



# Credit Risk Management with MATLAB



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# Credit Risk Management with MATLAB

This one-day course explains the technical details and benefits of using Financial Toolbox™ data types for portfolio optimization. The course is designed for financial professionals who want to explore the capabilities of asset allocation.

## Prerequisites

MATLAB® for Financial Applications

DURATION	LEVEL
1 Day	Medium
	

### TOPICS

## Day 1

- Classification of Credit Ratings
- Reduced Form Models
- Structural Credit Risk Models
- Historical Credit Migration Models

## Classification of Credit Ratings

OBJECTIVE: Create and validate classification models for credit ratings and credit scores based on historical data.

- Classifying credit ratings from historical data
- Analyzing and validating credit classification models
- Creating and assessing credit scoring models
- Determining probability of default

## Reduced Form Models

OBJECTIVE: Evaluate and assess market-implied risk and the Basel granularity assumptions on a bond portfolio.

- Evaluating portfolio concentration
- Fitting zero curves to market data
- Estimating recovery rate distributions
- Finding fixed-income cashflows
- Bootstrapping probability of default

## Structural Credit Risk Models

OBJECTIVE: Calculate capital requirements under Basel for a bond portfolio using the ASRF model and structural models of default probability.

- Discounting cashflows
- Estimating default probability with the Merton model
- Calculating capital requirements with the ASRF model

# Historical Credit Migration Models

OBJECTIVE: Calculate expected loss, value-at-risk, and conditional value-at-risk on a portfolio of bonds by incorporating copula correlated transitions events.

- Pricing bonds under yield shifts
- Estimating transition probabilities
- Simulating transition events
- Implementing correlated credit migrations



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