

Course Title:	<b>Heat exchangers</b>
Lecturer:	Igor Dejanović, Ph.D., research associate Assoc. Prof. Jasna Prlić Kardum, Ph.D.
Course Type:	Elective
ECTS:	6
Total Hours:	30 hours
Content of the Course:	The course gives an insight into the types of heat exchangers, their characteristics and typical application. It considers the problems that occur during their application and the possibilities of heat recovery.
Competences:	Students acquire knowledge about the types of exchangers and their selection criteria depending on the types of liquids, the temperature range and the required thermal duty of heat exchangers. They are met with the problems that occur while using different types of heat exchangers and the ways how to resolve them. They learn about the methods of estimation of heat exchanger area and the dimensioning standards. They are introduced to the methods of energy saving by application of heat exchangers. They acquire knowledge of the basics of heat exchange control.
Teaching Methodology:	Lectures, seminars
Course Units:	Types of heat exchangers, performance, advantages and disadvantages. Overview of standards. Typical application of different types of exchangers. Exchanger selection criteria. Calculation methods of heat exchangers accompanying distillation columns; condensers and evaporators (reboilers); heat exchange area, total transfer coefficient, the driving force of the process. The problems and the ways how to resolve problems that cause a decline in the efficiency of heat exchangers; corrosion, vibrations, material fatigue and deposits on the surface ( <i>fouling factor</i> ). Methods of heat exchanger cleaning. Efficient use of energy and the importance of heat recovery and saving methods. Heat exchanger control.
Examination method:	Seminar paper, oral exam
References:	<ol style="list-style-type: none"> <li>1. J.P. Holman, Heat Transfer, 9<sup>th</sup> ed., McGraw Hill, New York, 2008.</li> <li>2. K.J. Bell, A.C. Mueller, Wolverine Engineering Data, Book II – Wolverine Tube Heat Transfer Data Book, Wolverine Tube, Inc, Decatur, 2001.</li> <li>3. N.P. Cheremisinoff, Handbook of Chemical Processing Equipment, Butterworth Heinemann, Boston, 2000.</li> <li>4. J.R. Couper, W.R. Penney, J.R. Fair, S.M. Walas, Chemical Process Equipment, Selection and Design, Elsevier, Burlington, 2005.</li> <li>5. T. Kuppan, Heat Exchanger Design Handbook, Marcel Dekker Inc., New York, 2000.</li> </ol>
Course in English:	Yes
Quality Monitoring Method:	Course quality and performance monitoring in accordance with the quality management system of the University of Zagreb. Self-evaluation of lecturers and student poll.