

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 applications

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 differentiation 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 S' 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 Z' 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