We define Fitting invariants for (certain) modules over non-commutative rings. We then use this notion to derive some explicit consequences of the Equivariant Tamagawa Number Conjecture of Burns and Flach. Finally we explain how in the case of Tate motives, resp. elliptic curves, this approach gives rise to explicit non-commutative analogues of Brumer’s Conjecture, resp. of the ‘strong main conjecture’ of Mazur and Tate. (Received February 21, 2006)