Modeling for Strategic Insight

Sample Course Syllabus

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This course builds the skills and best practices for creating spreadsheet models, extracting powerful insights, and presenting analysis results to those who make complex strategic decisions. It is designed for those who will build decision models and conduct probabilistic analysis using Monte Carlo simulation. Using a case exercise, participants build a complete decision model, debug it, conduct sensitivity analysis to learn major sources of value and risk, use Monte Carlo simulation to evaluate alternative strategies, and generate graphs to communicate results.

Each participant is expected to provide a laptop computer with Microsoft® Excel. Most of the software tools used in the course are provided to participants, including software to generate tornado diagrams, waterfall diagrams and flying bar charts. A demonstration version of a Monte Carlo simulation package is downloaded to participant computers for use during the course.

Model Design: Structuring with Influence Diagrams
Creating a decision model without first planning its structure is as unwise as constructing a building without a set of plans. In this session, we introduce the influence diagram as a tool for describing the structure of a model. Participants work in teams to plan the structure of the model that will be created during the course.

Model Design: Parametric Relationships
High-quality decision models use parametric relationships, rather than strings of numbers. The parametric approach provides modelers with flexibility in model design and the ability to answer decision-makers’ questions about both the inputs and outputs of the model. In this session, participants design a parametric approach for a key variable in the model.

Model Design: Questions to Be Asked
During model design, modelers need to consider what questions the model needs to be able to answer. We discuss how to anticipate decision-makers’ questions and design in features to answer them.

Best Practices in Decision Modeling
We present and discuss a few golden rules in decision modeling, such as developing spreadsheets iteratively and organizing the model to clearly separate inputs and calculated results. We then take a detailed guided tour through a decision model that demonstrates the best practices that have been tested over many years of strategic decision consulting.
Model Building: Getting Started
Using the concepts and tools introduced in the course, each participant builds a decision model for a typical business strategy situation under the guidance of the instructors. Through this exercise, participants gain firsthand experience in building decision models that they can later apply to real-world strategic decision situations. In this session, participants get started on the model.

Model Building: Completing the Basic Structure
Participants complete the basic structure and produce a working model.

Model Building: Adding Strategies
Decision models are designed to evaluate multiple strategies. In this session, participants expand the model to evaluate an additional strategic alternative.

Debugging Models
Models are rarely created free of errors. In this session, we introduce three distinct levels of quality in a model. Level 1 quality is whether the model runs without causing an error, Level 2 quality is whether the model logic does what is intended, and Level 3 is whether the model adheres to best practices. Participants diagnose and correct model errors for each of these quality levels.

Evaluation and Insight Generation: Base Case and Sensitivity Analysis
Using decision models, we can evaluate alternative strategies to identify sources of value and risk. A variety of software packages are commercially available to conduct this analysis. In this session, we present an overview of base case and sensitivity analysis and introduce relevant software packages. Participants conduct these analyses to generate insights.

Evaluation and Insight Generation: Probabilistic Analysis
Decision models are typically used in probabilistic analysis, in which uncertainty in the inputs is transformed into uncertainty in the output. In this session, we present an overview of probabilistic analysis and introduce relevant software packages. Participants conduct probabilistic analysis using one of these packages to generate additional insights.

Synthesizing Results and Developing Further Insights
The purpose of creating decision models is to generate insights that can guide and inform strategic decision-making. Which strategic alternative creates the most value? Why is it better than the others? How much risk does it entail? What are the most important sources of risk? In this session, we discuss the answers to these questions and develop further insights that resulted from modeling and analyzing the decision situations. Participants use their models to provide these insights and identify how to effectively communicate them.