1052-18-105 **J P May*** (may@math.uchicago.edu), Department of Mathematics, The University of Chicago, 1118 E. 58th Street, Chicago, IL 60637. *Six model structures for DG modules over DGA's.*

Let A be a differential graded algebra over a commutative ring R and let M(A) be the category of differential graded (left) A-modules. There are three obvious notions of weak equivalence in M(A): A-homotopy equivalence, R-homotopy equivalence, and quasi-isomorphism. These lead to three triangulated categories. There are (at least) six sensible model category structures on M(A), one, two, and three, respectively, for the three kinds of weak equivalences just named. In one of them, the classical bar construction B(A,A,X) is a model theoretic cofibrant approximation of X. All of these model structures seem natural and interesting. There appear to be many other contexts in algebra and topology where such a sextet of interrelated model structures is present. (Received August 23, 2009)