FE5204 Stochastic Calculus and Processes

Semester 2 AY 2008/2009

1.	**Module Lecturer(s):**	Jim Zhu, RMI
2.	**Syllabus:**	This module targets post-graduate students in the Financial Engineering program. In emphasizes techniques (not the mathematical theory) in stochastic analysis with applications in financial mathematics. Major topics include: Discrete stochastic processes, Ito's calculus, Ito's lemma, Ito's processes, Stochastic differential equations, mathematical markets, arbitrage, completeness, optimal stopping problems, stochastic control, Girsanov transform, and derivatives. The course materials will be divided into 4 parts: 1. Ito's calculus; 2. Optimal stopping problems; 3. Stochastic control; 4. Mathematical markets Heuristic approach will be adopted.
3.	**Assessment (%)**:	<u>CA components</u>: Tutorials: 50% Total for CA: 50% Total for Final Examinations: 50% **Total Assessment: 100%**
4.	**Mode of Teaching and Learning**	Lectures & Tutorials
5.	**Illustrative Reading List:** (a) Compulsory reading:	Stochastic Differential Equations by B. Oksendal, Springer Verlag
	(b) Supplementary reading:	1) J Michael Steele: Stochastic Calculus and Financial Applications, Springer 2) Introduction to stochastic calculus applied to finance by Damien Lamberton and Bernard Lapeyre; translated by Nicolas Rabeau and Francois Mantion, Imprint Chapman & Hall 1996