Department of Mathematics

Summer 2014

I. GRADUATE COURSE CATALOG

II. GRADUATE COURSE SUMMER 2014

SENIOR UNDERGRADUATE COURSES

Math 4377 - Section# 12085 - Advanced linear algebra I - (06/02/2014 - 07/08/2014) - by M. Ru
Math 4378 - Section# 13655 - Advanced linear algebra II - (07/09/2014 - 08/15/2014) - by E. Papadakis

GRADUATE COURSES

Math 5310 - Online - Section# 16496 - History of Mathematics - (07/09/2014 - 08/15/2014) - by S. Ji
Math 5336 - Online - Section# 12658 - Discrete mathematics - (06/02/2014 - 07/08/2014) - by K. Kaiser
Math 5382 - Online - Section# 16105 - Probabilities - (06/02/2014 - 07/23/2014) - by C. Peters
Math 5383 - Online - Section# 18125 - Number theory - (06/02/2014 - 07/08/2014) - by M. Ru
Math 5389 - Online - Section# 16847 - Survey of Math - (06/02/2014 - 07/08/2014) - by G. Etgen

Math 6397 - Section# 18128 - Scientific Code Development - (07/09/2014 - 08/15/2014) - by A. Torok

III. HOW TO REGISTER COURSES

1. Log in to My UH (People Soft)
2. Select "UH Self-Service"
3. Select "Enrollment"

4. Select "Enrollment: add classes" and choose the semester in which you would like to be enrolled.
5. Enter the specific section number for the class.
6. Continue to add more courses if needed and continue to finish the enrollment process.

IV. ARCHIVE OF PREVIOUS COURSES

SENIOR UNDERGRADUATE COURSES

Math 4377 Advanced linear algebra I - (06/04/2012 - 07/06/2012) - (Section# 12085)

Time:	MoTuWeThFr 10:00AM - 12:00PM - Room: SEC 201
Instructor:	M. Ru
Prerequisites:	Math 2331 and minimum 3 hours of 3000 level mathematics.
Text(s):	Linear Algebra, 4th edition, by Friedberg, Insel, and Spence, ISBN 0-13-008451-4
	Instructor will cover up to Chapter 4 (determinant).
Description:	Topics covered include linear systems of equations, vector spaces, linear transformation, and matrices.

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Math 4378 Advanced linear algebra II - (07/09/2014 - 08/15/2014) (Section# 13655)

Time:	MoTuWeThFr 10:00AM - 12:00PM - Room: SEC 201
Instructor:	E. Papadakis
Prerequisites:	Math 4377 or equivalent course.
Text(s):	Linear Algebra, by Friedberg, Insel and Spence, 4 th edition

Description: Integrating Blackboard Learn and Face to Face Instruction
Announcements, study instructions and assignments will be available in Blackboard.

Description of the course

We begin with Chapter 7, determinants, then we cover eigenvalues and eigenvectors, diagonalization of matrices, characteristic and minimum polynomials, singular value decomposition, Jordan canonical forms. We will complete the course with some concepts about inner products for vector spaces.

Grading policies

In this course we have three exams, one every two week always on Fridays. Exams, (M1), (M2) and (M3) of 70 points each, for a total of 210 marks approximately. Below H stands for the total homework points and B for the total bonus points (see bonus policy). There will be three homework assignments which you turn in on Thursdays. Total stands for the maximum cumulative number of points a student can make in this course, excluding bonus points.

Homework assignments do not always worth the same number of points. You must work on ALL problems in a homework assignment even if you can't solve all problems. Attempting a problem automatically makes you eligible for some partial credit for this problem. Problems suggested for home study are not necessarily the homework problems. Once you submit a homework, you are assumed to be able to explain your solution to me on the board if I ask you to do so. Failure to demonstrate that you have an adequate understanding of your homework solution(s) will void the entire homework. Justifications are very important and account for half of your points in a homework or exam problem.

