# Department of Mathematics Faculty of Science

**MATH 735 (206735) Distribution Theory and Applications 3(3-0-6)**

**Prerequisite** Consent of the instructor

# ****Course Description****

Definitions and basic properties. The calculus of distributions. Distributions of slow growth. Convolution. The Fourier transform of distributions. The Laplace transform of distributions and applications.

**Objectives**

To provide student in distribution theory and applictions

**Course Contents No.of Lecture Hours.**

1. Definitions and basic properties 6

1.1 The space D of testing functions

1.2 Operations on distribution

2. The calculus of distributions 7

2.1 Convergence of sequence of distributions

2.2 The differentation of distributions

2.3 The primitive of distributions

3. Distributions of slow growth 7

3.1 The space S of testing functions of rapid decreasing

3.2 The space of tempered distribution

3.3 The delta functional and its derivative

4. Convolution 7

4.1 The direct product of distributions

4.2 The convolution of distributions

4.3 The convolution operators

5. The Fourier transform of distributions 9

5.1 The Fourier transform of ordinary function

5.2 The Fourier transform of tempered distributions

5.3 The space Z of testing functions

5.4 The space of ultra distributions

6. The Laplace transform of distributions 9

6.1 The Laplace transform of ordinary functions.

6.2 The Laplace transform of right sides distributions

6.3 The general solution of homogeneous linear differential equations

**Total 45**