
VISUAL BASIC FOR APPLICATIONS IN OPERATIONS RESEARCH

Continuing Education Program Offering 03-708
12-16 May 2003
Location: U.S. Marine Corp, Quantico, VA

SYNOPSIS: The Electronic Spreadsheet is rapidly becoming the standard computational environment of the OR analyst even though it was not developed with the analyst in mind. While the *EXCEL* spreadsheet has many powerful features, in its standard form it is limited in terms of analytical and data handling capabilities. However, by extending *EXCEL* via Visual Basic for Applications (VBA) the spreadsheet may be integrated with databases, presentation tools and many powerful forms of analysis. For example, in his recent book and software, *INSIGHT.xla*, Dr. Sam Savage has used VBA to bring simulation, decision trees and time series analysis to *EXCEL*. This course will show the analyst how to greatly enhance *EXCEL* and integrate it with databases and presentation tools. Two highlights of the course include a discussion of the architecture of Savage's analytical tools and a link between *EXCEL* and *Mathematica*. A topic outline follows:

Visual Basic Programming Fundamentals

- Creating Custom Functions for *EXCEL* Using Arrays
- Creating User Interfaces
- *EXCEL* Objects: Workbooks, Sheets, Ranges/Chart Objects

Creating OR Applications

- Recording History: Monte Carlo Simulation & Bootstrapping
- Stepping Through Time: Discrete Event Simulation
- Customized Analysis Generation: Time Series

Application Building:

- Automated Math Program Formulation
- Decision Trees

VB Connectivity with Other Resources

- Connecting To Databases: Access & SQL
- Connecting To Other Computation Servers: DLLs, Mathematica & Connecting Across Networks

Tying it all Together

- Using VBA with Other Programs: Word & PowerPoint
- Creating stand-alone Applications with Visual Basic

TEXTS: Participants will receive Excel Power Programming with VBA by Walkenbach.

ANTON ROWE: Anton Rowe graduated from University of California at San Diego with a Bachelor of Science degree in Mechanical Engineering in 1992 and received his M. S. degree from Stanford University in Engineering-Economic Systems and Operations Research in 1997.

While still an undergraduate, he developed a successful C program to aid in the design of composite golf shafts. Anton has since gained expertise with higher-level software languages such as Visual Basic and *Mathematica*. In 1997, he founded Episoft Inc., which developed a powerful link between *EXCEL* and *Mathematica*.

For the last several years, Anton has worked closely with Sam Savage of Stanford University in the development and programming of the Operations Research Applications software in Insight: Business Analysis Software for EXCEL. Dr. Savage has used this text and software extensively in his course Interactive Operations Research in Spreadsheets. In FY99, Mr. Rowe was assigned to a Faculty Position with the Naval Post Graduate School.

ADMINISTRATIVE INFORMATION:

PURPOSE: The ORSA CEP was initiated to support the OPMS Functional Area 49 Program and now supports the overall Department of Army analytical.

PLACE: Class will be held at 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.

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

APPLICATION: Personnel desiring to attend should contact: MCCDC, S&A: (703) 784-6022

POINT OF CONTACT: Further information may be obtained from the Course Director at (804) 765-4249/DSN 539-4249, or e-mail: orsacep@lee.army.mil. Personnel may also contact the Education Technician at (804) 765-4226/DSN 539-4226.
