Palestine Technical University – Kadoorie
Department of Applied Mathematics
Engineering Mathmatics2 Syllabus
Second Semester 2016/2017

Textbook:

Advanced Engineering Mathematics, by Erwin Kreyszing,9th edition.

References:

1. Elementary Differential Equation and Boundary Value problems, by William E. Boyce and Richard C. Diprima.

2.Fourier Series, by Geogrip ,Tolstov

Instructors: Dr. Ata Asa'd Dr. Basheer Mrs.Kefaya Ayyash

Grading: Two midterm exams (60%).

Final exam (40%).

- ***Topics to be covered (as time permits):***

Chapter 1: Complex Numbers and Higher order of linear Equation.

1.1 The complex number and plane
1.2 Euler's formula for complex number, product ,and quotients
1.3 De Mover's theorem and roots of complex numbers.
1.4 General theory of n^{th} order linear equation
1.5 Homogeneous equations with constant coefficients.
1.6 The method of undetermined coefficients.
1.7 The method of variation of parameters

Chapter 2: Series Solutions Of Second Order Linear Equations

2.1 Review of power Series.
2.2 Series Solution near an Ordinary point, part I
2.3 Series Solution near an Ordinary point, part II
2.4 Regular Singular point.
2.5 Euler Equation.
2.6 Series Solution near a regular singular point, part I

Chapter 3: The Laplace Transform

3.1 Definition of Laplace transform.
3.2 Solution of initial Value Problems.
3.3 Step Functions.
3.4 Differential Equation with discontinuous forcing function.
3.5 Impulse functions.
3.6 The convolution integral.

Chapter 4: Systems of First Order Linear Equations.

7.1 Introducton .
7.4 Basic Theory of Systems of First Order Linear Equations
7.5 Homogeneous Linear Systems with Constant Coefficients
7.6 Complex Eigenvalues
7.8 Repeated Eigenvalues
7.9 Nonhomogeneous Linear Systems

Chapter 5: Trigonometric Fourier Series.

5.1 Periodic functions.
5.2 Fourier series of Functions of period 2π and Fourier series of Functions defined on an interval of length 2π.
5.3 Even and odd functions, cosine and sine series
5.4 Functions of period $2l$.