Study programme(s): Applied Mathematics (MAP)	
Course title: MULTIDIMENSIONAL INTEGRAL CALCULUS AND APPLICATIONS (P403)	
Lecturer(s): Danijela Rajter Ćirić	
Course status: compulsory on modules: Techno-mathematics, Mathematics of Finance	
ECTS points: 5	
Requirements: Differential and Integral Calculus	

Learning Objectives

Acquiring advanced knowledge and skills in the field of integral calculus of functions of several real variables and applications in various practical domains.

Learning Outcomes

Student qualified for the application of acquired knowledge and skills to specific problems in the field of multidimensional integral calculus and its applications.

Syllabus

Theoretical instructions

Integral calculus for functions of multiple variables: multiple integral, line integral and surface integral of scalar and vector functions. The fundamental theorem for line integrals and independence from the path of integration. Theorems of integral calculus: Green's theorem, Stokes' theorem and Ostrogradsky's theorem of divergence.

Applications of integral calculus for functions of several variables: applications in physics, engineering, conservation laws and other applications.

Practical instructions

Tasks and problems in practical exercises follow the content of theoretical instructions. Application of knowledge gained in theory classes in solving specific problems and tasks.

Literature

1. Mirjana Štrboja, **Funkcije više promenljivih sa vizualizacijom**, PMF Novi Sad, 2016.
2. Jelena Aleksić, **Predavanja iz Analize 2**, PMF Novi Sad, ISBN 978-86-7031-369-9.
3. D. Perišić, S. Pilipović, M. Stojanović, **Funkcije više promenljivih - diferencijalni i integralni račun**, PMF, 1997.
4. Stewart, J., **Multivariable Calculus**, 7th edition, Books/Cole, Belmont, 2012.
5. Stewart, J., **Calculus**, 8th edition, Cengage Learning, Boston, 2016.
6. S. Radenović, **Matematička analiza 2 - metodska zbirka zadataka**, Beograd, 2002.

Number of active classes	**Lectures: 2**	**Exercises: 2**

Teaching methods

Expository lectures given by teachers, conversation and discussion with students, practical work, problem solving sessions and concrete applications.

Grading (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
colloquia	**50**	oral exam	**50**