

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Basics of Freezing and Food Storage		Code 1010612221010615313
Field of study Transport	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
Elective path/specialty Food Industry Machines and Refrigeration	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: 1 Laboratory: - 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		ECTS distribution (number and %)
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	It has news from the ground up construction of refrigeration equipment.
2	Skills	Can design the layout.
3	Social competencies	Is aware of the investigation in a professional manner.
Assumptions and objectives of the course: Familiarizing yourself with the construction and operation of refrigeration systems for use in vehicles for the transportation of food. Design and operational skills.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has the detailed knowledge needed to understand the subjects. - [K2A_W22]		
Skills:		
1. It can analyze objects and technical solutions in the field of refrigeration. - [K2A_U10]		
2. Can arrange transport process. - [K2A_U16]		
Social competencies:		
1. He can think and act in an entrepreneurial way. - [K2A_K07]		
Assessment methods of study outcomes		
Written tests.		
Course description		
Heat exchange in vaporizers (evaporators) and skraplaczach. Distribution of the air in the cold body and Ice-House. Chart i-X for moist air. Construction of automotive refrigeration aggregates. Arrangement of the components of the aggregates in the body depending on the performance and use. The drive units. Oszranianie vaporizers. Special functions carried out by the unit. modulation. Multitemperaturowe aggregates. Rules for the selection of automotive units depending on the size of the class and destination (simplified methods, the methods of accurate). Hybrid generators. Units for containers. Refrigeration dryers of the loading area of the container. The operation of refrigeration equipment used in transport. Diagnostic systems. Vessels equipment food prior to loading. Air conditioning vehicles. Parking air conditioners.		

Basic bibliography:		
1. Pojazdy chłodnicze w transporcie żywności. Praca zbiorowa pod red. Zwierzyckiego W. i Bieńczyka K., Wyd. System Serwis, Poznań 2006.		
2. Kwaśnikowski S. [red.], Pojazdy izotermiczne i chłodnicze. Navigator nr 7, Wrocław 1997.		
3. Bonca Z. Automatyka chłodnicza i klimatyzacyjna. Wyd. WSM Gdynia 1995.		
4. Postolski J., Gruda Z. Zamrażanie żywności. PWN 2001.		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in the lecture	30	
2. Preparation for assessment	5	
3. Participation in the classes	15	
4. Consultation	8	
5. Preparing for the lab exercises	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	68	3
Contact hours	53	2
Practical activities	0	0