

Abstract

This thesis deals with some of the salient aspects of fuzzy metric spaces and fuzzy normed linear spaces. We first provide a comprehensive comparison of the different bounded and continuous linear operators in fuzzy normed linear spaces that are found in literature. We move on to study some of these operators and obtain several results on completeness, extension and existence of inverse for some types of fuzzy bounded linear operators. The relation between fuzzy boundedness and fuzzy compactness is then examined which yields a generalized form of Riesz's lemma in the fuzzy setting. The space of fuzzy compact operators is studied to obtain several characterizations as regards to its completeness. Subsequently, we throw light on the topology induced by a fuzzy norm. Schauder basis is developed in fuzzy normed linear spaces and results on completeness of spaces of convergent sequences is obtained. The final part of the thesis is devoted to the study of various topological concepts, namely metrizable, compactness, separability etc. in \mathcal{L} -fuzzy metric spaces. Several results including a generalized form of Lebesgue covering lemma for the sequentially compact \mathcal{L} -fuzzy metric spaces are obtained.