Let $C$ be a smooth projective curve defined over $\mathbb{Q}$. We would like to study the limiting distributions of the coefficients of the normalized $L$-polynomial for $C$. To determine the distributions, we study the Sato-Tate groups of the Jacobians of the curves. In this talk we give both general results and explicit examples of Sato-Tate groups for certain curves $C$. We will use these groups to determine the limiting distributions of the coefficients of the normalized $L$-polynomial. (Received September 15, 2020)