SIE 270 Mathematical Foundations of Systems and Industrial Engineering
Schedule for Spring 2015

Instructor: Dr. Wei Xie
Office: Engr 265
Class Hours: 8:00 – 9:15 am TuTh
Contact: Tel: 520-626-1818
TA: Hongwei Luo (Engr 159A, 1:30– 3:00 pm WeTh)
Mohammed Alqahtani (Engr 129)

Office Hours: 10:00 – 11:30 am Tu

INSTRUCTIONAL OBJECTIVES

1. Understand how computers store data and do arithmetic, and computational errors
2. Fundamentals of matrix algebra
3. Using computer to numerically evaluate functions by some approximation methods and solve equations
4. Implementation of 1-3 via MATLAB commands and script

COURSE TOPICS

1. Data structures
2. Simultaneous 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 (*)

TEXT BOOK


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 is related to Instructional Objectives)

COURSE EVALUATION

- Homework ........................................... 40%
- Two Mid-term Exams ............................. 30% (15% each)
- Final Exam (comprehensive) .......... 30%
- Final Grade: A (90–100), B (80–89), C (70–79), D (50–69), E(<50)