Given a finite set of pairs in $\mathbb{R}^d \times \mathbb{R}$, nuclei and weights, Laguerre tessellations allow us to subdivide Euclidean space $\mathbb{R}^d$ into finitely many polyhedral cells using the power distance. We are interested in the problem of finding weights so that the Laguerre cells have prescribed volumes and nuclei. Our primary aim is to present the theoretical background leading to the problem's solution. Here we complete some proofs that are shortened in the literature, while other theorems are cited. Then, we demonstrate two own computer programs and the corresponding numerical results. First, we compute the desired set of weights that generates the Laguerre tessellation with prescribed cell volumes and apply it to a unit cube in $\mathbb{R}^3$. The application of this method relies on the Barzilai-Borwein gradient descent and Voro++ library, which computes the volumes of cells in each iteration. Furthermore, an iterative approach approximates a centroidal Laguerre tessellation, where the nuclei coincide with the centroids of Laguerre cells.