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| **Course code** | CC4 |
| **Type and description** |  |
| **ECTS credit** | 1 |
| **Course name** | **Stochastic processes II** |
| **Course name in Polish** | **Procesy stochastyczne II** |
| **Language of instruction** | English |
| **Course level** | 8 PRK |
| **Course coordinator**  | **Lesław Gajek** |
| **Course instructors** |  |
| **Delivery methods and course duration** |

|  | **Lecture** | **Tutorials** | **Laboratory** | **Project** | **Seminar** | **Other** | **Total of teaching hours during semester** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Contact hours | 15 | 0 | 0 | 0 | 0 | 0 | 15 |
| E-learning | No | No | No | No | No | No |  |
| Assessment criteria (weightage) | 1,00 |  |  |  |  | 0,00 |  |

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| **Course objective** | The aim of the course is:1. to enable the acquisition of knowledge and skills in stochastic processes and time series
2. to enable the acquisition of knowledge of elementary properties/theorems concerning stochastic processes
3. to enable the acquisition of elementary knowledge of applications of stochastic processes in other sciences
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| **Learning outcomes** |  After completing the course students can:1. give definitions/properties of basic stochastic processes/time series, describe their types and give basic probabilistic characteristics – effects W1, U2, K1
2. apply the above knowledge to analyse mathematical models – effects U1, K1, K3.
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| **Assessment methods** | Learning outcomes 1—2 (effects W1, U1, U2, K1, K3): oral exam |
| **Prerequisites** | The student has the knowledge and skills from Stochastic processes I. |
| **Course content with delivery methods** | LECTURE 1. Markov processes, Markov chains, ergodic theorem
2. Semi—Markov processes
3. Galton-Watson branching process
4. Birth-death processes
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| **Basic reference materials** | 1. Kallenberg, O. (2002) Foundations of Modern Probability, 2nd ed. Springer. 2. Resnick S.I. (2013). Adventures in Stochastic Processes. Springer 3. Williams D. (2019) Probability with Martingales. 2nd ed. Cambridge University Press |
| **Other reference materials** | 4. Rolski T., Schmidli H., Schmidt V., Jozef L. Teugels J.L. (1999) Stochastic Processes for Insurance and Finance John Wiley and Sons |
| **Average student workload outside classroom** | 10h |
| **Comments** |  |
| **Last update** |  |