

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Basics of Refrigeration		Code 1010614151010614576
Field of study Mechanical Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 5
Elective path/specialty Food Industry Machines and Refrigeration	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 18 Classes: - Laboratory: 12 Project/seminars: -		No. of credits 3
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences		ECTS distribution (number and %) 3 100%
Responsible for subject / lecturer: dr hab. inż. Krzysztof Bieńczak email: krzysztof.bieniczak@put.poznan.pl tel. 665-2655, 647-5888 MRiT ul. Piotrowo 3, 60-695 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has a basic knowledge of thermodynamics and fluid mechanics.
2	Skills	Student can take measurements in the field of basic fluid mechanics and thermodynamics.
3	Social competencies	He is aware of conduct in a professional manner.
Assumptions and objectives of the course: Understanding the theoretical and practical problems associated with the construction and operation of cold storage facilities.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. It has a structured, theoretically founded knowledge of the construction and operation of refrigeration facilities. He knows the dangers and safety devices compressor. - [K1A_W24]		
Skills: 1. It can make a balance of the cooling chamber and then design for the cooling system. - [K1A_U04 K1A_U16] 2. It can measure the basic parameters of the cooling system in order to diagnose the condition. He can reasonably operate refrigeration facilities. - [K1A_U04 K1A_U16]		
Social competencies: 1. He understands the importance of refrigeration and refrigerated transport as a way to reduce food waste and environmental hazards. - [K1A_K02]		
Assessment methods of study outcomes		
Written examination and routine inspection laboratory preparation and evaluation of their progress.		
Course description		

<p>Distribution and operation of refrigeration equipment. Linde circuits (wet and dry). Of sub-cooling circuit. Regeneration circuit. Parameters characterizing single refrigeration. Multi-stage circuits. The loss of refrigeration compressor, refrigerants. Coolants. Lubricating oils. Division of compressors. Construction of piston compressors, screw and scroll. Capacity control. Lubrication. Types of hazards and safety devices compressor. Factors affecting the efficiency of the compressor. Condensers (classification, construction, operation). Vaporizers (classification, construction, operation). Regulators (classification, principles of operation, construction, operation).</p>		
<p>Basic bibliography:</p>		
<p>Additional bibliography:</p>		
<p>Result of average student's workload</p>		
<p>Activity</p>	<p>Time (working hours)</p>	
1. Participation in the lecture	15	
2. Preparation for laboratory	12	
3. Participation in laboratory exercises	15	
4. Capturing the content of training, the report	12	
5. Participation in the completion	1	
6. Consultation	3	
7. Preparation for the exam	10	
8. Participation in the exam	2	
<p>Student's workload</p>		
<p>Source of workload</p>	<p>hours</p>	<p>ECTS</p>
Total workload	70	3
Contact hours	36	1
Practical activities	42	2