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# COMPUTER SIMULATION IN LOGISTICS USING EXCEL AND VBA

Course 02-710  
QUANTICO, VA

19-23 August 2002

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**SYNOPSIS:** A variety of logistic models will be described and programmed in *Visual Basic for Applications*, a high level programming language. An *Excel* worksheet will be used to input parameters and data to the program. Worksheets and charts will be used to display the results of running the simulation models both numerically in tables and graphically in charts. The best-fit and solver technologies in *Excel* will be used to find relationships between utilization of resources and performance of the system. Logistic models to be covered include:

- Normality of Things
- When to Reorder and How Much
- How Many Warehouse Docks
- Tankers Serving a Pipeline
- Selecting Aircraft
- Combining Warehouses

These models will focus on the effect of a change in demand on available resources. The first model simulates demand for a number of components by many customers over several days. This is displayed and analyzed on an *Excel* worksheet to verify statistically that the results are reliable. This model is used to simulate demand to a warehouse where, in the second model, the effects of reorder policies on stockout are simulated. Students construct parts of these models in *VBA* and interface the procedures with the full program. The other models simulate service needs relative to resource capabilities in a variety of areas.

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**TEXTS:** Participants will receive the text *Computer Simulation in Logistics*, R. L. Nersesian, G. B. Swartz, Quorum Press, 1996, bound handouts of the overheads and a disk containing all course materials presented.

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**DR. G. BOYD SWARTZ**

**BIO:** Dr. Swartz received his Ph.D. in Mathematics from New York University and his MSEE and BSEE from Lehigh University. He is currently a Professor in the Department of Mathematics at Monmouth University and has previously served as Chair of both the Computer Science and Mathematics Departments at Monmouth. Boyd Swartz is the recipient of multiple Grants to include: *Using Simulink to Teach Mathematics*, *Enterprise Software Development for Education* and *Using VBA to Teach Mathematics*. Presentations at Professional Conferences include “Teaching Complex Variables Using Excel and Maple”, “Simulation in Teaching Logistics with Excel 5 and VBA” and “V&V of FLIR Code.” Boyd Swartz has also published extensively via multiple journals to include Quorum Press, the Society for Computer Simulation, the Journal of Object Oriented Programming and the Society for Computer Simulation. He is also the President of GBS Associates and has presented commercial courses in UNIX, Microsoft Office and Project, and Object Oriented Software Construction.

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**ADMINISTRATIVE INFORMATION**

**PURPOSE:** The OR/SA CEP was initiated to support the OPMS Functional Area 49 Program and now supports the overall Department of Army analytical effort by providing instruction in highly demanded and used OR/SA techniques in DOD.

**PLACE:** Class will be held in Room 251, Marsh Center Building, MCB Quantico, VA

**ELIGIBILITY:** Interested Military Officers and civilian GS-1515 analysts with adequate mathematical background. This is a special offering being conducted for the US Marine Corp, Quantico, VA. Others may attend on a space available basis.

**CLASSIFICATION:** All material will be unclassified. A Picture ID will be required.

**FUNDING:** All costs for the course, to include registration and issue materials, have been paid. Travel and TDY payments for all personnel must be made by the attendee's parent organization.

**APPLICATION:** Personnel desiring to attend should contact the following people: HQMC, I&L: (703) 695-8800, MCCDC, S&A: (703) 278-6020

**ADDITIONAL INFORMATION:** Further information may be obtained from the ORSA CEP course director at DSN 539-4249/4226, commercial (804) 765-4249/4226, e-mail [orsacep@lee.army.mil](mailto:orsacep@lee.army.mil)

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