Advanced Functional Analysis

Fall Semester 2018

(First Semester 1397-1398)

Code: 2214175-01

Credits: 4

Instructor: Hossein Hosseini Giv (giv@math.usb.ac.ir, hossein.giv@gmail.com)

Lecture times: Sunday and Tuesday, 7:30-9:30 AM

Classroom address: Instructor's office at the Faculty of Mathematics

Assessment Policy: 40% midterm exam (04/10/1397), 60% final exam (25/10/1397)

Textbook: John B. Conway, *A Course in Functional Analysis*, Second Edition, Springer-Verlag New York, Inc., 1990.

Course Contents

1st week: Compact operators

2nd week: Invariant subspaces: Preliminaries

3rd week: Invariant subspaces: Lomonosov's Theorem

4th week: Elements of Banach algebras

5th week: Ideals and quotients in Banach algebras

6th week: The spectrum

7th week: More on the spectrum

8th week: The Riesz functional calculus

9th week: Dependence of the spectrum on the algebra

10th week: The spectrum of a linear operator

11th week: Spectral theory of compact operators

12th week: Abelian Banach algebras

13th week: Elements of the theory of C*-algebras

14th week: Abelian C*-algebras

15th week: Positive elements of a C*-algebra

16th week: The spectral theorem for normal operators