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| FACULTY: | **Faculty of Electronics and Computer Science** |
| FIELD OF STUDY: | **Computer Science** |
| ERASMUS COORDINATOR OF THE FACULTY: | Marcin Walczak, PhD (Electronics) |
| E-MAIL ADDRESS OF THE COORDINATOR: | marcin.walczak@tu.koszalin.pl |
| COURSE TITLE: | **Signal processing** |
| LECTURER’S NAME: | Robert Wirski, PhD |
| E-MAIL ADDRESS OF THE LECTURER: | robert.wirski@tu.koszalin.pl |
| ECTS POINTS FOR THE COURSE: | 5 |
| COURSE CODE (USOS): | 0712>1200-CPS |
| ACADEMIC YEAR: | 2025/2026 |
| SEMESTER: (W – winter, S – summer) | W |
| HOURS IN SEMESTER: | 45 |
| LEVEL OF THE COURSE:  (1st cycle, 2nd cycle, 3rd cycle) | 1st cycle |
| TEACHING METHOD:  (lecture, laboratory, group tutorials, seminar, other-what type?) | lecture, exercises |
| LANGUAGE OF INSTRUCTION: | * **English full time scheme for classes with 5 and more International Erasmus+ students enrolled/accepted;** * **English 50% individually with the teacher + Polish 50% with Polish students or individual project work- scheme for classes with less than 5 International Erasmus+ students enrolled/ accepted;** |
| ASSESSMENT METOD:  (written exam, oral exam, class test, written reports, project work, presentation, continuous assessment, other – what type?) | written/on-line exam |
| COURSE CONTENT: | Classification of signals and systems.  Z-transform.  Response of linear time-invariant systems to arbitrary inputs: the convolution sum.  Causality and stability of linear time-invariant systems.  Difference equations. Block diagrams. System functions.  Discrete state-space equations.  Response to complex exponential and sinusoidal signals: the frequency response function.  Linear-phase systems.  Ideal frequency-selective filters. Paley-Wiener theorem.  Fourier series.  Design of finite impulse response filters using windows.  Design of infinite impulse response filters from analog filters.  Discrete and fast Fourier transform.  Sampling theorem. |

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