First-principle calculations have been performed to study the structural, electronic and magnetic properties of BaUO3 in cubic perovskite. The lattice parameter, bulk modulus, bond length, band structures, density of states, and magnetic moments are evaluated using Full Potential Linearized Augmented Plane Wave (FP-LAPW) method in Wien2k-code with GGA as exchange and correlation functional and mBJ functional is used to improve the results along with GGA+U to review magnetic properties. It is found that our calculated structural parameters are in good agreement with experimental results and other work at ambient pressure. The density of states results for spin up and spin down channels show that BaUO3 is an half ferromagnetic material, so we may use this material to make high-performance spintronics devices.