Ab initio spin-orbit configuration interaction calculations are performed on the $UO_2$ molecule, which has been observed in matrix isolation and vacuum ultraviolet spectroscopic studies. $UO_2$ is isoelectronic with $PuO_2^{2+}$, which has a $5f^5^15f^1^3H_{4g}$ ground state. We find, as have other workers, that $UO_2$ has a $5f^5^17s^1^3\Phi_2$ ground state with a moderate mixture of $5f^5^17s^1^3\Delta_2$. The UO distance is found to be 1.786 Å. The $^3H_{4g}$ state is only slightly higher in energy. Oscillator strengths have been calculated for electronic transitions.