UNIVERSITY OF PANNONIA

SUBJECT DATASHEET

Semester:	2010/11/2
Subject:	Special unit operations and transport phenomena
Code:	VEMKMUM114S
Responsible department:	Department of Chemical Engineering Science
Responsible department code:	MKMU
Responsible lecturer:	dr. Géza Horváth

Educational objectives:

The unification of the knowledge of students with different backgrounds, preparation of VEMKFMM218M.

Detailed content of the subject:

1. Description of unit operations, thermodynamic tools and limits, description of phases, extensive density functions.
2. Continuus and periodic operations, transport mechanisms
3. Reology in unit operations. Balance equations in homegenic phases
4. Component and heat transport in finite and semi-infinite bodies
5. Boundary-layer theories. Surface phenomena and their application
6. Special diffusion operations. Analysis of separation methods
7. Similarities and analogies, the system of dimensionless numbers
8. Superposition of continuums. Mid-term paper.
9. The role and usage of enthrophy, enthrophy balance
10. Onsager formalism. Qualification and storage of pure and mixed materials
11. Ion exchange and adsorption. Probability methods for the description of stationar bed operations
12. Foundations of industrial chromatography. The limits of classic diffusion operations
13. Mixing, dimension analysis
14. Prevalent fine chemical processes
15. End-of-term paper

Requirements:

2 in-term papers

Required and suggested references:

Benedek P, László A: A vegyészmérnöki tudomány alapjai
Imre L.: Szárítási kézikönyv

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Required and suggested references:

Grúber J, Blahó M: Folyadékok mechanikája
Szolcsányi P: Transzportfolyamatok
Bird-Stewart-Lightfoot: Transportphenomena
Culson J.M, Richardson J.F: Chemical Engineering vol. I.
Cranc J: The Mathematics of Diffusion
Wärmeatlas, Astarita G: Mass Transfer with Chemical Reaction