



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Refrigeration and air conditioning equipment

Course

Field of study

Mechanical and Automotive Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

9

Laboratory classes

9

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

prof. dr hab. inż. Krzysztof Bieńczyk

Responsible for the course/lecturer:

Faculty of Civil and Transport Engineering

Prerequisites

Knowledge: Has a general knowledge of the impact of technical facilities and technologies on the environment

Skills: Is able to define categories of threats to the environment that are a specific technological process implemented in the field of production and operation of food machinery and refrigeration equipment and indicate ways of counteracting these threats.

Social competences: Work in an interdisciplinary team. Ability to lead a team and expand team knowledge

Course objective

Learning the basic principles of building refrigeration, air conditioning and heating devices

Course-related learning outcomes

Knowledge

Has basic knowledge in the field of chemistry, in the construction of the periodic table of elements and



their properties, the theory of chemical bonds, organic and inorganic compounds, types of chemical reactions, chemical analysis: in the scope enabling the understanding of lectures on metal and non-metallic materials, environment, fuels and lubricants, building materials and soil, biomechanics and biological materials processed by agricultural and food machinery.

Has extended basic knowledge necessary to understand specialist subjects and specialist knowledge about the construction, construction methods, manufacturing and operation of a selected group of working, transport, thermal and flow machines covered by the diploma path.

Has elementary knowledge of the life cycle of machinery, recycling of machine elements and construction and consumables.

Skills

Can obtain information from literature, the Internet, databases and other sources. Can integrate the obtained information, interpret and draw conclusions from it, and create and justify opinions.

Can use the experience gained in an environment professionally involved in engineering activities related to the maintenance of devices, facilities and systems typical for the field of study.

Has the ability to self-educate with the use of modern teaching tools, such as remote lectures, websites and databases, teaching programs, e-books.

Social competences

Is ready to critically assess his knowledge and received content

Is ready to fulfill social obligations and co-organize activities for the benefit of the social environment.

Is ready to fulfill professional roles responsibly, including:

- observing the rules of professional ethics and requiring this from others,
- caring for the achievements and traditions of the profession.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Final tests

Programme content

Principles of construction of cooling, air-conditioning and heating devices used in means of transport in order to ensure appropriate temperature conditions. Characteristics of the basic components of refrigeration, air conditioning and heating devices (compressors, heat exchangers, valves, safety elements). Refrigerants. Environmental aspects of using refrigerants.

Teaching methods

lecture with presentation, experimental classes



Bibliography

Basic

1. B. Gaziński Klimatyzacja pojazdów samochodowych, Systherm Serwis, Poznań 2016
2. B. Gaziński, Chłodnictwo dla praktyków, Systherm Serwis, Poznań 2013
3. S. Kwaśniowski, Pojazdy chłodnicze i izotermiczne, Navigator, Wrocław 1997

Additional

1. K. Kalinowski, Amoniakalne urządzenia chłodnicze tom.1 i 2, Masta, Gdansk 2005

Breakdown of average student's workload

| | Hours | ECTS |
|---|-------|------|
| Total workload | 50 | 2,0 |
| Classes requiring direct contact with the teacher | 18 | 1,0 |
| Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹ | 32 | 1,0 |

¹ delete or add other activities as appropriate