This bachelor's thesis compares the dynamics of classical mechanics with those of relativity theory. It develops a suitable Lagrangian function to describe the motion of a particle in a potential field within special relativity. The motion of a relativistic particle is studied in selected force fields: homogeneous, central (including Newtonian gravity), and linear harmonic oscillator fields. It also addresses the concept of rigid bodies in relativity and addresses the Ehrenfest paradox. The thesis provides an overview of fundamental dynamical problems in both special and general relativity and compares them with classical mechanics. The results offer a foundation for further study in relativistic physics.