1108-60-96   **Ananda P. Weerasinghe*** (`ananda@iastate.edu`), Department of Mathematics, Iowa State University, Ames, IA 50011, and **Chao Zhu**, Department of Mathematics, University of Wisconsin-Milwaukee, Milwaukee, WI 53211. *Optimal control of a process with a path-dependent cost structure.*

Motivated by inventory control problems, we consider an infinite-horizon discounted control problem for a linear SDE where the cost rate at a given time depends on the history of the process. State process represents the inventory level and the control process represents the inventory reduction effort. The cost structure constitute of two types of costs: a control cost and a capacity expansion cost. We derive an optimal control policy which is path-dependent and use this solution to address two other cost minimization problems: a control cost minimization problem with a capacity constraint and the associated long-run average cost minimization problem. We derive explicit optimal strategies in each case. Finally, we address the discounted control problem in the presence of regime-switching of the drift and diffusion coefficients in the SDE for the state process. (Received January 04, 2015)