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| FACULTY: | Department of Mechanical Engineering |
| FIELD OF STUDY: | Mechanics and Machine Building |
| ERASMUS COORDINATOR OF THE  FACULTY: | Dr hab. inż. Agnieszka Kułakowska, Prof. PK |
| E-MAIL ADDRESS OF THE  COORDINATOR: | agnieszka.kulakowska @tu.koszalin.pl |
| COURSE TITLE: | Material science I |
| LECTURER’S NAME: | dr hab. inż. Tomasz Rydzkowski, dr inż. M. Pancielejko |
| E-MAIL ADDRESS OF THE LECTURER: | [tomasz.rydzkowski@tu.koszalin.pl](mailto:tomasz.rydzkowski@tu.koszalin.pl);  [mieczyslaw.pancielejko@tu.koszalin.pl](mailto:mieczyslaw.pancielejko@tu.koszalin.pl) |
| COURSE CODE (USOS): | 4 |
| ECTS POINTS FOR THE COURSE: | 3 ECTS |
| ACADEMIC YEAR: | 2023/2024 |
| SEMESTER:  (W – winter, S – summer) | W |
| HOURS IN SEMESTER: | 30 |
| LEVEL OF THE COURSE:  (1st cycle, 2nd cycle, 3rd cycle) | 1st cycle |
| TEACHING METHOD:  (lecture, laboratory, group tutorials, seminar, other-what type?) | Lecture |
| LANGUAGE OF INSTRUCTION: | English, Polish, (separate group with English as leading language depends from the incomings number) |
| ASSESSMENT METOD:  (written exam, oral exam, class test, written  reports, project work, presentation, continuous assessment, other – what type?) | Written exam |
| COURSE CONTENT: | Bravais lattices. Crystal lattice types. The crystallographic planes and directions – Miller indexes. Crystallographic defects. Point, line, planar and bulk defects. A grain boundary. Polycrystalline materials. Cold work and recrystallization; mechanism of the plastic strain. Strain hardening of metals. Recrystallization - changes of the metal property after the recrystallization.  Arrangements of the phase equilibrium. Definition of the phase. Type of phases. Two-component diagrams types. Metastable Iron-Carbon (Fe-Fe3C) phase diagram: phases definitions in the Fe-Fe3C phase diagram, transformations (eutectic and eutectoid and peritectic. Polymer, composite and ceramic materials. Kinds of the chemical bonds. The structure difference between amorphous and crystal solids. The atomic structure difference between metals and ceramic materials. Definition of composite material. The role of matrix and reinforcement in composite  materials. Contemporary construction materials. |
| ADDITIONAL INFORMATION: |  |

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