



COURSE OUTLINE

SCHOOL OF FINANCIAL SERVICES Post Diploma-Financial Planning Program

COURSE NAME: Mathematics of Finance and Investment
COURSE CODE: MATH 4001
CREDIT HOURS: 42
PREREQUISITES: Grade 12 Mathematics or Equivalent
COREQUISITES: None
PLAR ELIGIBLE: YES (X) NO ()
EFFECTIVE DATE: September 2009
PROFESSOR: _____ **OFFICE #:** _____
PHONE: 416-415-5000 **EMAIL:** _____

NOTE TO STUDENTS: Academic Departments at George Brown College will NOT retain historical copies of Course Outlines. We urge you to retain this Course Outline for your future reference.

FOR OFFICE USE ONLY	
ORIGINATOR: _____	_____
SIGNATURE	DATE
CHAIR: _____	August 2009 _____
SIGNATURE	DATE
DATE OF REVISION: _____	_____

EQUITY STATEMENT: George Brown College values the talents and contributions of its students, staff and community partners and seeks to create a welcoming environment where equity, diversity and safety of all groups are fundamental. Language or activities which are inconsistent with this philosophy violate the College policy on the Prevention of Discrimination and Harassment and will not be tolerated. The commitment and cooperation of all students and staff are required to maintain this environment. Information and assistance are available through your Chair, Student Affairs, the Student Association or the Human Rights Advisor.

George Brown College is dedicated to providing equal access to students with disabilities. If you require academic accommodations visit the Disability Services Office or the Deaf and Hard of Hearing Services Office on your campus.

STUDENT RESPONSIBILITIES: Students should obtain a copy of the *Student Handbook* and refer to it for additional information regarding the grading system, withdrawals, exemptions, class assignments, missed tests and exams, supplemental privileges, and academic dishonesty. Students are required to apply themselves diligently to the course of study, and to prepare class and homework assignments as given. Past student performance shows a strong relationship between regular attendance and success.

COURSE DESCRIPTION:

Mathematics of Finance and Investment enables students to make financial investment decisions in an objective manner. This course provides mathematical concepts and procedures required to succeed in financial management and analysis. Included as key topics are: future value, present value, annuities, nominal and effective rates of return and yield ratios. The student is also introduced to the statistical measures (averages and measures of variability) that are used in assessing investment returns and volatility. Computer software will be used through parts of this course.

ESSENTIAL EMPLOYABILITY SKILLS:

As mandated by the Ministry of Training, Colleges and Universities essential employability skills (EES) will be addressed throughout all programs of study. Students will have the opportunity to **learn (L)** specific skills, to **practice (P)** these skills, and/or **be evaluated (E)** on the EES outcomes in a variety of courses. The EES include communication, numeracy, critical thinking & problem solving, information management, interpersonal and personal skills. The faculty for this course has indicated which of the EES are either Learned (**L**), Practiced (**P**) or Evaluated (**E**) in this course:

Skill	L	P	E	Skill	L	P	E
1. to communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience		√	√	7. to locate, select, organize and document information using appropriate technology and information sources	√	√	√
2. to respond to written, spoken or visual messages in a manner that ensures effective communication		√	√	8. to show respect for the diverse opinions, values, belief systems, and contributions of others		√	
3. to execute mathematical operations accurately	√	√	√	9. to interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals		√	
4. to apply a systematic approach to solve problems	√	√	√	10. to manage the use of time and other resources to complete projects		√	√
5. to use a variety of thinking skills to anticipate and solve problems.	√	√		11. to take responsibility for my actions, decisions and consequences		√	√
6. to analyze, evaluate, and apply relevant information from a variety of sources		√	√				

COURSE OUTCOMES:

1. Apply mathematical calculations to problems involving simple interest.

- Define simple interest.
- Present Values and Future Values calculations
- Determine the rate of return on an investment

2 Apply mathematical calculations to problems involving compound interest

- Define compound interest
- Distinguish between compound and simple interest
- Calculate maturity value
- Calculate present value
- Calculate the rate of return on an investment
- Perform calculations involving treasury bills and commercial paper
- Distinguish between nominal and effective rates of interest.

- Define the real rate of interest

3. Perform calculations involving annuities

- Distinguish between ordinary annuity and annuity due.
- Calculate the present value of an annuity
- Calculate the future value of an annuity
- Calculate the payment stream of various types of annuities
- Determine the rate of interest on annuity
- Perform calculations involving general annuities such as mortgages

4. Calculate the yield to maturity and market value of a bond.

- Define the various bond terminologies
- Calculate the purchase price to yield a given rate
- Calculate the premium and discount value
- Calculate the price of a bond between interest dates
- Calculate the yield on a bond

5. Apply averages and measures of dispersion to rates of return on investments

- Calculate various averages on the rates of return on investments
- Quantify the volatility of a return on an investment
- Describe how various measures of dispersion are associated with investment risk

DELIVERY METHODS:

This course will be a combination of formal lectures, group exercises and case studies based on formulation, analysis and interpretation of mathematical models in finance

LIST OF TEXTBOOKS AND OTHER TEACHING AIDS:

- Financial Planning Fundamentals, CFP Education Program Course : ADVOCIS™
- Texas Instruments BA II+
- Microsoft Excel (available in computer labs)

TESTING POLICY:

Students are required to write all tests on the scheduled dates. If a student cannot write a test due to an emergency or illness, then every effort must be made to contact the professor before the test, or, if this is not possible, within two days of the test date. Upon returning to school, proper documentation (as determined by the professor and in accordance with college policy) must be presented. Failure to do so will result in a grade of zero for the missed test. Record your professor's contact information on the front of this outline for easy reference. The only aids allowed on tests are calculators and paper dictionaries, no other aids, electronic or otherwise are allowed, this includes cell phones and electronic dictionaries. Every effort must be made to arrive on time for a test. At the discretion of the professor, students arriving more than 30 minutes after the commencement of a test may be declined the opportunity of writing it and be given a mark of zero.

