Module title: **A topic in real analysis**

Module Code: 22-148-19-01

Module Credit: 4

Term: First term 97-98

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

Lecturing time: Wednesday 11-13 and Thursday (15:30-17:30)

Objectives of the module:

The main aim of this lecture is to obtain the general theme about Banach spaces. In fact, we try to focus on examples about function spaces. The main attitude is that the proposed students get familiar with Banach space theory with an example friendly direction.
After succeeding in this lecture, the students should easily construct simple examples to distinguish the main different notions in the theory of Banach spaces as well as different concepts which arise in modern theory of Banach spaces.

First part: General aspects (weeks 1-9)

1- *Elementary functional analysis: Open mapping theory, Closed graph theorem, Uniform boundedness theorem.*
2- *Elementary measure theory: Monotone convergence theorem, Dominated convergence theorem, integral theory with examples in function spaces.*
3- *Banach spaces: General theory.*

Second part: Banach lattices (weeks 10-15)

Banach spaces with emphasizing on Banach lattice theory.

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.*
- *W. Rudin, Functional analysis, 2nd edition, McGraw-Hill, 1991.*
- *All hand over papers.*