Innovative heat and mass transfer exchangers for contemporary applications

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Objective:

Acquaintance with calculation and design methods of modern heat and mass exchangers for perspective industrial applications.

Contents

1. Fundamentals. Relation between fluid mechanics and heat transfer to classical and non-equilibrium thermodynamics (2h).
2. Issue of miniaturisation and heat transfer intensification in heat and mass exchangers. Existing examples of designs. Laminar or turbulent heat transfer? (2h).
3. Modern methods of design of heat and mass transfer apparatus (3h).
4. Modelling of thermal-hydraulic processes in heat exchangers. Suggested strategies of solution (4h)
5. Networks of heat exchangers (2h)
6. Heat recovery from technological processes, waste heat or data centers (2h)

Key competences:

Ability to determine basic dimensions of heat exchangers. Selection of an appropriate type of heat exchanger to the problem. Knowledge of modern heat intensification techniques.

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Bibliography:

1. Mikielewicz D., Lecture notes, 2014
2. Mikielewicz D., Boiling and condensation in channels and microchannels, GUT Publishers, Gdańsk 2009.
3. Carey V. P., Liquid –vapor phase change phenomena, Taylor and Francis, 2008.
4. Naterer G., Heat Transfer in Single and Multiphase Systems, CRC Press, 2003.
5. Kandlikar S.G., Heat transfer and fluid flow in minichannels and microchannels, Elsevier, 2004.

TERMINY WYKLADÓW			
Data	**Dzień tygodnia**	**Godzina**	**Sala**
2014-11-12	Śr	12.00-15.30	LM 10
2014-11-19	Śr	12.00-15.30	LM 10
2014-11-26	Śr	12.00-15.30	LM 10
2014-12-03	Śr	14.00-16.30	LM 10