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FINANCIAL DERIVATIVES, FALL 2024

Text book: Tomas Björk, *Arbitrage Theory in Continuous Time 4th Edition* (Oxford University Press, 2019).

Examination: A written exam takes place on Wednesday January 8, 2025. Two sets of homework problems will be distributed during the course. A successful treatment of these problems gives up to 2 bonus points in the written exam in January (not for any retake exams though).

Preliminary plan (to be updated sequentially):

Mo 4/11	L1	Introduction. A one-period model.	1,2
We 5/11	L2	Brownian motion. Stochastic integration.	4
Fr 7/11	L3	Properties of stochastic integrals. Martingales.	4
Mo 11/11	L4	Ito's formula.	4
Th 14/11	L5	SDE:s. Geometric Brownian motion.	5
Fr 15/11	L6	Feynman-Kac.	5
Tu 19/11	L7	Problem session.	4-5
We 20/11	L8	Portfolio dynamics. Arbitrage pricing.	7
Fr 22/11	L9	The Black-Scholes equation. Risk-neutral valuation.	7
Mo 25/11	L10	Volatility. Completeness and hedging.	7-8
We 27/11	L11	Asian options. Volatility mis-specification.	8, notes
Th 28/11	L12	Completeness vs arbitrage. Parity relations and delta-hedging.	8, 10
Tu 3/12	L13	Multidimensional models.	notes
We 4/12	L14	Incomplete markets.	9
Mo 9/12	L15	Dividends.	16
Tu 10/12	L16	Currency derivatives. Forward contracts.	
Th 12/12	L17	Problem session.	
Mo 16/12	L18	Bonds and interest rates.	
We 18/12	L19	Martingale models for the short rate.	
Fr 20/12	L20	Repetition.	

Recommended problems:

Chapter 4: 1, 2, 4, 5, 6, 7, 8
Chapter 5: 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Chapter 6: 1
Chapter 7: 1, 2, 4, 5, 6, 7, 9
Chapter 8: 1, 2, 3
Chapter 9: 1, 3