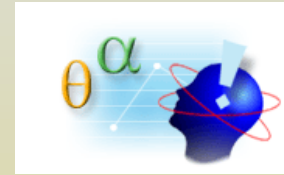




# INTEGRATED RISK ANALYSIS TRAINING

# Table of Contents



## MODULE 1: Introduction to Risk Analysis

### Chapter 1: Introduction to the Training

- Welcome to the Training and what to expect
- Checklist of materials

### Chapter 2: How Are Business Decisions Made?

- Single-point estimates
- Scenario analysis
- Sensitivity analysis
- Flaw of averages

### Chapter 3: What is Risk and Why Should Risk be Considered?

- What risk analysis does
- Integrated risk analysis process

### Chapter 4: Overview of Risk Analysis Software Applications

- Monte Carlo simulation
- Forecasting
- Analytical Tools
- Real Options Analysis
- Optimization

## MODULE 2: Monte Carlo Simulation with Risk Simulator

### Chapter 1: Overview of Risk Simulator Software

- Overview of Risk Simulator's 4 different modules
- Overview of the Risk Simulator menu and icon bars

### Chapter 2: Profiling, Assumptions, Forecasts and Running Simulations

- Creating and editing Simulation Profiles and their uses
- Setting Assumptions
- Setting Forecasts
- Running Simulations

### Chapter 3: Interpreting the Forecast Statistics

- Forecast chart
- Basic forecast statistics: the four moments

### Chapter 4: Simulation Run Preferences and Seed Values

- Run preferences
- Setting seed value: what it does and does not do

### Chapter 5: Running Reports, Saving and Extracting Simulation Data

- Generating a simulation report
- Saving and extracting simulation results

## MODULE 3: Advanced Simulation Techniques

### Chapter 1: Correlating and Truncating Distributions

- Correlated simulations
- Truncated distributions

### Chapter 2: Alternate Parameters

- Performing due diligence with alternate parameters
- Care in performing alternate parameters

### Chapter 3: Multidimensional Simulations

- Cell linking and dynamic simulations

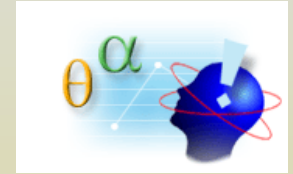
### Chapter 4: Distributional Fitting

- Single-fit
- Multiple-fit
- Choosing the right probability distributions

### Chapter 5: Due Diligence and Pitfalls in Simulation

- Questions to ask
- Pitfalls to avoid

# Module Contents



## MODULE 4: Simulation and Analytical Tools

### Chapter 1: Static Tornado and Spider Charts

- Tornado analysis
- Spider analysis

### Chapter 2: Dynamic Sensitivity Analysis

- Dynamic sensitivity analysis
- Sensitivity charts interpretation

### Chapter 3: Hypothesis Test on Different Distributions

- Basics of hypothesis testing
- Two distribution hypothesis test

### Chapter 4: Nonparametric Bootstrap Simulation

- Hypothesis test on statistics
- Comparing empirical bootstrap with theoretical hypothesis test

## MODULE 5: Forecasting

### Chapter 1: Overview of Forecasting Techniques and Data Types

- Qualitative versus quantitative forecasting
- Different techniques in forecasting

### Chapter 2: Forecasting Without Data

- Using custom distributions
- Using executive assumptions and the Delphi method

### Chapter 3: Time-Series Analysis Forecasting

- Data preparation and running time-series forecasts
- Interpreting the forecast report

### Chapter 4: Nonlinear Extrapolation

- Data preparation and running nonlinear extrapolation
- Interpreting and comparing results with time-series forecasting

### Chapter 5: Multivariate Regression Analysis

- Data preparation and running a regression
- Interpreting the regression report

### Chapter 6: Stochastic Processes

- What is a stochastic process?
- Random Walk Brownian Motion
- Mean-Reversion Process
- Jump-Diffusion Process
- Mixed Processes

### Chapter 7: Box-Jenkins ARIMA

- Data preparation and running an ARIMA
- Interpreting the ARIMA report

## MODULE 6: Real Options Analysis: Theory and Background

### Chapter 1: Introduction to Real Options: What, Where, Who, When, How, and Why?

- Definition of real options
- Why is real options analysis important in making decisions?

### Chapter 2: Sample Applied Business Cases

- High-level business case examples of real options analysis
- Requirements for running real options

### Chapter 3: Overview of Different Options Valuation Techniques:

Comparison between financial and real options

- Closed-form approach
- Simulation approach
- Binomial lattice approach

### Chapter 4: Risk-Neutral Probability Technique

- Intuition behind the binomial lattice
- Applying risk-neutral probability in solving options

### Chapter 5: Solving a Basic European and American Call Option

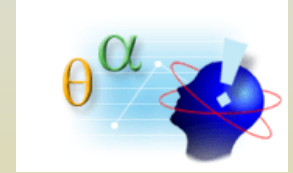
- Solving a simple option using closed-form models
- Solving a simple option using binomial lattices
- Granularity and precision in binomial lattices

### Chapter 6: Using Microsoft Excel to Solve a Basic European and American Call Option

### Chapter 7: Solving Basic Abandonment, Expansion, Contraction, and Chooser Options

- Basic Option to Abandon
- Basic Option to Contract
- Basic Option to Expand
- Basic Option to Choose

# Module Contents



## MODULE 7: Real Options Analysis: Application with SLS Software

### Chapter 1: Overview of the Different SLS Modules and Volatility Estimates

- Single Asset SLS (SLS)
- Multiple Asset SLS (MSLS)
- Multinomial SLS (MNLS)
- Excel functions and solutions

### Chapter 2: Volatility Estimates

- Volatility Estimates: Log Cash Flow Returns Approach
- Volatility Estimates: Log PV Asset Returns Approach
- Volatility Estimates: Management assumptions/probability approach
- Volatility Estimates: GARCH model

### Chapter 3: Solving Options with Changing Inputs and Customized Exotic Options

- Solving American, European, and Bermudan options
- Adding exotic and changing inputs to solve customized options
- Changing volatility options

### Chapter 4: MSLS: Multiple Sequential Compound Options

- Solving a multiphased sequential compound option
- Complex and customized sequential compound options
- Multiple asset simultaneous compound options
- Options to switch

### Chapter 5: MNLS: Solving Mean-Reverting, Jump-Diffusion, and Dual-Asset Rainbow Options using Trinomial, Quadrnomial, and Pentanomial Lattices

- Trinomial lattices
- Quadrnomial lattices
- Pentanomial lattices

### Chapter 6: Framing Real Options—Structuring the Problem

- High-tech manufacturing: build or buy decision
- Pharmaceutical R&D: stage gate investments
- Oil and gas: farm outs versus test wells and seismic tests
- Facility expansion: option to expand
- Utility industry: switching inputs
- R&D: phased sequential compound options

### Chapter 7: The Next Steps...

- Business model dynamics
- So what now?

## MODULE 8: Optimization with Risk Simulator

### Chapter 1: Introduction to Optimization Problems

- What is optimization and how is it used?
- Example combinatorial optimization problem
- Heuristics and algorithms to speed up optimization
- Types of optimizations

### Chapter 2: Decision Tables

- Creating a decision analysis scenario table

### Chapter 3: Continuous Optimization

- Examples of continuous optimization

### Chapter 4: Integer Optimization

- Examples of integer optimization