

Mathematics 144, Winter 2022 (Set Theory)

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Office Hours: 10 – 12 Thursdays **by Zoom**, with other Zoom or in – person times by appointment. A Zoom link for office hours will be emailed to all registered students, and the link will be sent to auditors upon request (this will require a valid UCR email address).

Textbook: D. W. Cunningham, *Set Theory — A First Course* (Cambridge Univ. Press).

Course Website: <http://math.ucr.edu/~res/math144-2022> (iLearn will only be used for individual grade postings!). This directory contains the course outline and online course notes, homework exercises (with solutions to be posted later), and other information. There will be one folder for each week's material.

Course objectives: The main goal is to provide a working knowledge of set theory to the extent it is needed in abstract upper level undergraduate mathematics courses. In particular, the point of view is relatively non – formal as opposed to fully axiomatic. The material goes through the basics of G. Cantor's theory of transfinite cardinal numbers.

Some suggestions:

DON'T BE RELUCTANT TO ASK QUESTIONS! If something is unclear to you, it is probably also unclear to others in the class. If something on the boards or in the lecture seems wrong, it should be corrected, and in any case you deserve a respectful answer to such questions.

DO — OR AT LEAST TRY TO DO — THE HOMEWORK! Most people learn to do mathematics by actively working problems on their own. Solutions should not be read until after you have attempted to solve the exercises on your own. ***Problems from these exercises, or others at a comparable level, will appear on quizzes and examinations.*** Don't be afraid of getting stuck. Partial credit may be given for answers that get part of the solution right but do not make it to the finish line.

LEVELS OF UNDERSTANDING LOGICAL ARGUMENTS: The most basic level is ***passive understanding***, where you understand how each step in a logical argument but could not necessarily explain it to someone else. For more complicated arguments, this is good enough. However, for working the problems in this course one needs a higher level that might be called ***active understanding***, in which you can explain a solution convincingly to someone who knows something about the subject (for example, another student or an instructor).