Summer 2023

Session #Regular: (06/05—08/11) , **Session #2:** (06/05—07/07) , **Session #3:** (06/05—07/27) , **Session #4:** (07/10—08/09)

GRADUATE COURSES - SUMMER 2023

SENIOR UNDERGRADUATE COURSES

This schedule is subject to changes. Please contact the Course Instructor for confirmation

Course	Section	Course Title & Session	Course Day & Time	Rm #	Instructor
Math 4366-01	16695	Numerical Linear Algebra (Session #2)	MTWThF, 10AM—Noon *(Synchronous/**On Campus Exams**)*	TBA	J. He
Math 4366-02	16918	Numerical Linear Algebra (Session #2)	MTWThF, 10AM—Noon *(Asynchronous/**On Campus Exams**)*	TBA	J. He
Math 4377 / Math 6308	10113	Advanced Linear Algebra I (Session #2)	MTWThF, Noon—2PM (F2F)	S 116	M. Ru
Math 4378 / Math 6309	10697	Advanced Linear Algebra II (Session #4)	MTWThF, Noon—2PM (F2F)	CBB 104	A. Török
Math 4389	15015	Survey of Undergraduate Math (Session #2)	MTWThF, 10AM—Noon (F2F)	S 114	D. Blecher

GRADUATE ONLINE COURSES

Course	Section	Course Title	Course Day & Time	Instructor
Math 5341	12259	Mathematical Modeling (Session #2)	(online)	J. He
Math 5383	12920	Number Theory (Session #2)	(online)	M. Ru
Math 5389	11215	Survey of Mathematics (Session #2)	(online)	G. Etgen
Math 5397	TBA	Survey of Mathematics (Session #4)	(online)	TBA

GRADUATE COURSES

Course	Section	Course Title	Course Day & Time	Rm #	Instructor
Math 6308	12768	Advanced Linear Algebra I (Session #2)	MTWThF, Noon—2PM	S 116	M. Ru
Math 6309	12769	Advanced Linear Algebra II (Session #4)	MTWThF, Noon—2PM	CBB 104	A. Török
Math 6386 -01	12500	Big Data Analytics (Session #3)	Fr, 3—5PM	SEC 201	D. Shastri

---Course Details--

SENIOR UNDERGRADUATE COURSES

Math 4366 - Numerical Linear Algebra (**16695**) & (**16918**)

Prerequisites: MATH 2318, or equivalent, and six additional hours of 3000-4000 level Mathematics.

Text(s): Intro to Applied Linear Algebra: Vectors, Matrices, & Least Squares. ISBN: 9781316518960

Description: Conditioning and stability of linear systems, matrix factorizations, direct and iterative methods for solving linear systems, computing eigenvalues and eigenvectors, introduction to linear and nonlinear optimization.

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Math 4377 - Advanced Linear Algebra I

Prerequisites: MATH 2331 and MATH 3325, and three additional hours of 3000-4000 level Mathematics.

Text(s): Linear Algebra, 5th Edition by Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence. ISBN: 9780134860244

Syllabus: Chapter 1, Chapter 2, Chapter 3, Chapter 4 (4.1-4.4), Chapter 5 (5.1-5.2) (probably not covered)

Description: Course Description: The general theory of Vector Spaces and Linear Transformations will be developed in an axiomatic fashion. Determinants will be covered to study eigenvalues, eigenvectors and diagonalization. Grading: There will be three Tests and the Final. I will take the two highest test scores (60%) and the mandatory final (40%). Tests and the Final are based on homework problems and material covered in class.

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Math 4378 - Advanced Linear Algebra II

Prerequisites: Math 4377 or Math 6308

Text(s): Linear Algebra, 5th edition, by Friedberg, Insel, and Spence, ISBN: 9780134860244

The instructor will cover Sections 5-7 of the textbook. Topics include: Eigenvalues/Eigenvectors, Cayley-Hamilton Theorem, Inner Products and Norms, Adjoints of Linear Operators, Normal and Self-Adjoint Operators, Orthogonal and Unitary Operators, Jordan Canonical Form, Minimal Polynomials.

