SIE 270 Mathematical Foundation of Systems and Industrial Engineering  
Schedule for Spring 2012

Instructor: Dr. Wei Lin  Office: Engineering 227  
Tel: (520) 621-6553  Email: whlin@email.arizona.edu  
Class Hours: 8:00-9:15 TTH  Office Hours: 9:30 – 10:30 TTH or by appointment  
Teaching assistant: Heng Yue (yue@email.arizona.edu) Office hours: TBD.

COURSE DESCRIPTION 2009-2010 CATALOG DATA:

Basics of data structures, transformations, computer methods, their implementation in MATLAB, 
and their applications in solving engineering problems.

SPECIFIC INSTRUCTIONAL OBJECTIVES

1. Understand the basics and different types of data structures  
2. Fundamentals of matrix algebra  
3. How computers evaluate functions, solve equations and simple optimization problems  
4. Fundamentals of the transformation method for solving ordinary differential equations

COURSE TOPICS

1. Data structures  
2. Linear equations  
3. Polynomial interpolation  
4. Numerical differentiation and integration  
5. Newton and simple gradient methods for nonlinear equations  
6. Ordinary differential equations  
7. Complex numbers  
8. Laplace transforms

REQUIRED TEXTBOOKS


PREREQUISITES:

1. Calculus, differentiation and integration;  
2. Ability to write and understand computer programs in a high level language;  
3. ENGR 170, MATH 129, PHYS 141 (Pre-requisite shown in Catalog).

COURSE EVALUATION

- Homework ……………………. 10%  
- Quiz …………………………… 15%  
- Three Mid Term Exams …….. (15% each)  
- Final Exam (comprehensive) …. 30%