ASSIGNMENT POLICY:

All assignments and the case study must be handed in on time and at the beginning of class. Failure to do so will result in a penalty of 10% per day or part thereof or as determined by your Professor.

EVALUATION SYSTEM:

Assessment Tool	Description	Outcomes assessed	EES assessed	Date/ Week	% of the final grade
Test 1	Test	1, 2, 3	1-6	Week 6	20%
Test 2	Test	3, 4,	1-6	Week 12	20%
Case study	Case studies	1,2,3,4,5	all	Week 4, 7, 12, 13	20(5% each)
Final Exam	Comprehensive exam	All	1-6	Week 15	40%
Total					100%

GRADING SYSTEM

The passing grade for this course is: **D**

A+	90-100	4.0	B+	77-79	3.3	C+	67-69	2.3	D+	57-59	1.3	Below 50	F	0.0
A	86-89	4.0	B	73-76	3.0	C	63-66	2.0	D	50-56	1.0			
A-	80-85	3.7	B-	70-72	2.7	C-	60-62	1.7						

Excerpt from the College Policy on Academic Dishonesty:

The *minimal* consequence for submitting a plagiarized, purchased, contracted, or in any manner inappropriately negotiated or falsified assignment, test, essay, project, or any evaluated material will be a grade of zero on that material. To view George Brown College policies please go to www.gbrownc.on.ca/policies

TOPICAL OUTLINE:

Week	Topic	Outcome	Content	Chapter/Reference
Week 1	Simple Interest	1	<ul style="list-style-type: none"> Short-term financing: Simple interest and simple discount. Future and present values Short-term financing. Equations of Value 	NA
Week 2	Simple Interest	1	<ul style="list-style-type: none"> Partial Payments and promissory notes Instructions and Tips for Financial calculator TI BA II Plus 	
Week 3	Compound Interest	2	<ul style="list-style-type: none"> Long-term financing: Compound interest. Compound Interest Formula Accumulated and Discounted Value Equations of Value 	
Week 4	Compound Interest	2	<ul style="list-style-type: none"> Finding the Rate and Time Compound Interest and Changing Rates Effective Interest Rate Equivalent Compound Interest Rates Real Rate of Interest 	Case Study 1 "Choosing a credit card"
Week 5	Simple annuities	3	<ul style="list-style-type: none"> Periodic payments, annuities: 	

			<ul style="list-style-type: none"> Accumulated Value of an Ordinary Simple Annuity ▪ Discounted Value of a Simple Annuity ▪ Finding the Periodic Payment of a Simple Annuity 	
Week 6	Simple Annuities	3	<ul style="list-style-type: none"> ▪ Finding the Number of Payments of a Simple Annuity ▪ Finding the Interest Rate for a Simple Annuity 	Test 1
Week 7	General Annuities	3	<ul style="list-style-type: none"> ▪ General annuities 	Case Study 2 “Cash back options”
Week 9	Annuities Due	3	<ul style="list-style-type: none"> ▪ Annuities Due: Present Value, Discounted Value ▪ Finding the Periodic Payment of an Annuity Due ▪ Finding the Number of Payments of an Annuity Due ▪ Finding the Interest Rate for an Annuity Due ▪ Real after-tax rate of return 	
Week 10	General Annuities	3	<ul style="list-style-type: none"> ▪ Mortgages ▪ Perpetuities 	Case Study 3 “To Lease or not to Lease”
Week 11	Bonds	4	<ul style="list-style-type: none"> ▪ Bonds: Purchase Price of Bonds to yield a Given Rate ▪ Premium and Discount ▪ Price between bond interest dates 	
Week 12	Bonds	4	<ul style="list-style-type: none"> • Buying Bonds on the Market • Finding the Yield Rate on Bonds • Method of averages 	Case Study 4: “Investing in Bonds” Test 2
Week 13	Business Decisions	5	<ul style="list-style-type: none"> ▪ Capital budgeting: Net Present Value, Internal rate of return and capitalized cost of assets. 	Case Study 5 : “Building a business”
Week 14	Business Decisions	5	<ul style="list-style-type: none"> ▪ Measures of Central Tendency and Investment Returns ▪ Measures of Dispersion and Volatility of Investment Returns ▪ Final Review 	
Week 15	Final comprehensive examination.			

Please note: this schedule may change as resources and circumstances require.

For information on withdrawing from this course without academic penalty, please refer to the College Academic Calendar: <http://www.georgebrown.ca/Admin/Registr/PSCal.aspx>