

University of Minnesota Institute of Technology
FM 5031/2 Practitioner Sequence
Module: Risk & Asset Allocation (7+6 weeks)

Instructor: John A. Dodson

DRAFT December 10, 2009

This course is part of the Masters in Financial Mathematics (MFM) program required practitioner sequence. The objective of this course is to provide students with a grounding in theoretical and applied statistics as it relates to finance, with an emphasis on risk measurement and decision techniques for portfolio design.

Sessions

There will be weekly class sessions for seven weeks during Fall semester (2 September to 21 October) and six weeks during Spring semester (20 January to 24-February).

We will hold class sessions by UM Connect (Adobe Flash-based) hosted at

<https://umconnect.umn.edu/dodson>

in the Active Learning Classroom EE/CS 2-260 from 5:30 PM to 8:50 PM on Wednesdays, with a break at 7:00 PM to accommodate other instructors' office hours.

Our TA, Hallie Elich, and she will also be available during lectures.

Resources

Instructor

The instructor will hold office hours on Sundays from 7:00 PM to 9:00 PM by UM Connect. You may make alternate arrangements by contacting the instructor.

You may contact the instructor by e-mailing to

jdodson@math.umn.edu

Blog

The class web log is

<http://blog.lib.umn.edu/dodso013/finmath/>

I encourage you to check this regularly for posts. You may want to subscribe to the site's RSS feed; alternatively, please contact the instructor if you wish to have an e-mail address added to the site's notification list.

Web Site

The class website is

<http://www.math.umn.edu/~dodso013/fm503/>

I will post slides a week in advance and update the journal a week in arrears.

Teaching Assistant

Our teaching assistant is Hallie Elich. Her website is

<http://www.math.umn.edu/~elich002/>

MATLAB

The course will make use of the MATLAB[®] system by The MathWorks Inc. A useful site for documentation and public libraries for MATLAB[®] is

<http://www.mathworks.com/matlabcentral/>

Texts

The main text for the course is

M: *Risk and Asset Allocation*, by Attilio Meucci, published by Springer-Verlag, ISBN 3-540-22213-8 or 978-3-642-00964-8 (soft cover). There is also a hardcover printing.

The author maintains a website for this text at

<http://www.symmys.com/>

including an errata that I recommend you print out and a technical appendix that I recommend you download.

Recommended texts

In addition to the required text, these may be useful supplements:

- *Probability and Statistics, 3rd ed.*, by Morris DeGroot and Mark Schervish
- *Monte Carlo Methods in Financial Engineering*, by Paul Glasserman
- *Quantitative Risk Management – Concepts, Techniques, Tools*, by Alexander McNeil, Rüdiger Frey, and Paul Embrechts

Schedule

Please complete the scheduled reading before each class session.

FM 5031/2 module

date	subject	reading
9 Sep	probability basics	M 1.1–2
16 Sep	parametric distributions	M 1.3
23 Sep	dependence	M 2
30 Sep	modeling the markets	M 3
7 Oct	estimators	M 4.1–4
14 Oct	conditional heteroskedasticity	paper
21 Oct	working with real-world data	M 4.5–6
18 Dec	exam	
20 Jan	objectives & preferences	M 5–6.2
27 Jan	mean-variance	M 6.3–7
3 Feb	bayesian estimation	M 7
10 Feb	evaluating allocations	M 8
17 Feb	Black-Litterman allocation	M 9.1–2
24 Feb	robust allocation	M 9.3–5
12 May	exam	

The semester exams will be held from 5:30 PM to 8:00 PM in Physics 131 on December 18 and May 12. We may have a guest speaker for one of the sessions.

Evaluation

Grading will be based on three evaluation sources each semester: regular short quizzes held during the first part of sessions (25%), a take-home assignment due

one week after the last session (50%) and part of the final exam¹ (25%). You will be asked to sign a statement indicating that the work you submit is yours and yours alone for these evaluations.

Grading

All grading is $A - F$ with \pm (except $A+$ & F), according to the University's definitions:

- $A \leftarrow 4$ Achievement that is outstanding relative to the level necessary to meet course requirements.
- $B \leftarrow 3$ Achievement that is significantly above the level necessary to meet course requirements.
- $C \leftarrow 2$ Achievement that meets the course requirements in every respect.
- $D \leftarrow 1$ Achievement that is worthy of credit even though it fails to meet fully the course requirements.
- $F \leftarrow 0$ Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit, or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I
- $I \leftarrow \emptyset$ The incomplete shall be assigned at the discretion of the instructor when, due to extraordinary circumstances, the student was prevented from completing the work of the course on time. The assignment of an I for the sequence requires a written agreement between the affected instructors, the program management, and the student specifying the time and manner in which the student will complete the course requirements.

Grades for FM 5031 modules are averaged at weights according to the number of weeks for each section. This module's weight is $\frac{7}{15}$ for FM 5031 and $\frac{6}{15}$ for FM 5032.

N.B.: Academic dishonesty in any portion of the academic work shall be grounds for awarding a grade of F .

¹These may be multi-part exams with sections for different modules.

Instructor Policies

Extra credit

The instructor will not accept any work for extra credit.

University Policies

Inquiries regarding any changes of grade should be directed to the instructor of the course; you may wish to contact the Student Conflict Resolution Center (SCRC) in 211 Eddy Hall (624-7272) for assistance.

Students with disabilities that affect their ability to participate fully in class or to meet all course requirements are encouraged to bring this to the attention of the instructor so that appropriate accommodations can be arranged. Further information is available from Disabilities Services (230 McNamara).

University policy prohibits sexual harassment as defined in the December 1998 policy statement, available at the Office of Equal Opportunity and Affirmative Action. Questions or concerns about sexual harassment should be directed to this office, located in 419 Morrill Hall.

The University Senate's academic policies are available at

<http://www1.umn.edu/usenate/usen/policies.html>

The University's Student Conflict Resolution Center website is

<http://www.sos.umn.edu/>