1051-49-255   **Nick Wintz*** (`njwn7d@mst.edu`), Missouri University of Science and Technology, Department of Mathematics and Statistics, Rolla, MO 65409. *The Linear Quadratic Regulator on Time Scales.*

We will unify and extend an optimal control problem for systems on time scales. Here, we will consider a linear system associated with a quadratic performance index. First, we will find an optimal control when the final state is fixed, resulting in an open-loop control. Next, we consider when the final state is free, resulting in a closed-loop control. Finally, we consider some extensions to the regulator problem, including tracking and disturbance/rejection models. (Received August 25, 2009)