ÓBUDA UNIVERSITY					
John von Neumann	*Faculty*	Applied Mathematics			*Institute*
Hungarian title of the course:	Diszkrét matematika			*Neptun code:*	NMXDM1PMNE
English title of the course:	Discrete mathematics			*Credit:*	5
Type (compulsory/obligatory:)	compulsory	*Education Type*	Full-time	*Semester :*	2021-22 1.
Study field:	Combinatorics, graph heory				
Lecturer:	Dr. Gábor Hegedüs				
Required preliminary knowledge:	-				

Weekly teaching hours:	*Lecture:*	2	*Practical work:*	1	*Laboratory work:*	0
Exam type:		w	*Language of course:*	English	*In timetable:*	y

CURRICULUM

Abstract:

Principle of mathematical induction, pigeonhole principle, principle of inclusion and exclusion,
Permutations, variations and combinations, binomial theorem,
Genrating functions and their basic properties,
Linear recurrence relations,
Stirling, Catalan, Bell and Fibonacci sequences,
The basic properties of graphs, subgraphs, complements and graph isomorphism
Trees, forests, Prüfer code,
Euler trails and circuits, Hamilton path and cycles, Ore's theorem, Posa's theorem, extreme graph theory, Turán's theorem,
Graph coloring, Brooks' theorem, Vizing's theorem, perfect graphs, planar graphs, dual graphs, Kuratowski's theorem,
Mathing theory, Hall's theorem, Könug's theorem, Gallai's theorem, Hungarian method, flows,
max-flow min-cut theorem

Detailed schedule of the course:

Topics of lectures:

No.	Date	Description
1.	09.09	Principle of mathematical induction, pigeonhole principle, principle of inclusion and exclusion
2.	16.09	Permutations, variations and combinations, binomial theorem
3.	23.09	Genrating functions and their basic properties
4.	30.09	Linear recurrence relations
5.	07.10	Stirling, Catalan, Bell and Fibonacci sequences
6.	14. 10	First midhalf test