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# DATA ANALYSIS, OPTIMIZATION AND SIMULATION WITH EXCEL

US ARMY WAR COLLEGE

CONTINUING EDUCATION PROGRAM COURSE 02-706

11 - 14 June 2001

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In this 3.5-day course, we will explore the exciting capabilities of *EXCEL* (and *EXCEL* add-ins) in the areas of data analysis, optimization and simulation. Participants will be trained in the use of the simulation add-ins *@RISK* and *RISKOPTIMIZER* and utilizing a new *EVOLUTIONARY SOLVER* that solves optimization problems using genetic algorithms. A sample of the topics to be covered includes:

## Data Analysis

- Histograms and descriptive statistics
- Pivot Tables
- Forecasting
- Data Mining

## Optimization

- Transportation, assignment and network flow models
- Facility location models
- Using Genetic Algorithm Excel Solver to solve quadratic assignment and traveling salesperson problems
- Aggregate planning models
- Data Envelopment Analysis
- Combinatorial Optimization with the Genetic Algorithm Excel Solver
- Goal Programming

## Queuing Models

- M/M/1 model
- M/M/s model
- Erlang loss model
- Machine repair model

## Monte Carlo Simulation

- Newsperson problem Capacity planning
- Deming's Funnel Experiment
- Project Management and simulation
- Manpower planning under uncertainty
- Combining Solver and *@RISK* for Capacity planning
- Modeling complex random variables

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**TEXT:** Participants will receive the text, Practical Management Science with Spreadsheets by Winston, a 30 day trial versions of the *EXCEL* add-ins *@Risk* and *RISKOPTIMIZER*, the software package *EVOLUTIONARY SOLVER* and bound copies of the course materials.

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Wayne L. Winston is currently a Professor of Decision Sciences in the School of Business at Indiana University, where he has taught since 1975. He received the S.B. degree in Mathematics from MIT and his Ph.D. in Operations Research from Yale University.

He is a consultant and executive educator. He has also taught Excel modeling and data analysis at GM, Saturn, Microsoft, Intel, Eli Lilly, Pfizer, Bristol Myers-Squibb, Arthur Anderson, NCR and Pricewaterhouse Coopers.

Wayne Winston has written and published numerous successful texts: Financial Models Using Simulation and Optimization, A Step-by-Step Guide with Excel and Palisade's Decision Tools Software, Decision Making Under Uncertainty with RISKOPTIMIZER, A Step-by-Step Guide Using Palisade's Decision Tools Software, Practical Management Science/Spreadsheet Modeling and Applications, Simulation Modeling Using @Risk, Operations Research: Applications and Algorithms and Introduction to Mathematical Programming: Applications and Algorithms.

In addition, he has published more than 20 articles in leading journals and has won more than 25 teaching awards, including the Indiana University School wide MBA award four times.

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## ADMINISTRATIVE INFORMATION

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**PLACE:** Collins Hall, US Army War College, Carlisle, PA.

**ELIGIBILITY:** Military Officers who possess OPMS Functional Area 49 (ORSA) and civilian GS-1515 analysts. A graduate degree in ORSA or ORSA-related field is preferred. Other military or civilian personnel in ORSA-related positions may attend on a space available basis.

**CLASSIFICATION:** The course material is unclassified. Student clearances will not be required.

**LODGING/DIRECTIONS:** DOD military and civilians may stay at Guest Housing. For reservations, dial (717) 245-4245. Reservations for hotels and motels in the area may be obtained via: <http://www.carlislewr.com/itr/>. General information about the Army War College and the local area may be obtained at: <http://carlisle-www.army.mil/>.

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

**APPLICATION:** Personnel desiring to attend should apply via their Training Officer through the Army Training Requirements and System (ATRRS), Course Code ALMC-SE, 02-706.

**POINT OF CONTACT:** 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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