This thesis consists of three major parts viz., study of the topological notions of fuzzy sets, rough sets and soft sets.

The first part consists of our work on fuzzy topological space. Here two different types of generalized notions of fuzzy closed sets, namely, fuzzy $g^s$-closed sets and fuzzy weakly-closed sets are introduced. Then we study various concepts of topology, like closure, interior, compactness, closed space, continuity and different types of generalizations of continuity using these introduced fuzzy closed sets. Further, a new definition of fuzzy boundary of a fuzzy set in a fuzzy topological space is proposed and examined.

In the second part, we have worked on topological structures of rough sets. It deals with different approaches in studying topological notions of rough sets. We have also studied covering based rough set, where a covering based rough set is introduced and investigated.

The third part contains topological structures of soft sets. Semi open and semi closed soft sets for a soft topological space are defined and various notions of topology are generalized using these generalized soft sets. Also, topological notions are examined on a hybridization of soft sets and fuzzy sets.