COURSE DESCRIPTION CARD - SYLLABUS

Course name

Engineering of refurbishment of food and cooling devices

Course

Field of study

Construction and Exploitation of Means of Transport

Year/Semester

1/2

Area of study (specialization)

Food Industry Machines and Refrigeration

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	0	0
Tutorials	**Projects/seminars**	
0	15	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr inż. Aleksandra Rewolińska

email: aleksandra.rewolinskal@put.poznan.pl

tel. 61 665-2232

Institute of Internal Combustion Engines and Drives

ul. Piotrowo 3; 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge: Basic knowledge of the design, technology and operation of machines.

Skills: Logical thinking, using information obtained from the library and the Internet

Social competences: Understands the needs of learning and acquiring new knowledge

Course objective

Acquainting with methods of restoring the fitness of machines

Course-related learning outcomes

Knowledge

1. Has extensive knowledge of the processes taking place in the surface layer of machine structural elements and surface engineering methods

2. Has extended knowledge of modern construction materials such as carbon plastics, composites, ceramics, in terms of their construction, processing technology and applications

3. Has extended knowledge of the strength of materials in the field of nonlinear models, fracture and fatigue strength, calculations of statically indeterminate structures, structural stability

4. Has a general knowledge of the types of research and methods of testing working machines with the use of modern measurement techniques and data acquisition

Skills

1. Can correctly select the optimal material and its processing technology for typical parts of working machines, taking into account the latest material engineering achievements

2. Can perform basic measurements of mechanical quantities on the tested working machine with the use of modern measuring systems

Social competences

1. Is ready to critically assess the knowledge and content received

2. Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties with solving the problem on its own

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written test of the lecture and completion of the project

Programme content

Methods of mating and regeneration of machine parts, machining to repair dimensions, methods: cold and hot plastic deformation, welding, resistance and friction welding, galvanic and chemical methods. The use of plastics in machine repair, bonding and sealing, including the use of anaerobic-contact adhesives. Application conditions and selection criteria of the regeneration method. Controlling the durability of machines in repair processes.

Teaching methods

1. Lecture with multimedia presentation

2. Exercise method (subject exercises, practice exercises) - in the form of auditorium exercises

Bibliography

Basic

1. Nosal S., Inżynieria odnowy maszyn : wybrane zagadnienia – Wydanie I. – Poznań, 2017

2. Jósko M., Kowalczyk J., Mańczak R., Nosal S., Ulbrich D., Inżynieria odnowy pojazdów samochodowych, Tom 1 Inżynieria obsługiwania Poznań, 2019

3. Jósko M., kowalczyk J., Mańczak R., nosal S., Ulbrich D., Inżynieria odnowy pojazdów samochodowych,

Tom 2 Inżynieria naprawy Poznań, 2019

4. Cypko J., Cypko E. Podstawy technologii i organizacji napraw pojazdów mechanicznych. Wkił,

Warszawa 1989

5. Kostrzewa S., Nowak B. Podstawy regeneracji części pojazdów mechanicznych. WKiŁ, Warszawa, 1986

Additional

1. Klimpel A., Napawanie i natryskiwanie cieplne. Technologie, WNT, Warszawa, 2000

2. Adamiec P., Dziubiński P., Regeneracja i wytwarzanie warstw wierzchnich elementów maszyn

transportowych, Wyd. Pol. Śląskiej, Gliwice, 1999

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for tutorials, preparation for tests) [1]	30	1,0

[1] delete or add other activities as appropriate