BUSADMIN 715
Portfolio Theory and Management
Fall 2019 Course Outline

DeGroote School of Business
McMaster University

COURSE OBJECTIVE

The course offers an advanced treatment of investment decision making. It explains in a formal and systematic fashion those concepts underlying portfolio investment decisions under risk. By using portfolio selection models, it also seeks to provide intuitive appealing criteria for such decisions. Besides covering recent research advancements in portfolio theory, the course has its emphasis on various practical and institutional issues pertaining to portfolio management as well.

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Dr. Andrew Aziz, Managing Director: Financial Risk Analytics, IHS Markit; Telephone: 437-991-1876; e-mail: andyaziz@rogers.com.

The teaching assistant's contact information and office hours are to be announced in class.

Important Notice: For e-mail communications with the instructor or the teaching assistant, please always use a McMaster University e-mail account and "Business F715" for the subject heading.

COURSE ELEMENTS

Avenue:	Yes	Leadership:	No	IT skills:	No	Global view:	Yes
Participation:	Yes	Ethics:	Yes	Numeracy:	Yes	Written skills:	Yes
Evidence-based:	Yes	Innovation:	Yes	Group work:	No	Oral skills:	Yes
Experiential:	No	Guest:	Yes	Final Exam:	Yes		

Algebra and general analytical skills, including those pertaining to matrix algebra, as well as fundamental statistical concepts, are important course elements.

COURSE DESCRIPTION

The course starts with some basic portfolio concepts. The coverage starts with a brief review of utility theory. It then provides alternative justifications for the mean-variance approach. If neither justification is considered adequate, a simple remedy is also provided and justified.

Once the fundamental materials have been covered, the analysis begins with two-security and three-security illustrations. With equally weighted portfolios being an example, more portfolio concepts are introduced. The course then presents, in considerable detail, portfolio selection under a simplifying assumption of short sales. The assumption allows efficient allocations of investment funds to be determined directly and analytical properties of the portfolio solution to be explored.

Various empirical and analytical issues pertaining to the sample covariance matrix of security returns are considered. To complement the analytical materials involved, spreadsheet-based illustrations are provided as well.

Considered next is portfolio analysis in the presence of a risk-free security. The analysis now becomes a two-part process. The first part pertains to the determination of the optimal risky portfolio regardless of any specific risk-return preferences of the investors involved. The second part pertains to the allocation of investment funds between the risk-free security and the optimal risky portfolio. It is the second part that knowledge about the investors' risk-return preferences is required. The course then examines some analytical issues and introduces a more realistic assumption about short sales.

The course then considers portfolio selection with short sales disallowed. An algorithm for portfolio construction, called the critical line method as developed by Harry Markowitz, a 1990 Nobel Laureate, is presented. Also considered is a simpler, but analytically equivalent, version of the algorithm, as well as a numerical approach for solving directly the same portfolio selection problem with spreadsheet tools on computers.

In order to establish some intuitive appealing criteria for portfolio selection, the covariance structure of security returns is then characterized by various models. The constant correlation model is the simplest among these models. It characterizes the correlations of returns of all securities considered to be the same. The single index model considers individual security returns as driven by the return of a market index; it uses the beta coefficients of individual securities to capture their relevant risk in a portfolio context. These models are then extended to account for group effects (such as industrial effects) on the portfolio choice.

Equilibrium models, including the well-known capital asset pricing model (CAPM) and the lesser known Arbitrage Pricing Theory (APT) are then described in detail. If investors behave as portfolio theory suggests they should, then their actions can be aggregated to determine prices at which securities will sell in the market.

LEARNING OUTCOMES

Upon successful completion of the course, the student will have a solid foundation in modern portfolio theory and good understanding of portfolio management in practice. As the use of spreadsheet tools is an important course element, the student will also have acquired some practical spreadsheet skills.

REQUIRED COURSE MATERIALS AND READINGS

The required course material is contained in the following textbook:

Modern Portfolio Theory and Investment Analysis 9th Edition, E. *Elton, M. Gruber, S. Brown & W. Goetzmann,* 2014.

