We provide here some general advice for the preparation of the final exam for the course *Functional Analysis I*. This is only meant as an helpful resource and certainly not as a binding guideline!

How to prepare for the exam?

• Getting the most work done during the semester, both in terms of study of the topics studied in class and in working on the weekly problem sets.

• (Once the exam dates are available) organizing a complete training program over a sufficiently long period of time, without excessive concentration of workload in the final days before the exam.

• Exploiting office hours to ask questions and acquire appropriate problem solving skills, working out harder problem with the aid of the teaching assistants.

• Trying to always transform the abstract notions you acquire into somewhat concrete pictures and images in your mind. Getting a full understanding of baby cases, toy problems etc...

• Devoting enough time and care to learning the basic skill of writing a *correct, complete and neat solution* of the key problems. A Math exam is not just about getting the right ideas, but it is also about learning how to express them in a clear and effective fashion. In general, it is advisable to always clearly state what you want to prove and provide a well-organized argument, possibly divided into steps if appropriate. It is better to be slightly redundant than being too succinct, and it is important to devote enough attention to your calligraphy as well as to the graphical structure of your work (for the obvious reason that unreadable or unreasonably messy solutions simply cannot be graded). Lastly, it is important to suitably define and explain all notations you are using.

• A complete training program:

(i) Step 1: complete study/revision of the material (lecture notes) and parallel thematic work on the problem sets. Identification of main types of problems and suitable classification.

(ii) Step 2: Probeprüfung, discussion with the teaching assistants of your solutions (both in terms of mathematical correctness and presentation of your work). The simulation should be made in actual exam conditions (180 minutes, phones off, no written aids etc...)

(iii) Step 3: advanced training on the review problems, and light/final review of the theory. Review of the ideas and techniques that came up in solving the problems in the Probeprüfung.

It is obvious that a training of this type, *given a reasonably good effort during the semester*, should take no less than 4/5 weeks (roughly 18 days for Step 1, 2 days for Step 2, 10 days for Step 3). The actual timing will then of course depend on your commitment during the semester and the grade you aspire to.

How *not* to prepare for the exam?

• Trying to get straight to the Probeprüfung and to the review problems without an adequate preparation. Often times, the outcome is that you will not be able to solve the vast majority of those problems, which in turn will result in (somehow unjustified) disappointment and frustration.

• Reading the solution of a problem without trying to solve it with a substantial effort and for a sufficiently long amount of time. The net effect is that you will likely react to the solution with comments like "I would have never thought about this strategy", which of course does not help the study process.

• Using old exams as simulations for the final exam you will have to face. Old exams correspond to courses taught by other faculty members, hence with a (partially) different syllabus, with (partially) different problem sets, with (partially) different grading schemes etc...

• Concentrating an unreasonable amount of work in the week before the exam. Typically, this will result in you coming to the exam *tired* and *tense*, while a mathematical exam does need you to be fully concentrated and lucid to perform well. Recall that the final exam is not primarily meant to test your mnemonic study of abstract notions but rather your *scientific maturity*, namely your capability of using the notions you have learnt and integrate them into your mathematical background.