There are many different methods used in the industry to improve the antifelting and shrinkproof properties of woven wool fabrics. In the study, Layer by Layer (LBL) method which is one of the most effective and new methods was applied on woven wool fabrics by using nano polyurethane. After the application on suit fabrics, relaxation and felting shrinkage, breaking and tear strength, alkali solubility tests were performed. It is ensured that the relaxation and felting shrinkage values are within ± 3%. It has been observed that soft handle fabrics are obtained after coating without any negative effect on the fabric key. In addition, SEM-EDX analysis was performed to examine the surface properties of the fabrics and to perform elementary analyses, and FTIR-ATR analysis was performed to determine bond characterization of the resulting films.