SIMON FRASER UNIVERSITY
*Faculty of Business Administration*

**Final Examination**

BUS 419
Advanced Derivative Securities 05-1

**Rules for Submitting Final Exam:** Answers to questions are to be typed, single spaced, of length 1 page ***each*** for all questions, 8"x11" standard paper, with 1" margin and type point not less than 12. (This examination is typed in 12 point.) For questions with multiple parts, e.g., a) and b), answer all parts. Violations will be subject to deductions. The examination is due in my office no later than the close of business on Monday April 18, 2005.

**ALL QUESTIONS ARE REQUIRED:** (All parts to be answered)

1,a) Outline the continuous time derivation of the Black-Scholes option pricing model. What assumptions are being made to derive the results?
b) What are the limitations of applying the model to actual options prices (being sure to identify what corrections have to be made to the Black-Scholes formula, e.g., to incorporate dividend paying stocks)?
c) Under what conditions will American currency put options be exercised early?

2.a) **Describe** the delta, gamma and theta for a long position in a straddle spread and a strangle spread. If both spreads are constructed to be delta neutral and have the same initial value (the $V$ is the same), then what can be said about the relative gamma and theta of the two spread positions?
b) Explain how to create a position which is delta positive and gamma neutral and contains a short stock position. Describe a specific example of how the position would be implemented.
c) A long stock position can be "protected" by buying a put. How can the payoff on this portfolio of a stock and option be replicated using "dynamic hedging" strategies involving portfolios which combine only stock and bond positions?

3. This question is related to the student presentations.
a) What are the relevant information sources to examine when seeking information about employee and executive stock options? What is the relevant US accounting standard to examine when seeking information about fair value accounting for employee stock options and what are the important changes to accounting practices for employee stock options being proposed in the new version of this standard?
b) Compare and contrast the risk management practices from gold mining companies, airlines and chartered banks. Be sure to identify and contrast risk measurement techniques, risk reporting techniques, and the amount and type of derivative security usage.