Course title: Parallel Algorithms	**Neptun code: GEMAK409-a**
Course coordinator: Dr. Attila Házy, PhD, associate professor	
type of lesson and number of lessons: **lecture (2)**	
method of evaluation: colloquium	
curriculum location of the subject: (autumn/spring semester): autumn and spring	
pre-study conditions *(if any)*: -	
The task and purpose of the subject:	
The aim of the course is to provide an introduction to the theory of parallel algorithms. Models of parallel computation and parallel computers, efficiency metrics, parallel complexity. The course Multiprocessors and multicomputers. Arithmetic problems: parallelization of basic operations, parallelism in arithmetic expressions. Vector and matrix operations. Matrix-related problems, solving systems of linear equations, sorting, and the Fast Fourier Transform. Numerical algorithms.	
Course description:	
The course on Parallel Algorithms is designed to familiarize students with computational models of parallel and concurrent execution. It provides an overview of widely used software tools (programming languages and libraries). Through practical examples and performance measurements, the course illustrates how to exploit hardware-level parallelism and highlights the advantages of parallel implementations over their sequential counterparts.	
Required literature:	
1. B. P. Lester: The Art of Parallel Programming, 1st World Publishing, 2013. 2. Peter Pacheco: An Introduction to Parallel Programming, Morgan Kaufmann, 2011. 3. Bertil Schmidt, Jorge Gonzalez-Dominguez, Christian Hundt, Moritz Schlarb: Parallel Programming, Morgan Kaufmann, 2017.	
Recommended literature:	
1. Peter Pacheco: Parallel Programming with MPI, Morgan Kaufmann, 1996. 2. Michael J. Quinn: Parallel Programming in C with MPI and OpenMP, McGraw-Hill Science/Engineering/Math, 2003.	