First-Day Information Sheet

Welcome! Here is some information and some ground rules. I will stick to these rules, and I assume you will, too. Read carefully, and let me know as soon as possible – certainly by the 12th day of classes: January 30th, 2013 – if there is anything unclear.

Treat this document like a contract.

Technicalities

Lectures: Tue/Thu 9:30am-11:00am at RLM 6.118

Office Hours: Tue/Thu 2:00-3:30pm at RLM 13.142

My e-mail: mcudina_teaching@math.utexas.edu

Phone numbers: (512)232-6186 (the instructor’s office)
(512)471-7711 (Department of Mathematics - main office)
(512)471-9038 (Department of Mathematics - main office(fax))

REQUIRED text: “Derivatives Markets (2nd Ed)” by McDonald

About the Course

A few (serious) introductory remarks

- Course URL. http://www.ma.utexas.edu/users/mcudina/course2.html
- Course description. This course is intended to provide the mathematical foundations necessary to prepare for a portion of
  1. the joint SoA/CAS exam FM/2, as well as
  2. the SoA Exam MFE and the “financial economics” portion of the CAS Exam 3.

Additionally, the course is aimed at building up the vocabulary and the techniques indispensable in the workplace at current financial and insurance institutions. This is not an exam-prep seminar. There is intellectual merit to the course beyond the ability to prepare for a professional exam.

The material exhibited includes: forward contracts, options, futures, swaps, the simple random walk, the binomial asset pricing model and its application to option pricing.

It should be stressed that this course is more sophisticated mathematically than is evident at first glance. A thorough understanding of probability and skillful application of notions from interest theory will be needed to advance through the varied and very dense material. The students will be required to actively participate in the class meetings and contribute to the successful conclusion of this course.

The remainder of the Exam MFE/3F curriculum is exhibited in course M339W (also offered by the Department of Mathematics).
Prerequisites. A grade of at least C- in both ACF329 and M362K.

Drop dates. The last drop date for this class is the one announced on the academic calendar of the University of Texas at Austin (see http://registrar.utexas.edu/calendars/). This term it is April 1st, 2013.

A few words about the assignments and grading

You will have homework assignments (due on the dates indicated in the table at the end of this document, and always in the beginning of class). There will also be two in-term exams during the session, and a final exam.

Homework. This is important information: I will not accept homework that does not conform to the guidelines that follow! Homework assignments you turn in must be organized and stapled. As will business or official documents, the homework assignments must be done carefully and written legibly on standard size paper. Please do homework on standard size good quality paper. Please write only on the front of each sheet. Box numerical answers where possible. Staple in the top left-hand corner. On the first page and the outside page write your name, course number, assignment number, and date. Also, put your last name on each page. Put solutions in order and number the pages. The lowest two homework scores will be dropped.

Having read and understood this First-Day Handout in its entirety will count as one homework assignment. To get the credit, read this entire document with understanding. Then complete the final page of this document and return that page to your instructor by January 31st, 2012. Not handing in this assignment does not exempt you from abiding by the First-Day Handout.

In-Term Exams. These exams will be administered during regular lecture time and will take place in the same classroom. Each exam will focus mostly on the material covered since the previous exam, but it is quite possible that some of the problems will refer to earlier material. Anybody whose average score in both in-term exams is above 90 will get an automatic A and will not be required to take the final exam. To clarify the last point: If you want to be exempt from the final exam, you must take both in-term exams, and the average score of the both of them must be above 90%.

The Final Exam. The final exam is going to be comprehensive. That means that any material covered in class or assigned as reading can (and probably will) appear. According to the current finals schedule posted by the registrar’s office, our final exam will take place on Monday, May 13th, 2013. You should be rechecking this information as the term progresses.

These are the things you should to bring to the exams:

i. a sufficient amount of paper to work on and hand-in your solutions on;
ii. calculators of any kind - the following are allowed at CAS/SoA exams: Texas Instruments BA-35 or BA II Plus or TI-30X or TI-30Xa or TI-30X II.

These are the things you must not to bring to the exams:
i. books, notes, manuals, anything containing solved problems;
ii. your own MFE/3F Exam tables (you will get a new copy to use during the exam).

Your scores in all of these will be used to calculate your final score in the course on the 100 point scale. These are the weights assigned to the assessment components:

- **Homework (average after the two lowest scores are dropped):** 10%
- **In-term exam I:** 25%
- **In-term exam II:** 25%
- **Final:** 40%

In the end, let me caution you that there will be **no make-up in-term exams**, unless you provide me with a written proof that your absence was “legitimate” (e.g., a note from your doctor or your lawyer). In that case you can expect **one and ONLY one** in-term grade dropped and your final exam will then get the weight of 65%. If you miss an in-term exam, you are immediately out of contention for the automatic A based on the in-term average.

