GU4061-002 Modern Analysis I, Spring 2019

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Textbook: Rudin, *Principles of Mathematical Analysis*

Homework policy: <u>Weekly</u> homework problems will be mostly taken from the textbook. Make sure your have <u>your name and UNI on top</u> of each homework assignment. <u>Staple</u> your work before dropping it off in the mailbox <u>by 5:00pm of the day it is due</u>. <u>No late homework will be accepted.</u>

Grading: Homework = 5%; First Midterm (Feb 18) = 20%; Second Midterm (April 10) = 20%; Final (TBD) =50%; Others =5%.
Please contact the instructor at least two weeks in advance for any conflict.

Help room: If you need help with your assignments or with the material of the course, you are encouraged to visit the help room 406 Mathematics.

Disability information: Students with disabilities requiring special accommodation should contact ODS promptly.

Tentative Schedule

Jan 23	Intro, ordered sets, fields

Jan 28	Extended real numbers, complex field, Euclidean spaces
Jan 30	Countability, Metric spaces
Feb 4	Compact sets, Perfect sets, connected sets
Feb 6	Convergent sequences, subsequences
Feb 11	Cauchy sequences
Feb 13	Upper and lower limites, special sequences
Feb 18	**First midterm**
Feb 20	Series, series of nonnegative terms
Feb 25	Root and ratio tests, absolute convergence
Feb 27	Addition and multiplication of series, rearrangements
Mar 4	Limits of functions, continuous functions
Mar 6	Continuity and compactness, continuity and connectedness
Mar 11	Discontinuities, monotonic functions
Mar 13	infinite limits and limits and infinity
Mar 25	**Class cancelled**
Mar 27	Derivative, mean value theorems
April 1	Continuity of derivatives, L'Hospital's rule
April 3	Derivatives of higher order, Taylor's theorem
April 8	Differentiation of vector-valued functions
April 10	**Second miterm**
April 15	The Integral, properties of the integral
April 17	Integration and differentiation
April 22	Integration of vector-valued functions, rectifiable curves
April 24	Uniform convergence, and continuity, and integration
April 29	Uniform convergence and differentiation
May 1	Equicontinuity
May 6	Stone-Weierstrass