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| FACULTY: | **Faculty of Mechanical Engineering** |
| FIELD OF STUDY: | **Biomedical Engineering** |
| ERASMUS COORDINATOR OF THE FACULTY: | Igor Maciejewski |
| E-MAIL ADDRESS OF THE COORDINATOR: | [igor.maciejewski@tu.koszalin.pl](mailto:igor.maciejewski@tu.koszalin.pl) |
| COURSE TITLE: | **Digital signal processing** |
| LECTURER’S NAME: | Łukasz Szparaga, PhD |
| E-MAIL ADDRESS OF THE LECTURER: | [lukasz.szparaga@tu.koszalin.pl](mailto:lukasz.szparaga@tu.koszalin.pl) |
| ECTS POINTS FOR THE COURSE:  COURSE CODE (USOS): | 5 0911>1000-CPS |
| ACADEMIC YEAR: | 2022/2023 |
| SEMESTER:  (W – winter, S – summer) | S |
| 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?) | Lectures (15h), Classes (15h) |
| LANGUAGE OF INSTRUCTION: | English |
| ASSESSMENT METOD:  (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?) | written exam/project work |
| COURSE CONTENT: | Program content includes: Digital Signal Processing System. Sequences and their properties. Difference equations. Impulse responses. Discrete weave. Properties of the "Z" transformation. Solving difference equations using the "Z" transform. Frequency properties of signals and discrete systems. Aliasing. Ways to counteract. Methods of designing recursive filters. The method of invariance of the impulse response. Frequency conversion method. Methods of designing non-recursive filters. The method of interpolation with trigonometric polynomials. Discrete and fast Fourier transform. Multidimensional signals. Basic methods of image processing. Discrete weaveDetermining the impulse response of the CPS algorithm with the given block diagram. Stability of the CPS algorithm. Properties of spectra of discrete signals and CPS systems. Programs for supporting the design of digital filters. |
| ADDITIONAL INFORMATION: | Students should have basic knowledge about digital technique and mathematics from previous courses. |