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| **Course title:** | **Discrete Mathematics** |
| **Institute/Division:** | F-2, Institute of Mathematics |
| **Course code:** | F2-DM |
| **Erasmus subject code:** | 11.1 Mathematics |
| **Number of contact hours:** | 45 hours |
| **Course duration:** | 1 semester |
| **ECTS credits:** | 6 |
| **Course description:** | Review of Mathematical Induction. Solving recurrence relations. Principles of Counting. Permutations. Elements of Number theory: Euclidean algorithm and its consequences. Algorithms and their complexity. Sorting algorithms. Graphs. Basic definitions. Degree of a vertex. Eulerian graph, Eulerian circuit, Euler theorem. Fleury's algorithm. Hamiltonian graph, Hamiltonian cycle. Dirac theorem. Directed graphs. Weighted graphs. Dijkstra's algorithm. Trees, spanning trees, minimum spanning tree. Kruskal's and Prim's algorithms. Networks and critical paths. Planarity. Graph coloring. |
| **Literature:** | C.A. Ross, C.R.B. Wright, *Discrete Mathematics*, Prentice Hall, Englewood Cliffs, N.J. 1988. |
| | N.L. Biggs, *Discrete mathematics*, Oxford Univ. Press, Oxford, 2002. |
| | E.G. Goodaire, M.M. Parmenter, *Discrete Mathematics with Graph Theory*, Prentice Hall, Engl. Cliffs, N.J. 2002. |
| **Course type:** | Lectures and exercises |
| **Assessment method:** | Attendance, ability of solving simple exercises, participation and preparation, homework, 2 quizzes, midterm and final exam. |
| **Prerequisites:** | None |
| **Primary target group:** | 1-st – 2-nd year computer science students |
| **Lecturer:** | Katarzyna Pałasińska, PhD, DSc, kpalasin@usk.pk.edu.pl |
| **Deadline for application:** | 15th January |