

Name: Construction materials and exploitation		
Course: Energy		Code of name:
Rodzaj przedmiotu: Moduł 3. Treści podstawowych	Poziom kształcenia: I stopień	Semestr: I
Rodzaj zajęć: wykład, ćwiczenia	Liczba godzin/tydzień/zjazd [*] 2W, 1C	Liczba punktów ECTS: 3 ECTS
Profil kształcenia: praktyczny		Język wykładowy: j. polski

SYLLABUS

I. CARDS OF COURSE

OBJECTS

- C.1. Presenting and familiarizing students with basic groups of construction and operating materials.
C.2. Adopting the principles of shaping the structure and properties of materials.
C.3. Educate the ability to perform basic material research.

PRELIMINARY REQUIREMENTS KNOWLEDGE, SKILLS AND OTHER COMPETENCE

1. Knowledge of chemistry and physics, heat engineering.
2. Ability to use professional literature.

SUBJECTIVE EFFECTS OF EDUCATION

- EK 1 - classifies and characterizes basic construction and operating materials
EK 2 - can determine the overall impact of the structure and structure of materials on their properties
EK 3- is able to plan the selection of appropriate methods and research tools to analyze the structure and basic mechanical properties of materials

PROGRAM CONTENT

LECTURES	Hrs
W 1 – General characteristics of metals.	2
W 2 – Properties of metal alloys and structures.	2
W 3 – Crystallization of metals and alloys.	2
W 4/W 5 – Iron alloys- properties, phases, structures.	4
W 6 – Heat- and chemical treatment of steel.	2
W 7 – Role of alloy elements in steel. Steel designations.	2
W 8 – Alloy steels - alloy structural steels, heat treatment.	2
W 9 - Alloy steels - alloy tool steels, heat treatment.	2
W 10 – Steels and iron alloys with special properties.	2
W 11 – Corrosion of metals and alloys.	2

W 12 – Non-ferrous metals and their alloys - Copper and its alloys.	2
W 13 – Non-ferrous metals and their alloys - Aluminum and its alloys, other non-ferrous metals..	2
W 14 – Types and properties of composite materials.	2
W 15 – General characteristics of sintered and polymeric products.	2
Auditorium exercises	Hrs
C 1 – Introduction, terms of obtaining credit.	1
C 2/C 3 – Destructive and non destructive properties testing methods of materials.	2
C 4 – Methods for analysis of chemical and phase composition of materials.	1
C 5 –Methods of surface analysis of materials.	1
C 6/C 7/ C8 - Mechanical and plastic properties of materials.	3
C 9/C 10 –Methods of determining hardness of materials.	2
C 11/ C 12 –Evaluation of corrosion resistance of materials.	2
C 13 –Fatigue phenomenon.	1
C 14 –The phenomenon of tribological wear of materials.	1
C 15 –Test.	1

DIDACTIC TOOLS

1. multimedia presentation
2. classical table

VERYFICATION (F – FORM, S – SUMMARY)

F1. – evaluation of preparation for classes
S1. – test

STUDENT'S WORK

Form of activity	Hrs* ¹⁾
Participation in lectures	30 h
Conducting in auditorium classes	15 h
Laboratory activities	-
Parties in project classes	-
Participation in the classroom	-
Education in eLearning classroom training	-
Test	4 h
Certificate for laboratory classes	-
Component project	-
Exam	-
Consultation	8 h
CONTACT WITH THE TEACHER godziny/ECTS	57 h / 3 ECTS

Preparing for auditorium exercises	4 h
Preparing for laboratory classes	-
Preparation for project classes	-
Preparing for seminar classes	-
Preparing for eLearning classes	-
Attendance in eLearning classes	-
Development preparation	-
Preparation for colloquium	4 h
Assessment for the exam	-
STUDENT'S WORK, godziny/ECTS	8 h / 3 ECTS
SUMMURY OF HOURS IN SEMESTER	Σ 65 h
SUMMURY OF ECTS	3 ECTS

BIBLIOGRAPHY

<ol style="list-style-type: none"> 1. Ashby M., Sherclif H., Cebon D.: Inżynieria materiałowa. Tom 1, 2. Wyd. Galaktyka, Łódź, 2011 2. Przybyłowicz K., Metaloznawstwo, WNT, Warszawa 1992. 3. Staub F., Metaloznawstwo, Wydawnictwo „Śląsk”, Katowice 1979. 4. Dobrzański L.: Podstawy nauki o materiałach i metaloznawstwo. WNT, Warszawa, 2002 5. Dobrzański L., Materiały inżynierskie i projektowanie materiałowe- podstawy nauki o materiałach, WNT, Warszawa 2006.
--

COORDINATOR

1. dr inż. Renata Włodarczyk rwlodarczyk@is.pcz.czest.pl

II. OTHER USEFUL INFORMATION ABOUT THE SUBJECT

1. All information for students on the schedule is available on the bulletin board and on the website: www.is.pcz.pl
2. Information on the consultation is provided to students during the first classes and is placed on the website on the website: www.is.pcz.pl
3. Information on the conditions of course completion is given to students during the first classes