**Course:** Approximation theory

Teacher(s): Marija Stanić, Tatjana Tomović Mladenović

Course status: elective

ECTS: 12

Prerequisites: -

### Goal

Thorough knowledge and understanding of Approximation theory. Enabling students to solve problems in this area with the use of scientific procedures and methods. Ability to follow modern achievements in the field of Approximation theory and its application.

#### Outcomes

The student has acquired the necessary theoretical knowledge for a systematic understanding of issues related to Approximation theory, its application in other branches of mathematics,

technology, and science. The student has mastered the skills and methods of research in this area.

## Contents

Theoretical teaching

Basic problems of approximation theory. Uniform mini-max approximations. Mean square approximations. Best L1-approximations. Polynomial and spline approximations. Approximations by rational functions. Extreme problems with algebraic and trigonometric polynomials. Properties of trigonometric and Jacobi polynomial sums.

Practical teaching

Implementation of the theoretically analysed methods.

#### **Recommended bibliography**

- 1. G. Mastroianni, G.V. Milovanovic, Interpolation Processes Basic Theory and Applications, Springer-Verlag, 2008.
- 2. R.A. DeVore, G.G. Lorentz, Constructive Approximation, Springer-Verlag, Berlin, 1993.
- G.V. Milovanovic, D.S. Mitrinovic, Th.M. Rassias: Topics in Polynomials: Extremal Problems, Inequalities, Zeros, World Scientific Publ. Co., Singapore – New Jersey – London – Hong Kong, 1994

Active teaching hours: 5 Theoretical: 5 Practical:	tive teaching hours: 5	Theoretical: 5	Practical:
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#### **Methods of teaching** Theoretical lectures and independent work of students during practical hours.

# Knowledge estimation: (max 100 points)

50 points on pre-exam and 50 points on oral exam