Prescriptive Analytics: Optimization and Decision-Making Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In the age of big data and AI-driven innovation, organizations must move beyond descriptive and predictive analytics to fully harness Prescriptive Analytics—the apex of data-driven decision-making. Prescriptive Analytics: Optimization and Decision-Making Training Course empowers professionals with the optimization tools, algorithmic frameworks, and data science techniques to prescribe the best actions for business success. Through real-world case studies and interactive modeling, participants will learn to transform analytics into impactful, actionable strategies.

Designed for decision-makers, analysts, and data professionals, this course delivers industry-proven techniques in operations research, linear programming, simulation modeling, and machine learning integration. The focus is on practical, hands-on learning that bridges theory and application to solve complex problems in supply chain management, financial planning, healthcare optimization, and more.

Programme Curriculum

Prescriptive Analytics: Optimization and Decision-Making Training Course

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planning, healthcare optimization, and more.

Course Objectives

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

1. Understand the fundamentals of Prescriptive Analytics and its role in data-driven decision-making.
2. Apply optimization techniques including linear and nonlinear programming for complex business scenarios.
3. Leverage machine learning algorithms in prescriptive models.
4. Use simulation modeling to evaluate decision outcomes under uncertainty.
5. Solve problems using decision trees, genetic algorithms, and heuristics.
6. Deploy real-time decision engines using prescriptive analytics.
7. Analyze supply chain optimization using data models.
8. Use prescriptive models for financial risk management and investment strategies.
9. Build healthcare optimization frameworks for resource allocation.
10. Integrate predictive and prescriptive analytics in enterprise settings.
11. Evaluate ethical concerns and data governance in automated decision systems.
12. Present data-driven recommendations using effective visual storytelling tools.
13. Use optimization software tools like Gurobi, CPLEX, and Excel Solver.

Target Audiences

1. Data Scientists & Analysts
2. Operations Managers
3. Business Intelligence Professionals
4. Financial Planners
5. Supply Chain Professionals
6. Healthcare Administrators
7. IT Managers and Engineers
8. Graduate Students in Analytics & AI

Course Duration: 5 days

Course Modules

Module 1: Introduction to Prescriptive Analytics

- Understanding the analytics lifecycle
- Distinction between descriptive, predictive, and prescriptive analytics
- Key tools and technologies overview
- Role in modern enterprises
- Industry applications
- **Case Study:** Improving delivery routes using prescriptive analytics in e-commerce

Module 2: Optimization Fundamentals

- Linear programming basics
- Objective functions and constraints
- Solving LP problems using Excel Solver
- Sensitivity analysis
- Shadow pricing concepts
- **Case Study:** Optimizing marketing spend for an advertising agency

Module 3: Advanced Optimization Techniques

- Integer programming

- Nonlinear optimization
- Goal programming
- Solver platforms (CPLEX, Gurobi)
- Constraint modeling
- **Case Study:** Resource allocation for a manufacturing plant

Module 4: Decision Trees and Heuristics

- Decision tree construction
- Utility theory and payoff tables
- Greedy algorithms and branch & bound
- Genetic algorithms
- Use of heuristics in complex systems
- **Case Study:** Product launch decision modeling in retail

Module 5: Simulation and Uncertainty

- Monte Carlo simulation
- Risk assessment with stochastic models
- What-if scenario planning
- Simulation tools (Arena, Simio)
- Linking simulations to optimization
- **Case Study:** Hospital bed allocation under uncertainty

Module 6: Machine Learning in Prescriptive Analytics

- Supervised learning integration
- Predictive to prescriptive transition
- Reinforcement learning
- Decision automation pipelines
- Real-time ML decision engines
- **Case Study:** Dynamic pricing strategy using ML for airlines

Module 7: Applications in Industry

- Prescriptive analytics in supply chain
- Logistics and transportation
- Retail demand planning
- Energy management
- Healthcare service delivery
- **Case Study:** Warehouse layout optimization using analytics

Module 8: Ethical Decision-Making and Data Governance

- Bias and fairness in algorithmic decisions
- Transparency in prescriptive models
- Data ownership and security
- Regulatory compliance (e.g., GDPR, HIPAA)
- Building trust in AI systems
- **Case Study:** Ethical review of an automated loan approval model

Training Methodology

- Instructor-led live sessions with real-time demonstrations
- Hands-on labs using industry tools (CPLEX, Gurobi, Excel Solver)
- Group activities, simulations, and decision games

- Interactive case-based learning and model building
- Quizzes and project-based assessments
- Final capstone project for industry-specific optimization

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

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