



## COURSE DATASHEET

<b>Semester:</b>	2016/17/1
<b>Course:</b>	Immobilized biocatalysts, bioreactors
<b>Code:</b>	VEMKBMB112R
<b>Responsible department:</b>	Research Institute on Bioengineering, Membrane Technology and Energetics
<b>Department code:</b>	MKBME
<b>Responsible instructor:</b>	Dr. László Gubicza

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### Course objectives:

To present the manufacture, features of the immobilized biocatalysts to students, moreover to describe the reactors working with them.

### Course content:

1. Introduction - the fundamentals of biotechnology and bioengineering, enzymes and microbes
2. Immobilization techniques
3. Characterization of immobilized biocatalysts
4. Application possibilities
5. Bioreactors with immobilized biocatalysts
6. Sterile and non-sterile operations
7. The role of air (oxygen)
8. Controlling techniques
9. Consultation, exam

### Requirements, evaluation and grading:

Students are required to attend lectures.

Preparation of 2 written reports concerning the lectures during the semester.

After a half an hour's preparation the examinee gives an oral presentation on the topic for about 20-25 minutes. Fail (1) when the examinee is unable to prove either the definition of the basic notions or the short scheme of things connected with the topic.

Pass (2) when the examinee is able to interpret the basic notions of the topic.

Satisfactory (3) when the examinee is well - versed in the basic notions of the topic and is able to present their logic connections - with the help of the examiner.

Good (4) when the examinee provides a logic, well - structured presentation with all the important facts and connections but he does not know or partly knows the required reading material connected with the topic.

Very good (5) when the examinee gives a logic, excellent, well-structured, perfect in details oral presentation that completely reveals the connection of the concepts within the topic.

### Required and recommended readings:



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### Required and recommended readings:

Boross, Sisak, Szajáni: Szilárd fázisú biokatalizátorok, Akadémiai Kiadó, Budapest, 2008, Buchholz, K., Kasche, V., Bornscheuer, U.T.: Biocatalysts and enzyme technology, Wiley, Wienheim, 2005  
Industrial enzymology, Ed. by Godfrey. T., West, T., MacMillan Press, London, 1996