

# **SYLLABUS**

**SUBJECT :** MATHEMATICAL ANALYSIS, *EXERCISES*, I INF., 1. SEM., 2010/11.

**TEACHER:** DR MAREK ŻOŁDAK

## **COURSE DESCRIPTION**

1. Mathematical induction, lower and upper bound of sets, properties of sequences. (3h)
2. The limit of a sequence. (4h)
3. Convergence of infinite series. (3h)
4. Absolute and conditional convergence of series. The power series. (3h)
5. Functions of one variable, limit, continuity. (4h)
6. Derivative of a function of one variable. (3h)
7. Differential calculus of functions of one variable (monotonicity, extremum, de L'Hospital rule, convexity). (7h)
8. Indefinite integral, basis methods of integration. (4h)
9. Integration of rational functions. (4h)
10. Definite Riemann integral and its applications. (4h)
11. Improper integrals. (3h)
12. Extremum of functions of two variables. (3h)

## **LEARNING OUTCOMES**

Upon completion of the course student ought to be able to do:

- calculating the limits of typical sequences and functions,
- compute derivatives of elementary functions,
- investigate a behaviour of elementary functions of one variable using differential calculus,
- compute integral some important class of functions (polynomial, rational, simple trigonometrical, etc.).

## **GRADING POLICY**

Student need to take tests after units 5 and 11.

## **TIMETABLE**

Lessons were realized every Monday 12-14.30, 15-17.30 (1.10.2010-21.01.2011).

Lessons for possible Erasmus students are planed to be in English language in a form of consultation.

## **TEXTBOOK AND REQUIRED MATERIALS**

1. W. Krywicki, L. Włodarski, Analiza matematyczna w zadaniach, vol.1. PWN, Warszawa.
2. M. Gewert, Z. Skoczylas, Analiza matematyczna 1. Przykłady i zadania, GiS, Wrocław.

## **PREREQUISITES:**

The knowledge of secondary school mathematics.