1077-17-390   **Noah Snyder*** (`nsnyder@math.columbia.edu`), **Christopher Douglas** and **Christopher Schommer-Pries**. 3-*Dimensional Topology and Finite Tensor Categories.*

The Turaev-Viro construction assigns to a spherical fusion category a 3-dimensional topological field theory. We generalize this construction in three ways. First we construct a fully local 0123 extended TFT. Second, we relax the assumption of sphericality on the fusion category; an arbitrary fusion category gives a 3-framed TFT while an additional choice of spherical structure yields an oriented TFT. Third we show that a non-semisimple finite tensor category gives a non-compact fully extended TFT. This correspondence between finite tensor categories and TFTs allows one to translate algebraic statements and arguments into topology and vice-versa. In particular, the generalization of Radford's theorem to finite tensor categories is equivalent to the fact that $\pi_1(\mathrm{SO}_3) \cong \mathbb{Z}/2$. (Received August 28, 2011)