TMA4230 FUNCTIONAL ANALYSIS, WEEK 14

LAST WEEK: Thursday, I gave an introduction to C*-algebras in general and graph C*-algebra in particular, and Friday, Takeshi Katsura gave a guest lecture about semiprojectivity and graph C*-algebras. The slides from my introduction is avaliable from the webpage.

THIS WEEK: This week (which is the last week of the semester) we will continue with the spectral theorem for self-adjoint operators. I hope to finish Section 9.8 and cover Section 9.9, and then briefly talk about Section 9.9 and 9.10

- The spectral family of a bounded self-adjoint linear operator (Section 9.8).
- The spectral theorem for bounded self-adjoint linear operators (Section 9.9).
- Extension of the spectral theorem to continuous functions (Section 9.10).
- Properties of the spectral family of a bounded self-adjoint linear operator (Section 9.11).

THE EXAMINATION: The exam is oral. The official data for the exam is Wednesday June 1, but it is also possible to take the exam Monday May 9 if you prefer. Please send me an email before May 1 with information about which day and at what time of the day you would like to take the exam.

One hour, which includes time for the examiners to discuss the grade etc., will be scheduled for each student, so you should expect that your examination last for a maximum of 45 minutes. During these 45 minutes you will be asked questions from the syllabus (see below). You are not expected to remember every little details of every proof, but you should be able to state the main theorems and important definitions, give examples of applications of the main theorems and other important concepts, and tell something about the proofs of the main theorems.

THE SYLLABUS: You are expected to know and understand the contents of Section 4.1–4.9 and Section 4.12–4.13, Chapter 7 and Chapter 9 of Introductory functional analysis with applications by Erwin Kreyszig in addition to pp. 32–43 (excluding the section “Normal spaces and the existence of real continuous functions”), 52–54 (only the section “The Banach-Alaoglu theorem”) and 61–65 (excluding the section “Holomorphic functional calculus”) of Harald Hance-Olsen’s notes Assorted notes on functional analysis and the note about the Stone-Weierstrass Theorem I handed out in class (if you do not have this note, send me an email and I will then send you a pdf-file with the note, or see me in class or at my office if you prefer a paper version).