**Graduate students.** Students who are taking M396C as a graduate course will be having extra special homework assignments. They should contact the instructor about the exact content of those assignments.

The final letter grades will be assigned relative to your numerical score obtained from the above scheme in the following way:

- **A** : 90 – 100
- **B** : 80 – 90
- **C** : 65 – 80
- **D** : 55 – 65

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**I do not “curve” the grades!!!!!**

- **A few bits of friendly advice**

  - **Discuss the course with your colleagues** - In order to be able to participate in class, you first need to build up a vocabulary - and there will be a lot of new vocabulary in the beginning. Who better to practice the new concepts with than your classmates who are in the same situation? I suggest that you try to work on homework assignments in pairs and small groups. Of course, you will be required to write up your own final version (and I urge you to do so - that is the only way you will be able to tell what your individual knowledge is, as opposed to the collective knowledge of your study-group).

  - **Don’t try to cheat** - This is an unpleasant topic, but unfortunately a necessary one! One is often tempted to stretch the boundaries of mere discussion/collaboration with a fellow student into the territory of pure and simple cheating. In short, everything that you present as your own work (especially the work that is supposed to be graded!!)
should, in fact, be your own work, and not something copied from an external source. In case that a student is caught in violation of the principles of academic honesty enforced at this university, he/she is immediately reported to the higher authorities and assigned a failing grade in this course. You are expected to have read and understood the current issue of General Information Catalog, published by the Registrars Office, for information about procedures and about what constitutes scholastic dishonesty. Please visit http://deanofstudents.utexas.edu/sjs/acint_student.php and http://registrar.utexas.edu/catalogs/gi09-10/ch01/index.html

◊ Get familiar with the required text - This is advice that everybody gives, but nobody takes, but do try to take a peak into the material we are going to cover in advance. It will make your journey less stressful, and will save you time and energy in the long run.

◊ Have realistic impressions of your performance - The grading scheme for this course is described above and I do not intend to stray from it. You are solely responsible for keeping a tally of your scores throughout the semester and entering your results in the grading formula above to avoid any surprises at the end of the semester.

◊ UT mandated notes

“The University of Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-6441 TTY or visit http://www.utexas.edu/diversity/ddce/ssd/”

“Religious holy days sometimes conflict with class and examination schedules. Sections 51.911 and 51.925 of the Texas Education Code relate to absences by students and instructors for observance of religious holy days.

Section 51.911 states that a student who misses an examination, work assignment, or other project due to the observance of a religious holy day must be given an opportunity to complete the work missed within a reasonable time after the absence, provided that he or she has properly notified each instructor.

It is the policy of The University of Texas at Austin that the student must notify each instructor at least fourteen days prior to the classes scheduled on dates he or she will be absent to observe a religious holy day. For religious holidays that fall within the first two weeks of the semester, the notice should be given on the first day of the semester. The student may not be penalized for these excused absences but the instructor may appropriately respond if the student fails to complete satisfactorily the missed assignment or examination within a reasonable time after the excused absence.”


– Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.

– Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
– Link to information regarding emergency evacuation routes and emergency procedures can be found at: www.utexas.edu/emergency

– Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.

– In the event of an evacuation, follow the instruction of faculty or class instructors.

– Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.

– Behavior Concerns Advice Line (BCAL): 512-232-5050”

◊ **On email and office hours - Per university regulations, I will not reply to/read e-mail sent to any addresses other than the one above.** Email should be used for brief messages about the organization of and current goings on in the course. As a rule, you should first consult the first-day handout to see if your question is answered here. If there is still any ambiguity, contact the instructor. Your instructor is handling a great number of email messages. You should not expect to have your particular email answered in less than 48 hours. You should not be asking mathematical questions via email, since they are incredibly difficult to answer through a typed message. To get an answer to this type of questions, you should come to office hours and ask in person. When coming to office hours, you should be able to present the mathematical question you have, the route(s) you took in attempting to solve the problem and the obstacles you encountered.
A **TENTATIVE** schedule. *Section numbers refer to McDonald: “Derivatives markets”.*

