<u>Course Title:</u> Introduction to Topology

<u>Instructor:</u> Prof. Efe A. Ok

<u>Lectures:</u> 2 sessions per week

<u>Course Objectives:</u> This course presents an introduction to the field of general topology (also known as *point set topology*), with emphasis on those aspects of the subject that are basic to higher mathematics. In particular, I will strive at illustrating the power of general topology by means of numerous applications to various other fields in mathematics. In addition, I will aim at a level and depth appropriate for someone aspiring to study higher-level mathematics and/or to become a professional mathematician. The course is entirely "proof based," and aims to give a hint at "doing mathematics" as opposed learning about it.

<u>Topics:</u> I intend to cover the basic theories of metric spaces, metric fixed point theory, topological spaces, quotient spaces, connectedness and compactness. The final part of the course will be devoted either to topological groups or to topological fixed point theory and invariance of dimension, depending on the class interest.

<u>Prerequisites:</u> Familiarity with elementary "analysis" at the level of, say, Rudin's "Principles of Mathematical Analysis" would be very helpful.

<u>Textbook:</u> I will use the draft of my own book on the subject which is called "Applied Topology." The book is only 80 percent complete, and is thus not yet published, but most of its chapters are available in my website https://sites.google.com/a/nyu.edu/efeok/home/

<u>Problem Sets:</u> There will roughly be one problem set in each week. These constitute an essential part of the course, and will be a significant part of the final grade. I expect you to write out complete *and clean* solutions to the problems, whether you found the solution yourself, or worked it out in collaboration with others. Rewriting one's work in a presentable fashion is an essential part of doing mathematics, for that is how one finds his or her errors or gaps in reasoning (as any graduate student writing a thesis can testify).

<u>Exams:</u> There will be one midterm (to be given in the time of one of the lectures) and one final exam.

<u>Grading:</u> The problems sets constitute 20% of your final grade, while the midterm and the final each constitutes 40% of your final grade.