



COURSE DATASHEET

Semester:	2015/16/1
Course:	Special unit operations and transport phenomena
Code:	VEMKMUM114S
Responsible department:	Department of Chemical Engineering Science
Department code:	MKMU
Responsible instructor:	Dóra Rippelné Pethő

Course objectives:

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

Course content:

1. Description of unit operations, thermodynamic tools and limits, description of phases, extensive density functions.
2. Continuous and periodic operations, transport mechanisms
3. Rheology in unit operations. Balance equations in homogeneous 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 continua. Mid-term paper.
9. The role and usage of enthalpy, enthalpy balance
10. Onsager formalism. Qualification and storage of pure and mixed materials
11. Ion exchange and adsorption. Probability methods for the description of stationary 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, evaluation and grading:

2 in-term papers

Required and recommended readings:

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



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Required and recommended readings:

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