2016 Summer Mathematics Review

July 10 – July 14

The Fuqua School of Business, Duke University

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Summer 2016 MBA Mathematics Review Course - Overview

Summer Math Review ("MBA Math Camp") is an intensive one-week review course in basic mathematical analysis to help prepare you for the quantitative material in your MBA courses. You will practice modeling real world scenarios of mathematical concepts, and you will see how mathematics can help you understand more about the scenarios.

Each half-day session is divided into a lecture/discussion period and a team-based problem-solving period. Morning sessions will generally run from 8am until noon. Afternoon sessions will generally run from 1pm until 5pm. You will be notified of any changes to this schedule.

You should also plan on spending time in the evenings going over your notes and problems done during the day, preparing the Final Assignment, and listing any questions you have on the day’s work.

You will receive course handouts at the beginning of each session. You should bring something to write with and any other note-taking supplies you wish to use. You will need to obtain a good business calculator for the course (and you will also use it during the program). Use of excel to solve problems is also encouraged and will be demonstrated in class.

All sessions will be held in the Dansby classroom.
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<tr>
<th>Date</th>
<th>Morning (8 am – 12 pm)</th>
<th>Afternoon (1 pm – 5 pm)</th>
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<tr>
<td>Sunday, July 10</td>
<td>Orientation&lt;br&gt;Pread reading Quiz (30 mins)&lt;br&gt;Distribute Final Assignment (to be discussed 07/14)</td>
<td>Calculus 1 Problem Session #2&lt;br&gt;&lt;br&gt;Algebra Review&lt;br&gt;Problem Session #1&lt;br&gt;&lt;br&gt;*Instructor: Sajad Modaresi&lt;br&gt;PhD student in Operations Management</td>
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<td>Monday, July 11</td>
<td>Calculus 2 Problem Session #3&lt;br&gt;&lt;br&gt;(Instructor: Christopher Calvin)</td>
<td>Exponential and Logarithmic Functions Problem Session #4&lt;br&gt;&lt;br&gt;(Instructor: Sajad Modaresi)</td>
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<td>Tuesday, July 12</td>
<td>Introduction to Probability Problem Session #5&lt;br&gt;&lt;br&gt;(Instructor: Christopher Calvin)</td>
<td>Discrete Random Variables Case Study Problem Session #6&lt;br&gt;&lt;br&gt;(Instructor: Sajad Modaresi)</td>
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<td>Wednesday, July 13</td>
<td>Continuous Random Variables Problem Session #7&lt;br&gt;&lt;br&gt;(Instructor: Sajad Modaresi)</td>
<td>Time Value of Money 1 Problem Session #8&lt;br&gt;&lt;br&gt;(Instructor: Christopher Calvin)</td>
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<td>Thursday, July 14</td>
<td>Time Value of Money 2 Problem Session #9&lt;br&gt;&lt;br&gt;(Instructor: Christopher Calvin)</td>
<td>Final Assignment Discussion Course Evaluation&lt;br&gt;&lt;br&gt;(Instructor: Christopher Calvin)&lt;br&gt;(Instructor: Sajad Modaresi)</td>
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Notes:
1. Both instructors will be available during all lectures and problem sessions
2. Sessions will start promptly at the time specified
3. Sub-topics and content of individual sessions may be adjusted based on class needs and progress
4. Lunch will be provided every day of the course
Additional Resources (Optional)

**For Algebra and Calculus:**


Units 1-8 comprise an excellent review of algebra with business applications. The Calculus topics that should be covered are found in Units 9-11, 19, and beginnings of Units 22-23.

**For Probability and Statistics:**


This unique paperback covers all the central ideas of modern statistics in an amusing, but also clear manner.


This very understandable paperback covers all the main ideas and also includes lots of quizzes.

**For Finance Mathematics:**

*Essential Prep - Finance* published by GMAC.

This online course covers Time Value of Money, Forecasting, Project Evaluation, and Required Rates of Return. It can be ordered at [http://www.mba.com/mba/Store](http://www.mba.com/mba/Store)

**For all Topics:**

*Introductory Mathematical Analysis* (by Haeussler and Paul)

There are many textbooks that cover the topics that we go over during Summer Math Review. *Introductory Mathematical Analysis* is a thorough and readable choice. There are several copies in Fuqua’s Ford Library. Please take a look at this text if you want extra problems to do or if you would like to see another way of thinking about a topic. There are answers to the odd problems in the back of the book.

The following topics will be helpful. Generally you will not need to go into as much detail as the book does. The book also has lots of good applications to economics; check the index to find them.

- Solving Linear and Quadratic Equations
- Functions and Graphs
- Lines, Parabolas, and Systems
- Exponential and Logarithmic Functions
- Mathematics of Finance
- Introduction to Probability, Normal Distribution, Linear Regression
- Differential Calculus
- Partial Derivatives
- Integration
**WELCOME TO MATH CAMP!!**

**Day One**
Please locate and sign the class rosters. Also locate your name tent, badge, parking decal, notebook, etc. Be sure to let us know if you are missing anything.

**Lunch Break** – In general, lunch will be from 12 - 1pm each day.

**Lunch will be provided Monday-Friday for MBA Business Math Review students.** Box lunches will be available outside of our classroom. You may choose your lunch and eat in your team rooms, the classroom, the Fox Center, outside, wherever you like.

Another place for coffee or snacks: Fox Center summer hours are 7:30 a.m. to 2:00 p.m. They will accept credit cards and cash. There are also refrigerators (Here's the code: 531), microwave ovens and cold drink/snack machines available in the little room off the Fox Center.

**Laptop / tablet use in class** – General Fuqua rule: no open laptops in class. However, due to the use of Microsoft Excel in several sessions during Math Review, we welcome you to bring your laptop for use only during times designated by the instructors. If you are taking notes on a tablet, please have it flat.

**Cell phone use in class** – Please turn cell phones off while in class.

Any general issues or questions should be directed to:

**Carol Bray**  
Academic Assistant, Fuqua School of Business  
919-660-7773  
bray0002@duke.edu

Office: A422B, West 3rd Floor  
Office Hours: 8am-3:30pm