A scaled Chebyshev node distribution is studied in this paper. It is proved that the node distribution is optimal for interpolation in $C_{M}^{s+1}[-1,1]$, the set of $(s+1)$-time differentiable functions whose $(s+1)$-th derivatives are bounded by a constant $M > 0$. Node distributions for computing spectral differentiation matrices are proposed and studied. Numerical experiments show that the proposed node distributions yield results with higher accuracy than the most commonly used Chebyshev-Gauss-Lobatto node distribution. (Received October 20, 2013)