The AKSZ construction in
derived algebraic geometry
as an extended topological field theory

Course number: Math 80440, Topics in Topology
Instructor: C. Schommer-Pries
Time & Location: 2-3:15pm Pasquerilla Center 102

The topic of this course is the recent work of Calaque-Haugseng-Scheimbauer who constructed a family of extended topological field theories by implementing a higher categorical version of the AKSZ construction in derived geometry. The AKSZ construction (originally introduced by Alexandrov–Kontsevich– Schwartz–Zaboronski) produces a classical field theory, a σ-model, whose space of fields are maps into a (shifted) symplectic manifold. This construction was promoted to the context of derived (algebraic) geometry by Pantev-Toën-Vaquié-Vezzosi. The work of Calaque-Haugseng-Scheimbauer extends and realizes this construction as a fully extended topological field theory (a map from the bordism (∞,n)-category to an (∞,n)-category of derived lagrangian correspondences).

This work touches on many modern developments such as the new field of derived algebraic and symplectic geometry, higher categories ((∞,n)-categories), extended topological field theories, and the cobordism hypothesis. Each one of these is a large subject in its own right. Our focus will be on understanding the big picture and how these pieces fit together. Our primary source will be their book of Calaque-Haugseng-Scheimbauer (arXiv:2108.02473).