MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

ADVANCED CREDIT RISK MODELING TECHNIQUES

"Quantitative Approaches for Assessing and Managing Credit Risk in Modern Financial Institutions"

Schedule

Venue (InHouse)	Fees
At Your Organization Premises	Ask For The Quotation

► **Available delivery methods:** In-House Training

Introduction

Credit risk modeling has evolved significantly with the emergence of advanced quantitative techniques and regulatory pressures. Financial institutions are now expected to adopt robust models that not only comply with international standards like Basel III/IV but also provide accurate and predictive insights into borrower creditworthiness and portfolio risk.

This advanced training course delves into the theoretical and practical aspects of credit risk modeling, covering scorecards, probability of default (PD), loss given default (LGD), exposure at default (EAD), and portfolio credit risk modeling. Participants will also explore machine learning applications, model validation, and stress testing techniques, using hands-on exercises and real-world datasets.

Objectives

By the end of this course, participants will be able to:

- Build and validate robust credit risk models using modern statistical tools
- Quantify and interpret PD, LGD, and EAD using empirical and theoretical techniques
- Apply portfolio credit risk models including CreditMetrics, KMV, and CreditRisk+
- Integrate machine learning into credit scoring and risk classification
- Comply with regulatory expectations for model risk governance and validation

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Why Attend

- Gain hands-on experience with credit risk model development and testing
- Understand the quantitative foundations of credit portfolio management
- Explore advanced tools including logistic regression, survival analysis, and machine learning
- Learn to apply stress testing and scenario analysis to credit risk models
- Ensure compliance with regulatory model validation and internal audit requirements

Target Audience

This program is designed for:

- Risk modelers and quantitative analysts
- Credit risk managers and analysts
- Basel compliance officers and internal auditors
- Portfolio managers and financial regulators
- Data scientists working in financial services

Individual Benefits

Key competencies that will be developed include:

- Statistical modeling and data preparation for credit scoring
- Application of Basel IRB parameters (PD, LGD, EAD)
- Proficiency in risk ranking, rating migration, and backtesting
- Use of R/Python or Excel-based simulation for credit model implementation
- Improved ability to interpret, present, and defend model results

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Enhanced model development and documentation practices
- Improved risk-based decision-making through model-driven insights
- Regulatory readiness with sound model validation and audit processes
- Stronger internal governance over credit risk modeling
- Data-driven credit portfolio optimization

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings – In-depth exploration of credit modeling frameworks and regulatory requirements
- Case Studies – Real-world applications of model implementation and misuse
- Workshops – Hands-on model building using datasets and analytical tools
- Peer Exchange – Experience sharing on modeling challenges and best practices
- Tools – Templates, scripts, and model validation checklists

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Course Outline

DETAILED 5-DAY COURSE OUTLINE (Customizable)

Training Hours: 7:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Foundations of Credit Risk Modeling

- Module 1: Credit Risk Modeling Overview (07:30 – 09:30)
- Role of credit risk models in risk management
- Overview of rating systems and scoring models
- Credit risk in retail vs. corporate portfolios
- Module 2: Data Requirements and Preprocessing (09:45 – 11:15)
- Sourcing internal and external credit data
- Data cleaning, imputation, and transformation
- Feature engineering and variable selection
- Module 3: Regulatory Environment and Basel Standards (11:30 – 01:00)
- Basel III/IV expectations for IRB models
- Minimum requirements for PD, LGD, and EAD
- Model risk governance and audit frameworks

Day 2: Probability of Default (PD) Modeling

- Module 1: PD Model Development (07:30 – 09:30)
- Logistic regression for binary default classification
- Scorecard design: Weight of Evidence (WoE) and Information Value (IV)
- Model performance metrics: ROC, AUC, KS, and Gini
- Module 2: Survival Models and Time-to-Default (09:45 – 11:15)
- Kaplan-Meier estimator and Cox proportional hazards model
- Dealing with censoring and time-varying covariates
- Use cases in retail and SME portfolios
- Module 3: PD Calibration and Validation (11:30 – 01:00)
- PIT vs. TTC calibration
- Out-of-sample testing and backtesting
- Internal rating systems and migration matrices

Day 3: LGD and EAD Modeling

- Module 1: Loss Given Default (LGD) Estimation (07:30 – 09:30)
- Recovery rate analysis and LGD drivers
- Regression techniques for modeling LGD
- Downturn LGD and regulatory floors
- Module 2: Exposure at Default (EAD) Techniques (09:45 – 11:15)
- Credit conversion factors and credit line utilization
- Modeling EAD for revolving vs. non-revolving exposures
- Validation of EAD assumptions
- Module 3: Integrated Risk Parameter Modeling (11:30 – 01:00)
- Correlations among PD, LGD, and EAD
- Implications for capital estimation
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Stress testing interdependent models

Day 4: Portfolio Credit Risk and Machine Learning

- Module 1: Credit Portfolio Models (07:30 – 09:30)
- CreditMetrics, CreditRisk+, and KMV models
- Monte Carlo simulation for credit loss distribution
- Concentration risk and granularity adjustment
- Module 2: Machine Learning in Credit Risk (09:45 – 11:15)
- Decision trees, random forests, and gradient boosting
- Neural networks and explainable AI (XAI) techniques
- Bias, fairness, and interpretability concerns
- Module 3: Model Risk Management (11:30 – 01:00)
- Model development, implementation, and monitoring lifecycle
- Independent validation procedures
- Managing model risk under SR11-7 and ECB TRIM

Day 5: Practical Implementation and Review

- Module 1: Stress Testing and Scenario Analysis (07:30 – 09:30)
- Macroeconomic stress testing of credit portfolios
- Reverse stress testing for model robustness
- Integrating credit models into enterprise-wide risk stress tests
- Module 2: Final Project – End-to-End Model Build (09:45 – 11:15)
- Hands-on construction of a PD model using provided dataset
- Validation checklist application
- Peer review of models
- Module 3: Course Wrap-Up and Next Steps (11:30 – 01:00)
- Best practices for documentation and model governance
- Action plan for institutional implementation
- Feedback, discussion, and closing

Certification

Participants will receive a Certificate of Completion in Advanced Credit Risk Modeling Techniques, affirming their expertise in quantitative modeling of PD, LGD, EAD, and credit portfolio risk, and readiness to implement and validate models in compliance with global regulatory standards.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

In-House / Customized Training Interested in running this course for your team? Please contact us:	TEL: **+601116373203**	EMAIL: **info@mawaevents.net**

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