

Module title: A survey on Banach lattices

Module Code: 22-14-194-01

Module Credit: 4

Term: Second term 97-98

Lecturer: Assistant Professor: O. Zabeti. o.zabeti@gmail.com

Lecturing time: Sunday and Tuesday (13:30-15:30)

Objectives of the module:

The main aim of this lecture is to obtain the general theme about Banach lattices. It is a necessary object for a PhD student who wants to continue research in Banach spaces with a suitable direction to order structures. In particular, we try to cover all notes which are required in general theory of Banach lattices. Also, we focus on order structures which is the most distinguishable and the most advantageous part of Banach lattices with respect to Banach spaces.

First part: General aspects (weeks 1-9)

- 1- Riesz spaces, order structures, the main theorems in this direction such as extension theorems.
- 2- Identities in Riesz spaces, special definitions which are related to order structures.
- 3- Topological aspects of locally solid Riesz spaces.
- 4- Different convergences in Riesz spaces.

Second part: Banach lattices (weeks 10-15)

- 1- General theory.
- 2- Order continuous Banach lattices, KB-spaces, reflexive ones.
- 3- Operator theory: compact operators.

Seminar presentations by students (week 16)

Assessments:

- *60% final exam*
- *25% preparation of a seminar report*
- *15% power point presentation*

References:

- *C.D. Aliprantis and O. Burkinshaw, Positive operators, 2nd edition, Springer, 2006.*
- *Professor Vladimir Troitsky notes on Banach lattices.*
- *All hand over papers.*