

**Development of a Stochastic Dynamic Model for a Make-to-Order Production System**  
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The problem is described as follows. A limited number of expensive, high quality parts is required in a given time period with a strict deadline. No rework of a nonconforming part is possible. To meet the demand, and to avoid the penalty, batch production is considered. Batch sizes as well as the maximum number of batches which can be produced are limited. Examples include make-to-order military and aerospace industry contracts as well as just-in-time manufacturing orders. The problem will be formulated and solved using stochastic dynamic programming. The optimal production policy will be found and a numerical analysis will be performed to get insight into the structure of the optimal policy.

Note: In addition to the listed topics, topics in the area of process/quality improvement, maintenance, reliability, production and inventory control are possible, interested students should contact Prof. Makis, e-mail: [makis@mie.utoronto.ca](mailto:makis@mie.utoronto.ca).