1100-93-116 **John Davis*** (john_m_davis@baylor.edu), Department of Mathematics, Baylor University, Waco, TX 76798, **Ian Gravagne** (ian_gravagne@baylor.edu), Dept of Electrical & Computer Engineering, Baylor University, Waco, TX 76798, **Geoffrey Eisenbarth** (geoffrey_eisenbarth@baylor.edu), Department of Mathematics, Baylor University, Waco, TX 76798, and **Dylan Poulsen** (dylan_poulsen@baylor.edu), Department of Mathematics, Baylor University, Waco, TX 76798. *Time Scales Modeling Done Right: Discretizing onto a Time Scale.* Preliminary report.

When studying real world applications from a time scales approach, it is crucial to model the underlying phenomena with dynamic equations which preserve the original dynamics. Failure to do so usually results in dynamic equations models that are artificial and inaccurate. In this talk, we will discuss, for example, how to map continuous models such as $\dot{x}(t) = Ax(t)$, $t \in \mathbb{R}$, to a dynamic equation $\xi^{\Delta}(\tau) = \mathcal{A}\xi(\tau)$, $\tau \in \mathbb{T}$, where $\mathbb{T}$ is a time scale, in such a way that solutions of the latter preserve the dynamics of the former. Finally, we discuss some real world applications where doing so not only allows new progress on the application but also leads to interesting mathematical questions that would not have arisen otherwise. (Received February 04, 2014)