



VBA Programming Spring MiniCourse, 2015

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Course Description

A decision support system (DSS) provides organizations and individuals with informative analyses that enhance decision making. A DSS is made up of a model (or models), a source of data, and a user interface. When a model is implemented in Excel, it is possible to use Visual Basic for Applications (VBA) to make the system more efficient by automating interactive tasks that users would otherwise have to repeat routinely. VBA can also make the system more powerful by extending the functionality of a spreadsheet model and by customizing its use. This course covers the programming and design skills needed to build spreadsheet-based decision support systems.

Why would an MBA student be interested in this course?

The material in this course extends problem-solving capabilities acquired in the Decision Science course and elsewhere in the curriculum. Whereas the typical treatment of a problem-solving technique would lead to a stand-alone model based on a given data set, the DSS approach makes it possible to integrate different model types, to insulate an unsophisticated user from the details of the analysis, and to tailor the models to the specific needs of a decision-making client. This capability is especially important when the client is not comfortable with Excel or when the underlying model needs to be protected from the ultimate user. The student will discover how to design a convenient user interface that will link data, models, and reports with each other and with decision-making needs. Ultimately, the design and implementation of decision-support activities represents a valuable capability in consulting and staff support positions in industry.

Text

S. Christian Albright, *VBA for Modelers*, South-Western/Cengage Learning (Fourth Edition, 2012).

Course Assignments and Grades

This course meets once a week at a regularly scheduled time. In addition, an optional lab class will be organized. Homework assignments are due at the start of each regularly scheduled class, including the first. The course grade is based on the homework assignments, in-class exercises, and a project.

Supplementary References

S. Eksioglu and M. Seref, *Developing Spreadsheet-based Decision Support Systems*, Dynamic Ideas (2011).

An alternative text, which was used for this course in an earlier edition, but only about a third of the book supports the course. Part I reviews Excel. Part II supports the course. Part III contains some advanced material and a set of case exercises.

Excel 2013 Power Programming with VBA by John Walkenbach. Wiley. 2013.

Walkenbach has written a series of successful books on Excel. This one is oriented to VBA.

Excel 2013 VBA and Macros by Bill Jelen and Tracy Syrstad. Que. 2013.

A Fast Track To Structured Finance Modeling, Monitoring and Valuation: Jump Start VBA by William Preinitz, Wiley, 2009.

This book is intended mainly to cover finance topics, but it has an introduction to VBA and might be suitable for students with a strong orientation to finance.

Credit Risk Modeling using Excel and VBA by Gunter Loeffler and Peter N. Posch, Wiley, 2nd Edition, 2011.

This book might be suitable for students with a strong orientation to finance. It's another example of some specialized books that draw on VBA.

VBA Programming: Outline

Class #1 : Introduction to VBA

The Excel Object Model and the VBA environment; Read Ch 1-3.
Macros Ch 4.

Homework Due: HW 1.1-4

Class #2 : Programming Basics

Variables, Objects, Formulas; Read Ch 5.

Class #3 : Programming Basics: Functions and Subroutines

Modularization; Read Ch 10.

Homework Due: HW2.1-4

Class #4 : Range Objects

Ranges in VBA; Read Ch 6.

Class #5 : Programming Concepts

Program controls: conditional statements and loops; Read Ch 7.

Homework Due: HW3.1-3

Class #6 : User Interfaces

User forms, error-checking, and protection; Read Ch 11.

Class #7: : Arrays

Arrays in VBA Programming; Read Ch. 9

Homework Due: HW4.1-5

Class #8 : Libraries

Controlling Excel's Solver; Read Ch 17.

Class #9 : Worksheets, Workbooks, and Collections

Other Excel Objects; Read Ch 8.

Homework Due: HW5.1-4