<table>
<thead>
<tr>
<th>#</th>
<th>Wday</th>
<th>Date</th>
<th>Material to be covered</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T</td>
<td>Jan 15</td>
<td>Orientation. Standing assumptions. Conventions. Prerequisites.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>T</td>
<td>Jan 22</td>
<td>Sections 2.1, 2.2: Forward contracts. Call options.</td>
<td>HW#1 Due</td>
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<tr>
<td>4</td>
<td>TH</td>
<td>Jan 24</td>
<td>Sections 2.3-2.6, 2.A: Put options Section 3.1: Basic Insurance.</td>
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<tr>
<td>5</td>
<td>T</td>
<td>Jan 29</td>
<td>Sections 4.1, 4.2: Basic risk management.</td>
<td>HW#2 Due</td>
</tr>
<tr>
<td>6</td>
<td>TH</td>
<td>Jan 31</td>
<td>Sections 4.3, 4.4: Derivatives in risk management.</td>
<td>Signature due</td>
</tr>
<tr>
<td>7</td>
<td>T</td>
<td>Feb 5</td>
<td>5.1, 5.2, 5.3: Forward and prepaid forward pricing (stocks).</td>
<td>HW#3 Due</td>
</tr>
<tr>
<td>8</td>
<td>TH</td>
<td>Feb 7</td>
<td>Section 8.1: Swaps. Sections 5.4, 5.B: Futures.</td>
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<tr>
<td>9</td>
<td>T</td>
<td>Feb 12</td>
<td>Section 9.1: Put-call parity. Chooser options.</td>
<td>HW#4 Due</td>
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<tr>
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<td>TH</td>
<td>Feb 14</td>
<td>Index options. All-or-nothing options. Gap options.</td>
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<tr>
<td>11</td>
<td>T</td>
<td>Feb 19</td>
<td>Options on other assets.</td>
<td>HW#5 Due</td>
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<tr>
<td>13</td>
<td>T</td>
<td>Feb 26</td>
<td>Maximum option.</td>
<td></td>
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<tr>
<td>14</td>
<td>TH</td>
<td>Feb 28</td>
<td><strong>In-term I</strong></td>
<td></td>
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<tr>
<td>15</td>
<td>T</td>
<td>Mar 5</td>
<td>Section 9.3: Option price properties. Spreads and Collars.</td>
<td></td>
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<tr>
<td>16</td>
<td>TH</td>
<td>Mar 7</td>
<td>No-arbitrage revisited. Pricing by replication.</td>
<td>HW#6 Due</td>
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<tr>
<td>17</td>
<td>T</td>
<td>Mar 19</td>
<td>Sections 10.1, 10.3: Binomial option pricing (replication).</td>
<td></td>
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<tr>
<td>18</td>
<td>TH</td>
<td>Mar 21</td>
<td>Probability on cointoss space. 11.2: Risk-neutral probability.</td>
<td></td>
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<tr>
<td>19</td>
<td>T</td>
<td>Mar 26</td>
<td>The forward tree. Section 10.2: Multiperiod binomial pricing.</td>
<td>HW#7 Due</td>
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<tr>
<td>21</td>
<td>T</td>
<td>Apr 2</td>
<td>Asian options and their pricing.</td>
<td>HW#8 Due</td>
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<tr>
<td>22</td>
<td>TH</td>
<td>Apr 4</td>
<td>Barrier options.</td>
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<td>23</td>
<td>T</td>
<td>Apr 9</td>
<td>Compound options.</td>
<td>HW#9 Due</td>
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<tr>
<td>24</td>
<td>TH</td>
<td>Apr 11</td>
<td>Options on currencies.</td>
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<td>25</td>
<td>T</td>
<td>Apr 16</td>
<td>Options on futures contracts.</td>
<td>HW#10 Due</td>
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<tr>
<td>26</td>
<td>TH</td>
<td>Apr 18</td>
<td>Section 8.2: Interest rate swaps.</td>
<td></td>
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<tr>
<td>27</td>
<td>T</td>
<td>Apr 23</td>
<td>Caps.</td>
<td>HW#11 Due</td>
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<tr>
<td>28</td>
<td>TH</td>
<td>Apr 25</td>
<td><strong>In-term II</strong></td>
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<tr>
<td>29</td>
<td>T</td>
<td>Apr 30</td>
<td>Problem solving session.</td>
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</tr>
<tr>
<td>30</td>
<td>TH</td>
<td>May 2</td>
<td>Problem solving session.</td>
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</tbody>
</table>
I have read and understood
the First-Day Handout
for M375(unique number: 56809).

Signature

Legibly written: first name, last name, uteid

Date