**ADVANCED DERIVATIVES**

**Description**

This course is intended for students who have a quantitative background and are interested in enhancing their knowledge of the way in which derivatives can be analyzed.

**Prerequisite**

Students must take an approved introductory course in derivatives before taking this course.

### Required Readings

Hull, John C. *Options, Futures, and Other Derivatives, 11th Edition*

**Assignments**

There are three hand-in assignments during the semester:

Assignment 1: 14A, 14B, 14C, 15A, 15D, 21A, 21B, 21C (due week 5)

Assignment 2: 20A, 20B, 27A, 24A, 25A, 26A, (due week 10)

Assignment 3: 28A, 29A, 30A, 31A, 32A, 33A, 34A (due week 15)

**Assessment**

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| Assignment 1 | 15% |
| Assignment 2 | 15% |
| Assignment 3 | 15% |
| Final Exam | 55% |

The final examination will not be open book. You will be permitted a two-sided “cheat

sheet” with notes and/or formulae.

**Schedule**

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| Week 1: | Introduction; Wiener Processes and Ito’s Lemma; Chapter 14 |
| Week 2: | The Black–Scholes differential equation; Chapter 15 (esp. Section 15.6) |
| Week 3-4: | Numerical Procedures: Binomial and Trinomial Trees; Monte Carlo Simulation; Finite Difference Methods; Chapter 21 |
| Week 5: | Alternatives to Black–Scholes; Chapter 20 (review) and Sections 27.1 to 27.3 |
| Week 6-7: | Credit Derivatives; Section 24.2 and Chapter 25 |
| Week 8-9: | Exotic Options and Their Valuation; Chapter 26 and Sections 27.4 to 27.8 |
| Week 10: | Martingales and Measures; Chapter 28 |
| Week 11-13: | Interest Rate Derivatives; Chapters 29–33 |
| Week 14: | Swaps Revisited; Chapter 34 |
| Week 15: | Course Review; Chapter 37 |