

Quick Start for lecturers on how to teach risk analysis and use ModelRisk for Insurance and Finance

Risk analysis can be a fascinating topic to learn if the course focuses on the problem solving part, supported by plenty of examples. In lectures, it is generally a good idea to keep the theory to a minimum and to try to find visual methods to explain probability ideas rather than formulae.

The type of person who is likely to be a successful risk analyst is more usually attracted by the problem solving side of the work and the practical application of mathematics and logic rather than the mathematics per se. In our risk analysis courses, we always start a course by getting people to say a little about themselves and this helps me find examples that have the greatest resonance with the particular audience. We set lots of problems and ask people to work in pairs, for small problems, or groups of six or so for larger problems. This makes a course a lot more dynamic, gives people a sense of achievement when they solve a problem, and really helps people understand better because they have to debate and defend or give up their ideas.

At [Vose Software](http://www.vosesoftware.com) we have a very affordable educational program in which graduate and post-graduate students at accredited universities can obtain copies of **ModelRisk** for a nominal charge through a bulk order via their university. More information about our academic program is available at www.vosesoftware.com/academic.htm.

In the ModelRisk software we have placed a lot of emphasis on user-friendly interfaces, which makes it ideally suited as a teaching aid. Below, we give ideas on what to include in a risk analysis course for various disciplines.

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David Vose”

All [blue links](#) below are topics within ModelAssist for ModelRisk, the very comprehensive help-file that comes with every copy of ModelRisk.

Insurance and finance risk analysis modeling

This is probably the most technical area of risk analysis. We suggest:

- [Presenting results](#) to illustrate how results can be expressed and used; and
- [Monte Carlo simulation](#), [Analyzing and using data](#), [Aggregate distributions](#), [Time series](#), [Modeling correlation](#), [Optimization in risk analysis](#), [Model validation](#), [Model design](#) and finally [Insurance and finance risk modeling](#) for an in-depth technical course

Of course, as ModelRisk was designed with specifically this area in mind, it makes for a great tool to assist in the learning process (so more time can be devoted to the actual modeling and less to fiddling with Excel's shortcomings etc.).

Risk management

A major issue faced by risk analysts is that the management they report to often does not fully understand what a (quantitative) risk analysis is, or how to use and interpret it. In our view, it would be a great help if MBA students or similar business and public administration courses offered a basic introduction to risk analysis. We suggest the following:

- [Introduction to risk analysis](#) and the topics on [Risk management](#), [Probability theory and statistics](#), [Analyzing and using data](#) and [Presenting results](#), to give a background on the purpose of risk analysis and how to use the results.
- [Monte Carlo simulation](#) to explain how a simulation works; and
- the [Model Validation](#) topics on checking and validation.

Business investment risk analysis

Typical business investment problems involve deciding whether to invest in a new venture or expand on a proven venture. The analyses are typically performed using discounted cash-flows. We recommend:

- [Introduction to risk analysis](#) and the topics on [Risk management](#), [Probability theory and statistics](#), [Analyzing and using data](#) and [Presenting results](#) to set the scene;
 - [Model design](#) on how to run a model;
 - [Analyzing and using data](#) about analyzing data and fitting distributions;
 - [Aggregate distributions](#) for calculating sums of random variables: this is an area in which people make lots of mistakes;
 - [Time series](#) for forecasting time series;
 - [Modeling correlation](#), particularly the subjective modeling of correlation;
 - [Modeling expert opinion](#): perhaps the most important topic in this area, since SMEs are often the source of most estimates in an investment analysis;
 - [Optimization in risk analysis](#) as this helps determine the best investment strategy, especially for things like staged investment;
- and [Insurance and finance risk analysis modeling](#) for topic specific ideas.

Finally, at Vose Software we are always interested in any feedback or comments you may have regarding our software tools, our services and suggestions. We look forward to hearing from you!