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| Course title: Modern Analysis | Neptun code: GEMAN402-a |
| Course coordinator: Dr. Judit Tóthné Makó, PhD, associate professor | |
| type of lesson and number of lessons: lecture (2) | |
| method of evaluation: colloquium | |
| curriculum location of the subject: (autumn/spring semester): autumn and spring | |
| pre-study conditions (<i>if any</i>): - | |
| The task and purpose of the subject: | |
| The modern analysis is the important, abstract part of the mathematics, which was based on the classical analysis. Our aim is giving an overview of some classical sections of the theory of Banach spaces and Hilbert spaces and learning some important definitions and theorems of functional analysis. | |
| Course description: | |
| Metric space: definitions and examples, Hölder and Minkowski inequalities, Topology in metric spaces, Convergence in special spaces, Complete metric spaces, Banch Fixed Point Theorem, Compactness, Linear spaces: definitions and examples, The Hahn-Banach theorem, Linear topological spaces, normed spaces and Banach spaces: definitions and examples, Sequences and series in normed spaces, Hilber spaces: definitions and examples. Ortoogonal series, Fourier series. | |
| Required literature: | |
| <ol style="list-style-type: none"> 1. E. Kreyszig: Introductory Functional Analysis with Applications, Wiley India Pvt. Limited, 2007. 2. J. C. Robinson: An introducion to Functional Analysis, Cambridge University Press, 2020. | |
| Recommended literature: | |
| <ol style="list-style-type: none"> 1. F. Albiac, N. J. Kalton: Topics in Banach Space Theory, Springer, 2006. 2. R. E. Magginson: An introduction to Banach space theory, Springer Verlag, New York, 2012. 3. J. B. Conway: A course in functional analysis, Springer-Verlag New York, 1990 | |