

C&O 372

Portfolio Optimization Models

Winter, 2011

Time: 11:30-12:20, MWF

Place: MC 4059

Instructor: Prof. Michael J. Best, MC 5042, mjbest@math.uwaterloo.ca

Office Hours: 1:00 – 3:00, MWF, MC 5042

Teaching Asst: tba

text: Portfolio Optimization, Michael J. Best, CRC Press, Taylor & Francis Group, 2010, ISBN-13: 9781420085846

Content: We begin with necessary and sufficient conditions for optimality for quadratic minimization subject to linear equality constraints. These are then applied to the Markowitz definition of an efficient portfolio to determine such portfolios explicitly. The efficient frontier is then derived and with the introduction of a risk-free asset, the Capital Market Line is developed along with its properties. Threshold returns and maximization of Sharpe ratios are introduced. Practical problems are seen to be quadratic programming problems and this subject and solution algorithms are developed. Some computational experience will be given using Matlab programmes supplied with the text.

Assignments: every 1-2 weeks, to be handed in during class on the due date, **no late assignments accepted**, marked assignments will be returned in class in approximately one week. Marked assignments, which are not picked up in class will be placed in the wooden box outside my office door (MC 5042) and can be picked up anytime.

Midterm: Wednesday, February 16, 11:30-12:20. Room Assignments: A-Lu, Han MC 4059; Lu, Ruoyan-Z DWE 1501.

Final Grade: 10% assignments, 25% midterm, 65% final.

Web Site: <http://www.math.uwaterloo.ca/~mjbest/>

Go to the heading 'Winter, 2011 Course Pages' and choose C&O 372. Please take a look at this course web page frequently. I will use it to advise you of late-breaking developments; changes in due dates, typos, changes in the date of the midterm, etc.

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check www.uwaterloo.ca/academicintegrity/ for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, <http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline, <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>. For typical penalties check Guidelines for the Assessment of Penalties, <http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm>.

Appeals: A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>.

Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.