The textbook is available for purchase at McMaster's bookstore. Other readings include some original articles on the topics involved. These articles can be accessed electronically, for registered students, from McMaster's library website.

EVALUATION

There are three components for evaluation

Components and Weights

Final	50%
Mid Term	25%
Assignments (3)	25%

NOTE: The use of a McMaster standard calculator is allowed during examinations in this course. See McMaster calculator policy at the following URL:

www.mcmaster.ca/policy/Students-AcademicStudies/UndergraduateExaminationsPolicy.pdf

Grade Conversion

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme:

LETTER GRADE	PERCENT	POINTS
A+	90-100	12
A	85-89	11
A-	80-84	10
B+	75-79	9
B	70-74	8
B-	60-69	7
F	00-59	0

Communication and Feedback

Students that are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential and anonymous email to the respective Area Chair or Associate Dean:

http://mbastudent.degroote.mcmaster.ca/contact/anonymous/

Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Administrative Assistant.

Instructors are encouraged to conduct an informal course review with students by Week #4 to allow time for modifications in curriculum delivery. Instructors should provide evaluation feedback for at least 10% of the final grade to students prior to Week #8 in the term.

ACADEMIC DISHONESTY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at:

www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations

MISSED ACADEMIC WORK

Missed Mid-Term Examinations / Tests / Class Participation

Where students miss a regularly scheduled mid-term or class participation for legitimate reasons as determined by the Student Experience – Academic (MBA) office, the weight for that test/participation will be distributed across other evaluative components of the course at the discretion of the instructor. Documentation explaining such an absence must be provided to the Student Experience – Academic (MBA) office within five (5) working days upon returning to school.

To document absences for health related reasons, please provide to Student Experience – Academic (MBA) office the Petition for Relief for MBA Missed Term Work and the McMaster University Student Health Certificate which can be found on the DeGroote website at http://mbastudent.degroote.mcmaster.ca/forms-and-applications/. Please do not use the online McMaster Student Absence Form as this is for Undergraduate students only. University policy states that a student may submit a maximum of three (3) medical certificates per year after which the student must meet with the Director of the program.

To document absences for reasons other than health related, please provide Student Experience – Academic (MBA) office the Petition for Relief for MBA Missed Term Work and documentation supporting the reason for the absence.

Students unable to write a mid-term at the posted exam time due to the following reasons: religious; work-related (for part-time students only); representing university at an academic or varsity athletic event; conflicts between two overlapping scheduled mid-term exams; or other extenuating circumstances, have the option of applying for special exam arrangements. Such requests must be made to the Student Experience – Academic (MBA) office at least ten (10) working days before the scheduled exam along with acceptable documentation. Instructors cannot themselves allow students to unofficially write make-up exams/tests. Adjudication of the request must be handled by Student Experience – Academic (MBA).

If a mid-term exam is missed without a valid reason, students will receive a grade of zero (0) for that component.

Missed Final Examinations

A student who misses a final examination without good reason will receive a mark of 0 on the examination.

All applications for deferred and special examination arrangements must be made to the Student Experience – Academic (MBA) office. Failure to meet the stated deadlines may result in the denial of

these arrangements. Deferred examination privileges, if granted, must be satisfied during the examination period at the end of the following term. There will be one common sitting for all deferred exams.

Failure to write an approved deferred examination at the pre-scheduled time will result in a failure for that examination, except in the case of exceptional circumstances where documentation has been provided and approved. Upon approval, no credit will be given for the course, and the notation N.C. (no credit) will be placed on the student's transcript. Students receiving no credit for a required course must repeat the course. Optional or elective courses for which no credit is given may be repeated or replaced with another course of equal credit value.

Requests for a second deferral or rescheduling of a deferred examination will not be considered.

