Ulrich modules were introduced by Bernd Ulrich in 1984 and have since been a very active area of research. The existence of Ulrich modules for complete local domains have powerful applications. For example, existence implies Lech’s conjecture: given a flat local map of local rings from $R$ to $S$, the Hilbert-Samuel multiplicity of $S$ is at least the Hilbert-Samuel multiplicity of $R$. Until recently, it was unknown if there were any counterexamples to the existence of Ulrich modules for local domains. In this talk, I will introduce the notion of Ulrich modules and discuss implications of their existence. Then I will give a counterexample to the existence of Ulrich modules for complete local domains. (Received January 26, 2020)