorized documentation through designated administrative channels. Information regarding specific diagnostic criteria and policies for obtaining academic accommodations can be found at www.uta.edu/disability. Also, you may visit the Office for Students with Disabilities in room 102 of University Hall or call them at (817) 272-3364. Posting Course Syllabuses Online – page 5

Academic Integrity:

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Series 50101, Section 2.2)

Student Support Services Available: The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

Electronic Communication Policy: The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system.

All students are assigned a MavMail account. ***Students are responsible for checking their MavMail regularly.*** Information about activating and using MavMail is available at <http://www.uta.edu/oit/email/>.

There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

Make-up Exam Policy: See instructor to schedule at conclusion of course.