Final grade at this point is 100(H+E1 + E2+E3+B) /2.9. You can see this grade under the tag "Grade before final Exam" as well as all other grades in Blackboard. Grades are updated as the course progresses. Homework total is set to 80; each homework assignment gives 40 points.

The final exam is optional. If a student chooses to take the final then the following grade calculation scheme applies: The grade of the final exam, is denoted by F and is out of 200 marks. The goal of the final exam is to give a chance to eliminate low grades. However, this requires adequate preparation because this exam is comprehensible in contrast to Exams 1, 2 and 3 which are sectional. The final exam replaces grades, so you may wish to only give it a try: If you don't submit your final exam paper for grading then your grade as formed with all exams and homework prior to the final exam becomes your final grade in this course.

Recall that the final exam replaces grades, so once you submit the final exam, grade replacement is immediately effective on the grades you intent to replace. This implies that these grades are replaced with your scores from the final exam and there is no way of rolling back to the original grades. Below you see the schedule for grade replacements. Of course, you may attempt the final, you may decide that it is better to not submit the exam, then you walk away with your exam in hand, and your overall grade before the find exam becomes your find grade in the course. On the front cover of the blue notebook INDICATE which grade(s) you wish to replace and which problems of the final exam you want us to grade in order to replace the grade(s). Don't solve more then what you need. Below you see the schedule for grade replacements.

Replace 1 homework grade: Work on 3 problems of your choice.
Replace 1 exam: Work on 4 problems of your choice.
Replace 1 exam and 1 homework grade: Work on 6 problems of your choice.
Replace 2 exams: Work on 7 problems of your choice.
Replace 1 exam and 2 homework grades: Work on 8 problems of your choice.
Replace 2 exams and 1 homework grade: Work on all problems.

If you score 185 or more points then your course guide is automatically set to A.

Final grade calculation algorithm:

Set 100(E1+E2+E3+H1+H2+B)/[Total] = Tavg. The final replaces up to 200 points but not bonus points. Typically, your final exam points will be used to replace the lowest two of your grades.

Bonus policy: Bonus marks are added to your grades. There is no bonus for homework.

1. If you score in any 2 of the 3 exams any score over 50, or 50, then you receive a 15% bonus on each one of these exams.

2. If you improve your grade in the sequence of the 3 exams then you receive a 20% bonus on the improvement.

3. If both homework assignments are over 32 points EACH, then you receive 10 bonus points.

4. If the grade of homework 2 exceeds the grade of homework 1 by 7 points and both homework grades are over 20 points then you receive 6 bonus points.

5. However, if the grade of one of the two homeworks is 40 or more, then you receive 4 booms points.

Grading scale: <42 is F, >=42is D-, >=48 is D, >=56 is C, >=62 is B-, >=72 is B, >=80 is A.

This scale is only indicative. I use all +-and all letter grades.

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GRADUATE ONLINE COURSES

Math 5310 History of Mathematics - (07/09/2014 - 08/15/2014) - (Section# 16496)

Time: Arrange (online course)
Instructor: S. Ji
Prerequisites: Graduate standing
Text(s): No textbook is required.

Description:	This course is designed to provide a college-level experience in history of mathematics. Students will understand some critical historical mathematics events, such as creation of classical Greek mathematics, and development of calculus; recognize notable mathematicians and the impact of their discoveries, such as Fermat, Descartes, Newton and Leibniz, Euler and Gauss; understand the development of certain mathematical topics, such as Pythagoras theorem, the real number theory and calculus. Aims of the course: To help students to understand the history of mathematics; to attain an orientation in the history and philosophy of mathematics; to gain an appreciation for our ancestor's effort and great contribution; to gain an appreciation for the current state of mathematics; to obtain inspiration for mathematical education, and to obtain inspiration for further development of mathematics. On-line course is taught through Blackboard Learn, visit http://www.uh.edu/webct/ for information on obtaining ID and password. The course will be based on my notes. Homework and Essays assignement are posted in Blackboard Learn. There are four submissions for homework and essays and each of them covers 10 lecture notes. The dates of submission will be announced. All homework and essays, handwriting or typed, should be turned into PDF files and be submitted through Blackboard Learn. Late homework is not acceptable. There is one final exam in multiple choice. Grading: 40% homework, 45% projects, 15 % Final exam.

