# University of Minnesota Institute of Technology
# FM 5032 Practitioner Sequence (4 credits)
# Module: Interest Rate Models (6 weeks)

### Instructor: John A. Dodson[*]

### 25 March, 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 six weeks during Spring semester starting 18 February.

We will hold class sessions 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. For the last four sessions, we have unamimously agreed to hold sessions from 5:00 PM to 8:20 PM on Sundays 8, 22, and 29 March and 5 April.

## Resources

The instructor will hold office hours on Sunday February 22 from 7:00 PM to 9:00 PM in Vincent Hall 262[1]. You may make alternate arrangements by contacting the instructor. Office hours on Wednesdays 4, 11, and 25 March and 1 April will be by conference line and UMConnect. Please see the blog for co-ordinates.

You may contact the instructor by e-mailing to

    jdodson@math.umn.edu

The class blog 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.

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.

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[*]RiverSource Investments LLC, an Ameriprise Financial company
[1]You will need to arrange access to the building on Sunday evenings.

# Texts

The main text for the course is

BM: *Interest Rate Models—Theory and Practice, 2nd edition*, by Damiano Brigo & Fabio Mercurio, published by Springer, ISBN 10-540-22149-2

The first author maintains a website related to the text at

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http://www.damianobrigo.it/book.html
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# Schedule

Please complete the scheduled reading before each class session.

### FM 5031 module

| date | subject | reading |
|---|---|---|
| 18 Feb | introduction | BM 1 |
| 25 Feb | affine models | BM 3 |
| 8 Mar | Gaussian models | BM 4 |
| 22 Mar | the market model | BM 2, 6.1–6 |
| 29 Apr | the swap model | BM 6.7–9 |
| 5 Mar | whole-curve models | BM 5 |

The first assignment will be distributed on February 25 and collected on March 8. The second assignment will be distributed on March 29 and collected on 8 April at the beginning of the next module.

Note that we will not meet during Spring Break week.

# Grading

Grading will be based on two take-home assignments equally weighted.

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

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

# 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://sos.umn.edu/sos/`