

Module title: Development of Microbial Strains (2141)

Module code	1.2
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<b>Coordinator</b>	Prof. Dr. rer. nat. Tilman Achstetter
<b>Aims including key qualification</b>	In depth understanding of the abilities and peculiarities of micro organisms, broad knowledge of the possibilities to use and modify them to the desired features. Adoption of methods and results from fundamental research with respect to industrial application of those micro organisms (GLP/ GMP, safety, economical and society related social issues). Exercises based on primary literature will raise the understanding for scientific analysis and synthesis; they will increase social competence and enlarge the catalogue of methods.
<b>Contents</b>	Changes of metabolic capacities of micro organisms relevant to industry, based on genetic engineering, random mutagenesis and subsequent screening exemplified by industrial projects. Synthesis of research findings on one hand in microbiology/ cell biology/ microbial physiology/ biochemistry and on the other hand of the pharmaceutical food and feed and fine chemical industry, based essentially on original literature (patents, publications).
<b>Instructor</b>	Prof. Dr. rer. nat. Tilman Achstetter
<b>Type</b>	Compulsory module, option Industrial Biology
<b>Teaching methods</b>	Seminaristic tuition
<b>Learning methods</b>	Group work, guided exercises
<b>Assessment</b>	Written examination and/ or oral presentation
<b>Duration of assessment</b>	90 minutes (acc to examination regulations)
<b>Prerequisites</b>	Basics in microbiology, formal and molecular genetics, in chemistry and biochemistry, cell biology, industrial micro biology, bio process development, English language (level...), basic understanding of database research
<b>Study system usability</b>	Basis for the project modules of the 2nd semester. The module opens avenues to a science-based development of industrial micro organisms
<b>Workload</b>	180 hrs (blocked seminar)
<b>Contact time</b>	4 (equivalent to 60 hrs per semester)
<b>Self-study (hours)</b>	120 (equivalent to 8 hrs per week)
<b>ECTS points (credits)</b>	6
<b>Frequency</b>	Once per academic year, summer term (1st semester)
<b>Conditions for the award of credits</b>	Achievement of the specified learning outcomes demonstrated <i>via</i> assessment, Essay (in english, 5000 words)