Any student who is unable to write a final examination because of illness is required to submit the Application for Deferred MBA Final Examination and a statement from a doctor certifying illness on the date of the examination. The Application for Deferred MBA Final Examination and the McMaster University Student Health Certificate can be found on the DeGroote website at http://mbastudent.degroote.mcmaster.ca/forms-and-applications/ Please do not use the online McMaster Student Absence Form as this is for Undergraduate students only. Students who write examinations while ill will not be given special consideration after the fact.

In such cases, the request for a deferred examination privilege must be made in writing to the Student Experience – Academic (MBA) office within five business days of the missed examination.

Special examination arrangements may be made for students unable to write at the posted exam time due to compelling reasons (for example religious, or for part-time students only, work-related reasons):

- Students who have religious obligations which make it impossible to write examinations at the times posted are required to produce a letter from their religious leader stating that they are unable to be present owing to a religious obligation.
- Part-time students who have business commitments which make it impossible to write examinations at the times posted are required to produce a letter on company letterhead from the student's immediate supervisor stating that they are unable to be present owing to a specific job commitment.

In such cases, applications must be made in writing to the Student Experience – Academic (MBA) office at least ten business days before the scheduled examination date and acceptable documentation must be supplied.

If a student is representing the University at an academic or athletic event and is available at an overlapping scheduled time of the test/examination, the student may write the test/examination at an approved location with an approved invigilator, as determined by the Student Experience – Academic (MBA) office.

In such cases, the request for a deferred examination privilege must be made in writing to the Student Experience – Academic (MBA) office within ten business days of the end of the examination period.

Note: A fee of $50 will be charged for a deferred exam written on campus and a fee of $100 for deferred exams written elsewhere. In cases where the student's standing is in doubt, the Graduate Admissions and Study Committee may require that the student with one or more deferred examination privileges refrain from re-registering until the examination(s) have been cleared.

STUDENT ACCESSIBILITY SERVICES

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students are required to inform SAS of accommodation needs for course work at the outset of term. Students must forward a copy of such SAS accommodation to the instructor normally, within the first three (3) weeks of classes by setting up an appointment with the instructor. If a student with a disability chooses NOT to take advantage of an SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. The SAS website is:

http://sas.mcmaster.ca

POTENTIAL MODIFICATION TO THE COURSE

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

ACKNOWLEDGEMENT OF COURSE POLICIES

Your registration and continuous participation (e.g. on A2L, in the classroom, etc.) to the various learning activities of BUSADMIN F715 will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on A2L. **It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.**

Lack of awareness of the course policies **cannot be invoked** at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.

COURSE SCHEDULE

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WEEK	DATE	ASSIGNMENT
1	Sept. 13	Introduction and preliminary concepts: Readings: - Elton & Gruber: Chapters 1, 2, 3.
2	Sept. 20	Portfolio Risk and Return - Key Principles: Readings: - Elton & Gruber: Chapters 1, 2, 3. 11 - Supplemental article
3	Sept. 27	The Mean-Variance Approach: Fundamental Concepts Readings: - Elton & Gruber: Chapters 4, 5, 11
4	Oct. 04	Portfolio Selection with Frictionless Short Sales Readings: - Elton & Gruber: Chapters 4, 5
5	Oct. 11	No Class Thanksgiving
6	Oct. 18	Portfolio Selection in the Presence of a Risk-Free Security Readings: - Elton & Gruber: Chapters 5, 6
7	Oct. 25	Midterm
8	Nov. 01	Portfolio Selection without Short Sales Readings: - Elton & Gruber: Chapters 6
9	Nov. 08	Constant Correlation Model and Single Index Model Readings: - Elton & Gruber: Chapters 7, 9
10	Nov. 15	Multi-Group and Multi-Index Models Readings: - Elton & Gruber: Chapters 8
11	Nov. 22	Constant Correlation Model and Single Index Model Readings: - Elton & Gruber: Chapters 7, 9
12	Nov. 29	Equilibrium models: CAPM Readings: - Elton & Gruber: Chapters 13, 14
13	Dec. 06	Equilibrium models: APT Readings: - Elton & Gruber: Chapter 16