INSTITUTE OF MATHEMATICS AND APPLICATIONS

COURSES OF STUDY

M.A./M.Sc. IN COMPUTATIONAL FINANCE

(w.e.f. 2022-23)

UTKAL UNIVERSITY

BHUBANESWAR-751004

M.A./M. Sc. IN COMPUTATIONAL FINANCE

Throughout Credit 4-0-4 shall mean a four credit theory paper in which class room instruction of 4 hours per week shall be imparted. Similarly Credit 3-2-4 shall be a 4 credit course comprising of a theory component for 70 marks having 3 hours of class room instruction per week and a lab component for 30 marks with 2 hours of lab work per week.

SEMESTER-I

Paper No.	Course Title	Category	Marks	Credits
MCF 101	Micro Economic Theory	Core	100	4 (4-0-4)
MCF 102	Computational Linear Algebra	Core	100	4 (4-0-4)
MCF 103	Probability,Statistics, and Stochastic Processes with Lab	Core	100	5(4-2-5)
MCF 104	Numerical Optimization with Lab	Core	100	3 (2-2-3)
MCF 105	Financial Institutions and Corporate Finance	Core	100	4 (4-0-4)
MCF 106	Programming (Python for financial modelling)	Core	100	4 (2-4-4)

SEMESTER-II

Paper No.	Course Title	Category	Marks	Credits
MCF 201	Accounting for Decision Making	Core	100	4(4-0-4)
MCF 202	Portfolio Theory and Investment Analysis	Core	100	4(4-0-4)
MCF203	Machine Learning with Lab	Core	100	4 (3-2-4)
MCF 204	Financial Computing with Lab	Core	100	4 (3-2-4)
MCF 205	Multivariate Data Exploration and Analysis with Lab	Core	100	4 (3-2-4)
MCF 206	Financial Derivatives	Core	100	4 (4-0-4)

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SEMESTER-III

Paper No.	Course Title	Category	Marks	Credits
MCF 301	Stochastic Calculus for Finance	Core	100	4(4-0-4)
MCF302	Fixed Income Security Analysis	Core	100	4(4-0-4)
MCF 303	Financial Risk Management and Measurement	Core	100	4(4-0-4)
MCF 304	Advanced Machine Learning with Lab	Core	100	4 (3-2-4)
MCF 305	Computational Modelling of Financial Derivatives with Lab	Core	100	4 (4-0-4)
MCF 306	Data Visualization	Core	50	2 (1-2-2)
MCF 307	Internship Evaluation	Core	50	2

SEMESTER-IV

Paper No.	Course Title	Category	Marks	Credits
MCF 401	Principles of Financial Engineering	Core	100	4 (4-0-4)
MCF 402	Monte Carlo Methods in Finance	Core	100	4 (4-0-4)
MCF403	Elective I (To be chosen from Group A)	Elective	100	4 (4-0-4/ 3-2-4)
MCF404	Elective II (To be chosen from Group B)	Elective	100	4 (4-0-4/ 3-2-4)
MCF 405	Dissertation with Viva-voce	Core	200	6

Elective Papers Group-A		Elective Papers Group-B	
A1	Actuarial Science.	B1	Big Data Analytics.
A2	Behavioural Finance.	B2	Causal Inference for finance.
A3	Credit Derivative Pricing Models.	B3	Deep Learning and Reinforcement Learning.
A4	Dynamic Asset Management.	B4	High Performance Computing.
A5	International Equity and Currency Markets.	B5	Object Oriented Software Engineering.
A6	Time Series Analysis and Forecasting.	B6	Probabilistic graphical model.
A7	Quantitative Risk Management.	B7	Soft Computing Methods in Finance.