

Department of Industrial Engineering
Announces
The Scott T. Poage Distinguished Lecture Series

**Title: Integrating Worker and Team Considerations into
Manufacturing Cell Formation**

Distinguished Speaker
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When: 10-11:00am, Friday, February 24, 2006
Where: 102 D, Engineering Building 1

Abstract

In recent years, the traditional reductionist approach to scientific management has been replaced by an emphasis on flexibility and recognition of the importance of including entity interactions when modeling systems. In this talk, we examine several issues related to the formation and operation of autonomous teams for manufacturing cells wherein workers must cooperate to complete a set of tasks. We begin with a model for the partitioning of workers into effective teams based on individual skill and behavioral profiles. Descriptive measures are integrated into a mathematical model to determine which individuals should be grouped together and which tasks should be assigned to each individual. Empirical testing shows that the model successfully predicts team performance and good solutions can be obtained with reasonable computational effort. We then discuss the operational issue of dynamic cooperation among workers for completing serial tasks. Recent literature demonstrates that relatively low levels of cross-training often provide sufficient flexibility to enhance productivity and reduce average flow times. We develop rules for operators to make real-time decisions concerning the sharing of tasks in a serial production line. The rules which require limited cross-training and information are implemented using a push control mechanism. The rules are shown to provide nearly optimal results for a two-stage line. Simple to implement extensions for longer lines are shown to also perform well.

Short Bio

Ronald G. Askin is a Professor and Department Chair of Industrial Engineering at Arizona State University. Dr. Askin received a BS in Industrial Engineering from Lehigh University, an MS in Operations Research from Georgia Institute of Technology, and a Ph.D. in Industrial & Systems Engineering from Georgia Institute of Technology.