In this study, the thermal buckling analysis of the non-homogenous shallow spherical shell is investigated. Firstly, the analytical modeling of non-homogenous material properties and appropriate thermal expansion coefficient which vary continuously through the thickness direction is made. In the formulation of the problem, Kirchhoff-Love's first order shell theory is used and Hooke's law is taken into account for stress-strain relations. By using Donnell-Mushtari-Vlasov's (DMV) assumptions and linear stress-displacement relation, the stability equations depending on three displacements are obtained. Stability equations are solved for the simply supported boundary condition and analytical expression for the dimensionless critical uniform temperature rise is found. In numerical computations, the effects of variations of the elasticity modulus and appropriate thermal expansion coefficient as a power function according to thickness direction and variation of the geometric parameters of the sphere on the critical uniform temperature rises are examined as. To test the validity of this study, the obtained results are compared with counterparts in the open literature.