The abstract is as follows:

In this lecture series we will introduce Behrend constructible function on a scheme or a Deligne-Mumford stack. The Donaldson-Thomas type counting invariants will be defined by Behrend function on the Donaldson-Thomas moduli space. If the Donaldson-Thomas moduli space locally is the critical locus of a holomorphic function on a higher dimensional complex manifold, then the value of Behrend function at a point is given by the Euler characteristic of Milnor fibre of the holomorphic function at that point. We will explain how the Donaldson-Thomas type moduli space locally can be given by the critical locus of a holomorphic function. As applications, we will talk about the counting invariants in the derived category of quiver representations and cover the GW/DT/PT/NCDT-correspondence.

The outline is as follows:

1) Behrend functions and counting invariants.
2) Cyclic L-infinity algebras and transfer theorem.
3) Joyce-Song formulas for Behrend functions.
4) Applications to counting invariants for quiver representations.

References are:

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5) D. Joyce and Y. Song, A theory of generalized Donaldson-Thomas invariants, arXiv:0810.5645.
6) R. Pandharipande and R. thomas, Counting invariants via stable pairs in the derived category, arXiv:0707.2348.