# PROJECT 8
## MARKOV PROCESSES

### SYNOPSIS

Working either indivually or in teams of two or three, prepare an Excel package to perform Markov process calculations.

### YOUR TASK

Create an Excel document consisting of the following five parts. Most likely you will want each of these parts to correspond to a separate sheet in the document.

Part A  Finite Markov chains. This part should allow a user to calculate a power of a transition matrix. If only the power is being changed, the user should only have to change one number in one cell.

Part B  Linear Markovian Birth-Death Processes. This part should calculate the results of formulas 21.6 and 21.7.

Part C  Poisson Birth Processes and Poisson Death Processes. This part should calculate the results of formulas 21.10 and 21.14.

Part D  M/M/s Queueing Models. This part should calculate the results of formulas 23.3 - 23.12 and 24.5 - 24.9.

Part E  M/M/s/K Queueing Models. This part should calculate the results of formulas 24.10 - 24.15.

Ensure that your document is user-friendly and that the pages and cells are clearly labeled.

### WHAT YOU SHOULD SUBMIT

1. A typed title page.

2. The Excel document, allowing me to modify cell values.

3. A .pdf copy of the document with each page illustrating the calculations for a text problem from the appropriate section. Make sure there aren't cells spilling over the margins of the pages.