Traditional points-based grading systems can make it difficult to determine what a student has actually learned. They may penalize students who require several attempts before mastering a topic, and don’t necessarily encourage useful learning behaviors.

We describe a standards-based grading system, implemented in a freshman Calculus 1 course, that aims to address these issues. In this system, students demonstrate mastery of a set of standards that correspond to major learning objectives. These standards are based in part on the Common Core Standards for Mathematical Practice.

Both this system and its associated classroom structure are intended to encourage reflection, revision, and a focus on eventual mastery and useful learning behaviors. We will compare results with a similar class taught by the same instructor, but without the standards-based grading system. This will include both a quantitative and anecdotal look at final grades, learning outcomes, and student statements about their own learning. (Received September 13, 2015)