

General Information			
Course name and code	Environmental Biotechnology ÚBEV/ENVB/16	ECTS Credits	4
		Semester	2nd (Summer) Magister & Doctoral Degree
Aims			
<p>The course offers fundamental information on the cleaning up the environment, primary raw materials processing and waste treatment using different biological processes. The aim is to point out on different fields where environmental biotechnology has already been applied and where future development is predicted. The course involves basic knowledge on directives of Slovakia and EU related to the environmental biotechnology exploitation.</p>			
Contents			
<ol style="list-style-type: none"> 1. Introduction to environmental biotechnology. History of environmental biotechnology. EU and US strategies in the field. 2. Wastewater production, biological wastewater treatment 3. Wastewater treatment plant 4. Sludge processing. 5. Eutrophication. Algal cultivation in open and close systems. Integrated recycling systems. 6. Bioaccumulation and biovolatilization. 7. Phytoremediation – introduction, application for soil and water treatment. Phytomining. 8. Biosorption. 9. Bioprecipitation and bionanotechnology. 10. Biobleaching. 11. Biological treatment of fuels. 12. Bioenergetics. Production of biofuels. Microbial fuel cells. 			
Evaluation			
Exam – oral form			
Bibliography			
<ol style="list-style-type: none"> 1. Kadukova, J., Kavulicova, J.: Phytoremediation and Stress, Evaluation of Heavy Metal-Induced Stress in Plants, Nova Science Publishers, Inc., New York, 2010, 134 s. ISBN 978-1-61761-319-7. 2. Kadukova, J., Stofko, M.: Biosorption of Heavy Metals Ions from Aqueous Solutions, Chapter 4, Environmental Research Trends (Ed. Marvin A. Cato), Nova Publishers, New York, 2007, 133-152, ISBN 1-60021-556-4. 3. Kadukova, J., Stofko, M.: Utilization of Algae for Pollution Elimination, Chapter 5, Algae: Nutrition, Energy Source and Environmental Control (Ed. Kristian N. Hagen), Nova Publishers, New York, 2009, 57-87. ISBN 978-1-60692-008-4. 4. Kaduková, J.: Biometallurgy, 1. vyd., Košice, TU, 2013. 132 s. ISBN 978-80-553-1291-0. 5. Kaduková, J.: Biotechnology (Bio-diesel, bio-methane, bio-ethanol and bio-hydrogen), 1. vyd., Košice, TU, 2015. 117 s. ISBN 978-80-553-2126-4. 			