UNIVERSITY OF THE FRASER VALLEY

ORIGINAL COURSE IMPLEMENTATION DATE:	October 2000
REVISED COURSE IMPLEMENTATION DATE:	September 2020
COURSE TO BE REVIEWED (six years after UEC approval)**:**	April 2026

Course outline form version: 05/18/2018

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: BUS 434

Number of Credits: 3 Course credit policy (105)

Course Full Title: Risk Management and Financial Engineering

Course Short Title: Risk Mgmt & Financial Eng.

(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)

Faculty: Faculty of Professional Studies

Department (or program if no department): School of Business

Calendar Description:

Risk management and financial engineering are sought-after skills in financial markets and institutions. This course introduces the methods that are used to quantify risk and proposes strategies to manage portfolios that include equities, fixed income instruments and derivatives.

Note: This course is offered as BUS 434 and ECON 434. Students may take only one of these for credit.

Prerequisites (or NONE):	BUS 349/ECON 349.
Corequisites (if applicable, or NONE):	None
Pre/corequisites (if applicable, or NONE):	None

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number:

Cross-listed with: **ECON 434**

Dual-listed with:

Equivalent course(s): **ECON 434**

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar hours	35
Tutorials/workshops	10
Supervised laboratory hours	
Experiential (field experience, practicum, internship, etc.)	
Supervised online activities	
Other contact hours:	
Total hours	**45**

Labs to be scheduled independent of lecture hours: ☒ No ☐ Yes

Special Topics *(Double-click on boxes to select.)*

This course is offered with different topics:

☒ No ☐ Yes *(If yes, topic will be recorded when offered.)*

Independent Study

If offered as an Independent Study course, this course may be repeated for further credit: *(If yes, topic will be recorded.)*

☒ No ☐ Yes, repeat(s) ☐ Yes, no limit

Transfer Credit

Transfer credit already exists: *(See* ***bctransferguide.ca****.)*

☐ No ☒ Yes

Submit outline for (re)articulation:

☒ No ☐ Yes *(If yes, fill in transfer credit form.)*

Grading System

☒ Letter Grades ☐ Credit/No Credit

Maximum enrolment (for information only): 25

Expected Frequency of Course Offerings:

Every semester

Department / Program Head or Director: Carl Janzen	**Date approved:**	Feb. 25, 2020
Faculty Council approval	**Date approved:**	March 13, 2020
Dean/Associate VP: Tracy Ryder Glass	**Date approved:**	March 13, 2020
Campus-Wide Consultation (CWC)	**Date of posting:**	n/a
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	April 24, 2020

Learning Outcomes:

Upon successful completion of this course, students will be able to:

- LO 1. Demonstrate knowledge of portfolio risk, including movements in asset price volatility, asset price levels and interest rate fluctuations;
- LO 2. Quantify the risks of holding a portfolio, risk pricing and modeling;
- LO 3. Create a delta risk-free position using continuous trading hedging techniques;
- LO 4. Critically analyze the usage, benefits and drawbacks of derivatives in capital markets;
- LO 5. Apply risk management techniques in tracking portfolio risk;
- LO 6. Pursue self-motivated and self-reflective learning in the study of financial modeling and risk management strategies.

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods *(Guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion.)*

The material in the course will be presented in lecture. This course is based on solving problems and as such there will be an assignment each week. Students will be put into groups and each week a different group will be responsible for presenting solutions to that week's assignment. Students in this course will also be required to sign up for third-party trading games as well as derivative pricing templates such as the Deriva Gem. Value at Risk (VAR) models will also be introduced. They will be asked to use hedging and effective risk management techniques taught in the course in a simulated program.

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials *(If more space is required, download Supplemental Texts and Resource Materials form.)*

	Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1.	Hull, J. C.	Options Futures and other Derivatives	☒	Prentice Hall	
2.	Wilmott, P.; Howison, S. & Dewynne, J.	The Mathematics of Financial Derivatives: A Student Introduction	☒	Cambridge University Press	
3.			☐		
4.			☐		
5.			☐		

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

N/A

Typical Evaluation Methods and Weighting

Final exam:	50%	Assignments:	20%	Field experience:	-	Portfolio:	-
Midterm exam:	30%	Project:	-	Practicum:	-	Other:	-
Quizzes/tests:	-	Lab work:	-	Shop work:	-	Total:	100%

Details (if necessary):

Typical Course Content and Topics

Module One: Introduction to risk management

- The stochastic behaviour of stock prices and the Black-Scholes model
- Beta, alpha, epsilon, and no-arbitrage pricing
- The term structure of rates: The par curve, bootstrapping spot, implying forward and calibrating swaps
- Assignment #1 (LO 1–4)

Module Two: Options on stock indices, currencies and futures

- Non-contingent claims: forwards, futures, FRAs and swaps
- Trading strategies involving options
- Binominal model
- Midterm exam (LO 1–4)

Module Three: Hedging and risk management of portfolios

- Black Scholes Model
- Hedging exposure for non-standard options contracts: The Greek Letters
- Value at Risk
- Estimating volatilities and correlations
- Pricing bonds with embedded options
- Pricing caps, floors and floaters
- Credit risk
- Assignment #2 and Presentations (LO 3–6)

Comprehensive final exam (LO 1–6)