SYLLABUS

MATH 6360
APPLICABLE ANALYSIS
FALL 2019

Instructor:	Alexander Mamonov
Office:	PGH 690
Office hours:	TuTh 4:00PM – 5:30PM
Phone:	(713) 743-0297
E-mail:	mamonov@math.uh.edu
Class web page:	https://www.math.uh.edu/~mamonov/MATH6360-F2019/index.html
Classroom:	AH 208
Class hours:	TuTh 2:30PM – 4:00PM
Class number:	17453

****

The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course including those posted on Blackboard, communicated via e-mail, etc.

****

All class policies, announcements, reviews, homework assignments, solutions and grades are posted on **Blackboard**: http://elearning.uh.edu/webapps/portal/frameset.jsp

Prerequisite: MATH 4331 or equivalent.

Textbook: J.K. Hunter and B. Nachtergaele, *Applied Analysis*, World Scientific, 2005, available at the author's web page: https://www.math.ucdavis.edu/~hunter/book/pdfbook.html

Objectives: Upon completion of this course, the students are expected to gain the understanding of the fundamental concepts of analysis that are useful in applications. In particular, the concepts related to solvability of various types of equations, including integral and differential equations (existence and uniqueness), Fourier series, linear operators on Banach and Hilbert spaces and their properties, etc.

Topics: Tentative list of topics covered (chapter numbering as in the textbook):

Ch1	Metric spaces, convergence, compactness, completeness
Ch3	Contraction mapping theorem, integral operators and equations
Ch3	Differential equations, existence and uniqueness of solutions
Ch5	Banach spaces, duality
Ch6	Hilbert spaces, inner products, orthogonality
Ch7	Fourier series, convergence
Ch8	Linear operators, operator adjoint and Fredholm alternative, self-adjoint operators
Ch9	Spectrum, spectral theorem
Ch12	Function spaces, L^p spaces
Ch13	Multivariate calculus, inverse and implicit function theorem

Grading: Bi-weekly homeworks, an in-class midterm exam and a final exam will be given. There are no make-ups for the exams. The course grade is determined by the homeworks, midterm exam and the final exam with each having the following weights:

Homework	30%
Midterm Exam	30%
Final Exam	40%

Counseling and Psychological Services (CAPS) Statement

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus.
http://www.uh.edu/caps/outreach/lets_talk.html