Legendrian knot theory in manifolds beyond $\mathbb{R}^3$ has seen increased attention in recent years. In this talk, I’ll consider Seifert fibered spaces equipped with a transverse, $S^1$-invariant contact structure. To a Legendrian knot in such a manifold, we associate a differential graded algebra. This construction is a combinatorial model of Legendrian contact homology, and the invariant identifies an infinite family of non-simple knot types representing torsion homology classes. (Received January 27, 2012)