The physical, electrical and piezoresistive characteristics of chromium nitride (CrN) thin films on silicon substrates have been investigated for use as strain gauges. The thin-film depositions were carried out by DC reactive magnetron sputtering in an argon-nitrogen atmosphere (Ar-(5–25%)N₂). The deposited CrN thin films with a thickness of 3500 Å and annealing conditions of 300°C for 48 h in Ar-10% N₂ deposition atmosphere have been selected as the ideal piezoresistive material for the strain gauges. Under optimum conditions, the CrN thin films for the strain gauges have a high electrical resistivity, \( \rho = 1147.65 \text{ mW cm} \), a low temperature coefficient of resistance (TCR) = –186 ppm/°C and a high temporal stability with a good longitudinal gauge factor, \( GF = 11.17 \).