Term 2 ***Elective Modules***

Note: *Students must choose TWO modules from the list of available electives. Students must choose at least 1 from List A and no more than 1 from list B. The list below is indicative only, minor changes are possible. Further information and confirmation of available electives will be provided at the end of Term 1.*

Electives: (brief list, details on following pages)

List A:

MA9080:	PDEs (Partial Differential Equations) for Finance	PDE
ST420:	Statistical Learning and Big Data	

List B:

IB98J0:	Advanced Risk Management	ARM
IB9Y20:	Behavioural Finance	BF
ST403:	Brownian Motion	

List A:

MA9080: **PDEs (Partial Differential Equations) for Finance** **PDE**

This module aims to provide both a theoretical and a practical understanding of partial differential equations, including numerical methods; to link this understanding with problems from finance; and to give an introduction into optimal control and Markov chain Monte Carlo (MCMC) methods. Topics include:

Illustrative Syllabus: (indicative, may be subject to minor changes)
Basic Theory of PDEs
Examples of PDEs in Finance
Numerics of PDEs
Optimal Control
Markov Chain Monte Carlo (MCMC) Methods

Assessment: 2-hour **Exam** (Term 3: April/May) counting for 80% of the module mark, and **class test** (20%)

ST420: Statistical Learning and Big Data - https://warwick.ac.uk/fac/sci/statistics/currentstudents/modules/st4/st420

List B:

IB98J0: **Advanced Risk Management** **ARM**

This module aims to develop the conceptual understanding and mathematical skills that students require to address risk analysis and -management problems in more complex, and thus more "realistic", scenarios. Topics covered include:

Illustrative Syllabus: (indicative, may be subject to minor changes)
Multivariate Models
Copulas and Dependence
Market Risk
Credit Risk

Assessment: 1.5-hour **Exam** in Term 3 (April/May) counting for 60% of the module mark, **Class Test** counting for 20% of the module marks and **Empirical Project** (2,500 words) counting for 20% of the module mark.

IB9Y20: **Behavioural Finance** **BF**

Psychologists working in the area of behavioural decision-making have produced much evidence against the adequacy of neoclassical economics. Behavioural finance comprises financial analysis which relaxes some of these assumptions. It is a paradigm where financial markets are studied using models that are less narrow than those based on von Neumann-Morgenstern expected utility theory and arbitrage assumptions. Topics covered include:

Illustrative Syllabus: (indicative, may be subject to minor changes)
Market Efficiency
Prospect Theory
Loss aversion
The Impact of Knightian Uncertainty
Limits to Arbitrage
Overconfidence in Financial Markets
Herding and Asset Bubbles
Paradoxes and Anomalies
The Disposition Effect
Investor Sentiments

Assessment: 2-hour **Exam** in Term 3 (April/May) counting for 80% of the module mark, and **Group Work** 20%.

ST403: Brownian Motion - https://warwick.ac.uk/fac/sci/statistics/currentstudents/modules/st4/st403