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Math 4389 - Survey of Undergraduate Math

Prerequisites:	MATH 3330, MATH 3331, MATH 3333, and three hours of 4000-level Mathematics.
Text(s):	Instructors notes
Description:	A review of some of the most important topics in the undergraduate mathematics curriculum.

ONLINE GRADUATE COURSES

MATH 5341 - Mathematical Modeling

Prerequisites:	**Graduate standing**. Calculus III and Linear Algebra
Text(s):	Textbook *(free download)*: **Introduction to Applied Linear Algebra**, Boyd and Vandenberghe, Cambridge University Press, 2018
Description:	**Course Platforms:** MS Teams and Blackboard. **Course Technology Requirements:** Computer, internet, microphone and webcam. **Course Overview**:vThe course introduces vectors, matrices, and least squares methods, related topics on applied linear algebra that are behind modern data science and other applications, including document classification, prediction model from data, enhanced images, control, state estimation, and portfolio optimization. We will review vectors and matrices in the first two weeks, and then focus on least squares and more advanced examples and applications in the following two and half weeks. **Detailed Syllabus** (**PDF)**

MATH 5383 - Number Theory

Prerequisites:	Graduate standing.
Text(s):	TBA
Description:	TBA

MATH 5389 - Survey of Mathematics

Prerequisites:	Graduate standing
Text(s):	Instructor's notes
Description:	A review and consolidation of undergraduate courses in linear algebra, differential equations, analysis, probability, and astract algebra. Students may not receive credit for both MATH 4389 and MATH 5389.

MATH 5397 - Selected Topics in Mathematics

Prerequisites:	Graduate standing

Text(s):   Instructor's notes
Description: TBD

GRADUATE COURSES

MATH 6308 - Advanced Linear Algebra I

Prerequisites:	**Graduate standing**. MATH 2331 and MATH 3325, and three additional hours of 3000-4000 level Mathematics.
Text(s):	Linear Algebra, 5th Edition by Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence. ISBN: 9780134860244
	Syllabus: Chapter 1, Chapter 2, Chapter 3, Chapter 4 (4.1-4.4), Chapter 5 (5.1-5.2) (probably not covered)
Description:	Course Description: The general theory of Vector Spaces and Linear Transformations will be developed in an axiomatic fashion. Determinants will be covered to study eigenvalues, eigenvectors and diagonalization. Grading: There will be three Tests and the Final. I will take the two highest test scores (60%) and the mandatory final (40%). Tests and the Final are based on homework problems and material covered in class.

MATH 6309 - Advanced Linear Algebra II

Prerequisites:	**Graduate standing**. Math 4377 or Math 6308
Text(s):	Linear Algebra, 5th edition, by Friedberg, Insel, and Spence, ISBN: 9780134860244
Description:	The instructor will cover Sections 5-7 of the textbook. Topics include: Eigenvalues/Eigenvectors, Cayley-Hamilton Theorem, Inner Products and Norms, Adjoints of Linear Operators, Normal and Self-Adjoint Operators, Orthogonal and Unitary Operators, Jordan Canonical Form, Minimal Polynomials.

MATH 6386 - Big Data Analytics

Prerequisites:	Graduate standing. **Students must be in the Statistics and Data Science, MS program.** Linear algebra, probability, statistics, or consent of instructor.
Text(s):	TBA

Description:

Description: Concepts and techniques in managing and analyzing large data sets for data discovery and modeling: big data storage systems, parallel processing platforms, and scalable machine learning algorithms.

Class notes: *Computer and internet access required for course. For the current list of minimum technology requirements and resources, copy/paste/navigate to the URL http://www.uh.edu/online/tech/requirements. For additional information, contact the office of Online & Special Programs at UHOnline@uh.edu or 713-743-3327. Course instruction for this section takes place both in a classroom face-to-face environment during the scheduled time and additionally by electronic means.*