

# C&O 372

## Portfolio Optimization Models

### Winter, 2012

Time: 11:30-12:20, MWF

Place: MC 4059

Instructor: Prof. Michael J. Best, MC 5042, [mjbest@math.uwaterloo.ca](mailto: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 15, 11:30-12:20. Room Assignments: tba.

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

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

Go to the heading 'Winter, 2012 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.

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