Course Unit Descriptor

Study Programme: Mathematics (MA), Applied Mathematics (MB)	
Course Unit Title: Fixed point theory	
Course Unit Code: MA54	
Name of Lecturer(s): Ljiljana M. Gajic	
Type and Level of Studies: Master Academic Degree	
Course Status (compulsory/elective): elective	
Semester (winter/summer): Summer	
Language of instruction: Serbian	
Mode of course unit delivery (face-to-face/distance learning): face- to- face	
Number of ECTS Allocated: 5	
Prerequisites: None	

Course Aims: The aim of course is to introduce students to a very important discipline of mathematical analysis, interesting both from the theoretical point of view and for applications in other sciences.

Learning Outcomes:

Successful students should understand the basic principles and techniques of the fixed point theory, and be able to apply these principles in modeling concrete problems from other scientific areas.

Syllabus:

Theory

Metric fixed point theory. The Banach contraction principle, its generalizations and applications

Fundamental of topologic fixed point theory. The simplex theory, the Brouwer theorem of fixed points and applications and applications. Theorems of Schauder Tychonoff and Rothe. Measure of noncompactness and condensing operators. Generalizations of Schauder fixed point theorem. Nonexpansive mappings

Practice

Problem sessions follow the material covered at theoretical lectures.

Required Readings

1. Olga Hadzic, Osnovi teorije nepokretne tacke, Institut za matematiku, Novi Sad, 1978.

2. Dejan Ilic, Vladimir Rakocevic, Kontra ktivna preslikavanja na metrickim prostorima i uopstenja, Univerzitet u Nisu, Prirodnomatematicki fakultet, 2014.

Weekly Contact Hours:	**Lectures:** 2		**Practical work:** 2

Teaching Methods:

Theoretical plenary lectures and problem solving on the blackboard

Knowledge Assessment (maximum of 100 points): 100

Pre-exam obligations	points	Final exam	points
Active class participation		written exam	
Practical work		oral exam	50
Preliminary exam(s)	50	…….	

Seminar(s)			
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			