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Math 5336 Discrete mathematics - (06/02/2014 - 07/08/2014) - (Section# 12658)

Time:	Arrange (online course)
Instructor:	K. Kaiser
Prerequisites:	
Text(s):	Discrete Mathematics and Its Applications, Kenneth H. Rosen, seventh edition, McGraw Hill, ISBN-13 978-0-07-288008-3, ISBN-10 0-07-288008-2. Plus: My own Notes on the Zermelo-Fraenkel Axioms and Equivalence of Sets.

Description:	Syllabus: Chapter 1: 1.1, 1.3, 1.4 -1.6 , Chapter 2, Chapter 5: 5.1-5.3, Chapter 9 The Zermelo Fraenkel Axioms; Equivalence of Sets in form of my notes. Grading: Midterm is worth 40%, the final is worth 40% and Homework is worth 20%. For turning in Homework, students need to get the software program Scientific Notebook. More information, visit instructor's website: http://www.math.uh.edu/~klaus/SU14_5336_DiscMath.htm

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Math 5382 Probabilities - (06/02/2014 - 07/23/2014) - (Section# 16105)

Time:	Arrange (online course)
Instructor:	C. Peters
Prerequisites:	
Text(s):	
Description:	

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Math 5383 Number Theory- (06/02/2014 - 07/08/2014) - (Section# 18125)

Time:	Arrange (online course)
Instructor:	M. Ru
Prerequisites:	None
Text(s):	instructor's lecture note

Number theory is a subject that has interested people for thousand of years. This course is a one-semester long graduate course on number theory. Topics to be covered include divisibility and factorization, linear Diophantine equations, congruences, applications of congruences, solving linear congruences, primes of special forms, the Chinese Remainder Theorem, multiplicative orders, the Euler function, primitive roots, quadratic congruences, representation problems and continued fractions.

Description: There are no specific prerequisites beyond basic algebra and some ability in reading and writing mathematical proofs. The method of presentation in this course is quite different. Rather than simply presenting the material, students first work to discover many of the important concepts and theorems themselves. After reading a brief introductory material on a particular subject, students work through electronic materials that contain additional background, exercises, and Research Questions. The research questions are typically more open ended and require students to respond with a conjecture and proof. We the present the theory of the material which the students have worked on, along with the proofs. The homework problems contain both computational problems and questions requiring proofs. It is hoped that students, through this course, not only learn the material, learn how to write the proofs, but also gain valuable insight into some of the realities of mathematical research by developing the subject matter on their own.

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Math 5389 Survey of Math - (06/02/2014 - 07/08/2014) - (Section# 16847)

Time:	Arrange (online course)
Instructor:	G. Etgen
Prerequisites:	
Text(s):	
Description:	A review and consolidation of undergraduate courses in linear algebra, differential equations, analysis, probability, and abstract algebra.

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Math 6397 - Scientific Code Development - (07/09/2014 - 08/15/2014) - (Section# 18128)

Time:	Online (time arrange) or In Classroom: MoTuWeThFr 12:00PM - 2:00PM - Room: SEC 203
Instructor:	A. Torok
Prerequisites:	familiarity with computers
Text(s):	material will be posted on-line

Description:

The purpose of this course is to improve programming skills in order to tackle mathematical problems that require computations (e.g., numerically solving ODE's, PDE's, SDE's). The emphasis is on converting an algorithm or theoretical result into a good code, and presenting the results in a convenient format.

Students can use a language they are familiar with or, if needed, learn a new one. Some material will be posted on-line. After presenting the basic principles, students will work on projects. During the face-to-face meetings we will discuss and debug code.