
VISUAL BASIC FOR APPLICATIONS IN OPERATIONS RESEARCH

USAREC, Fort Knox, KY

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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**
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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*. This text and software has been used extensively in the course *Interactive Operations Research in Spreadsheets* presented by Dr. Savage. In FY99, Mr. Rowe has been assigned to a Faculty Position with the Naval Post Graduate School.

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. This is a special offering for Fort Knox personnel. Others may attend on a space available basis.

APPLICATION: Personnel desiring to attend should apply via their Training Officer through the Army Training Requirements and Resources System (ATRRS), Course Code ALMC-SE 02-70X.

PLACE: Skidgel Hall, Fort Knox, KY.

CLASSIFICATION: The course is unclassified.

FUNDING: Travel and TDY payments for any personnel accepted into the course must be paid by the attendee's parent organization.

POINT OF CONTACT: Further information may be obtained from the ORSA CEP course director at (804) 765-4249/4226, DSN 539-4249/4226, e-mail orsacep@lee.army.mil
