Electronic voting has become the most preferred and generally acceptable voting method in the 21 century. Advanced and developed countries are constantly reviewing their e-voting systems. However, the cyber security problem associated with the e-voting system has been giving concerns to cyber security experts and researchers. The authentication methods employed in existing e-voting system is for a voter to input a unique identification number that has been assigned after accreditation. This is to confirm of the voter's details in the voter registration data base. This paper seeks to develop a secured e-voting system that integrates a second order authentication in the form of One-Time Password to again confirm the voters' details in the registration data base before voting is allowed. Java programming language was employed in coding the OTP algorithm into the existing e-voting system algorithm. The e-voting system is more secure with this work.