Superconducting spintronics devices, such as the spin value of a superconducting layer sandwiched between ferromagnetic layers, are remarkable because superconductivity can be tuned by magnetization configuration of ferromagnets, leading to the nonvolatile memory devices. Raising the temperature for the superconducting spin switches to operate in a broad range is the key to its implementation. Based on the previous success with niobium nitride, molybdenum nitride (MoN) appears to be a promising spacer candidate. In this project, MoN thin films were investigated to create superconducting films with a critical temperature ($T_c$) higher than 4K. The films were fabricated through reactive sputter deposition. The sputtering conditions were varied to optimize the properties of MoN films to obtain a high $T_c$ superconducting film. The films’ resistance vs temperature was measured from room temperature down to 4.2K to obtain $T_c$ and residual resistivity ratio. The crystalline structures of the films were analyzed with x-ray diffraction which indicated that the films were structurally disordered rather than hexagonal or cubic structure. Samples successfully showed superconductivity below 6.3K, whereas for higher N$_2$ partial pressures during sputtering, the $T_c$ of the films was below 4.2K. To bring crystallinity, post-annealing was performed for samples in N$_2$, Ar, and ultra-high vacuum. While we were able to create superconducting MoN films with good $T_c$, the alternate phase, which has a $T_c$ of 12.5K, would require more optimization; a deeper understanding of MoN would create a strong foundation for MoN as part of a spin value.