A signed graph is a pair \((G, \phi)\), where \(G = (V, E)\) is a graph (in which parallel edges are permitted, but loops are not) and \(\phi : E \to \{-, +\}\). By \(S(G, \phi)\), we denote the set of all symmetric \(n \times n\) matrices \(A = [a_{i,j}]\) such that if \(a_{i,j} < 0\), then \(i\) and \(j\) are connected by at least one \(-\) edge, if \(a_{i,j} > 0\), then \(i\) and \(j\) are connected by at least one \(+\) edge, and if \(a_{i,j} = 0\), then \(i\) and \(j\) are nonadjacent or \(i\) and \(j\) are connected by a \(+\) and by a \(-\) edge. The parameters \(M(G, \phi)\) and \(\xi(G, \phi)\) of a signed graph \((G, \phi)\) are the largest nullity of any matrix \(A \in S(G, \phi)\) and the largest nullity of any matrix \(A \in S(G, \phi)\) that has the Strong Arnold Property, respectively. In this talk, we discuss the characterizations of the classes of signed graphs \((G, \phi)\) with \(M(G, \phi)\) \(\leq 1\), of the class of signed graphs \((G, \phi)\) with \(\xi(G, \phi)\) \(\leq 1\), of the class of 2-connected signed graphs \((G, \phi)\) with \(M(G, \phi)\) \(\leq 2\), and of the class of 2-connected signed graphs \((G, \phi)\) with \(\xi(G, \phi)\) \(\leq 2\). (Received September 19, 2016)