



Faculty	Bioengineering of Animal Resources
Department	Biotechnology
The position in the state of functions	8/II
Function	Professor
The subjects in the education plan	Genetic Engineering 1, Technology of Biosynthetic Products 1, Technology of Biosynthetic Products 2
Scientific field	Engineering Sciences; Engineering of plant and animal resources; Biotechnology
The theme of the competition tests	1. Genetic modifications in microorganisms. Mutagenic factors. Mutations and mutants. Isolation of mutants. 2. Industrial microorganisms. Culture collections. Methods of preserving microorganisms. 3. Characteristics of microorganisms for industrial use. Improvement of industrial strains. 4. Genetic recombination. Genetic transformation. Competence of bacterial cells. 5. Types of plasmids and their biological significance. Conjugation and mobilization of the chromosome. 6. DNA amplification by the polymerase chain reaction. Principle of the polymerase chain reaction. Parameters, reaction components, amplification plateau. 7. Probiotics. Characteristics of lactic acid bacteria used as probiotics. Characteristics of excipients used in the conditioning of probiotics. Effects of probiotics. 8. Nitrogen-fixing microorganisms. Atmospheric nitrogen fixation. Obtaining inoculants for bacterization of legumes. 9. Cellulolytic enzymes. The substrate of the cellulolytic complex. Enzymatic hydrolysis of cellulose. Production of cellulolytic enzymes. 10. Technology for obtaining lignocellulosic ethanol. Pretreatment technologies. Enzymatic hydrolysis of biomass – enzymes, substrates, reaction products and use. 11. Technology for obtaining and using biogas. Biological processes, microorganisms, feedstock materials. Environmental implications. 12. Applications of genetic engineering. Obtaining pharmaceutical products with genetically modified organisms. Bibliography: 1. Vintila, T., Gaspar, E., Antofie, M.M., Magagnin, L., Berbecea, A., Radulov I., Biorefinery for rehabilitation of heavy metals polluted area, in Heavy Metals - Recent Advances, Edited by Almayyahi, B.A., IntechOpen, 313–338, 2023. 2. Vintilă T. Biotehnologii Microbiene și Industriale. Volumul 1. Editura Mirton, Timișoara 2012. 3. Vintilă Teodor, Dinu Laura. – Tehnologia Produselor de Biosinteză. Manual de Laborator. Editura Mirton, 2015. 4. Vintilă T. Biofuels and Renewable Resources. Editura Mirton, Timișoara 2013. 5. Vintilă T, Jurcoane Ș., Energie regenerabilă din agricultură,

	Editura Mirton Timișoara, 2009. 6. Nikolic V., Vintilă T, Producerea și utilizarea biogazului obținerea de energie, Editura Mirton Timișoara, 2009. 7. Jurcoane Ș., Vintilă T. – Biotehnologia Enzimelor, Ed. Mirton, Timișoara, 1999. 8. Vintilă T., Inginerie Genetică, Course text book, part 1. 9. Vintilă I., Vintilă Daniela R., – Genetică medicală. Ed. Vasile Goldiș University Press, Arad 2006.
The address where the tender file is sent	The Secretariat of the Faculty of Bioengineering of Animal Resources, Calea Aradului 119, Timisoara, Timis county, PC 300645.