Antiferromagnets are common in nature and just like ferromagnets possess a long-range magnetic order. They have found little practical application so far, because the magnetic order in antiferromagnets is hard to detect and to manipulate by external magnetic fields. This has become less of a problem due to the development of spintronics, which has motivated a new interest in antiferromagnets. In this thesis we first theoretically study the electronic and magnetic structure of certain class of antiferromagnetic compounds, which are related to common semiconductors. In the second part we focus on electrical manipulation of antiferromagnets. We show that the so-called spin-orbit torque, which has been studied extensively in ferromagnets, can efficiently manipulate the antiferromagnetic order. We calculate the spin-orbit torque in several antiferromagnets and study the symmetry of the spin-orbit torque in detail.