



## COURSE DATASHEET

<b>Semester:</b>	2014/15/1
<b>Course:</b>	Industrial fermentations
<b>Code:</b>	VEMKBMM414F
<b>Responsible department:</b>	Research Institute on Bioengineering, Membrane Technology and Energetics
<b>Department code:</b>	MKBME
<b>Responsible instructor:</b>	Dr. László Gubicza

---

### Course objectives:

To introduce the students to the field of industrial fermentation, to present the most important processes, to describe their characterization.

### Course content:

1. Introduction - high volume fermentation products, classification, features
2. Fermentations in the food industry (beverages, acetic acid, yeast ...)
3. Manufacture of organic acids (citric acid, maleic acid, itaconic acid ...)
4. Production of enzymes (proteases, amylases, lipases ...)
5. Production of amino acids (e.g. lysine, glutamic acid...)
6. Systems for environmental protection
7. Single cell protein (SCP)
8. Energetics
9. Special fermentation systems

### Requirements, evaluation and grading:

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.



# UNIVERSITY OF PANNONIA

## COURSE DATASHEET

<b>Semester:</b>	2014/15/1
<b>Course:</b>	Industrial fermentations
<b>Code:</b>	VEMKBMM414F
<b>Responsible department:</b>	Research Institute on Bioengineering, Membrane Technology and Energetics
<b>Department code:</b>	MKBME
<b>Responsible instructor:</b>	Dr. László Gubicza

---

### Required and recommended readings:

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