Obuda Universit										
John von Neumann Faculty of Informatics					Institute of Applied	Mathematics				
Nome and code:					Cro	dita				
Non komogeneou	. Uilha	rt in aa	ualities via Mat	hiau		uits.				
Non-nomogeneous Hilbert inequalities via Mathieu-series										
	2019/20 year 11. semester									
Subject lecturers: Prof. dr. habil. Tibor K. Pogány										
Prerequisites (with	Draraquisites (with									
code).	Calculus I, II									
Weekly hours: Lectur		re:	Seminar.:		Lab. hours:	Consultation:				
Way of	Vay of									
assessment:	sessment:									
			Course d	escrip	tion:					
Goal: to provide	a dee	eper un	derstanding of	the	methods and results	concerning Hilbert				
inequality for dou	ble seri	ies infei	rred by the Mat	hieu-s	eries technique.	C				
Course description	n: This	semina	ar gives introdu	uction	to hypergeometric typ	pe special functions,				
Mathieu series an	nd to the	he Hilb	ert and associ	ated i	nequalities concerning	g the double series.				
Moreover, a set o	f differ	rent kin	d upper bound	s are	established also for th	e double, triple and				
multiple zeta func	tions v	ia their	integral represe	entatio	on forms.					
			Lecture	sched	ule					
Education week		Topic								
1.	Invit	Invitation to Mathieu series								
2.	Math	Mathieu (a, λ) -series								
3.	Нуре	Hypergeometric, Gamma and Beta functions								
4.	Riem	Riemann ζ and Dirichlet η functions								
5.	Non-	Non-homogeneous kernel Hilbert double sum theorem								
6.	Deve	Developing Theorem 8								
7.	Spec	Special cases, corollaries, discussion								
8.	Final	Final remarks to Theorem 9								
9.	New	New class of allied Hilbert's inequalities								
10.	Appl	Application to Mordell-Tornheim ζ function								
11.	Integral representations, bounds									

Midterm requirements

Education week	Topic	

Finalgrade calculation methods

Achieved result	Grade		
89%-100%	excellent (5)		
76%-88<%	good (4)		
63%-75<%	average (3)		
51%-62<%	satisfactory (2)		
0%-50<%	failed (1)		

Type of exam					
Project presentation & Written exam					
Type of replacement					
Project presentation					
References					
Mandatory:					
1. T. K. Pogány, Integral representation of Mathieu (a,λ)-series, Integral Tranforms					
Spec. Functions 16 (2005) 685–689.					
2. N.M. Temme, Special Functions, John Wiley & Sons, 1996.					
3. G. H. Hardy, J. E. Littelwood, Gy. P'olya, Inequalities, Cambridge University					
Press, Cambridge, 1934.					

Recommended:

1. J. Karamata, *Teorija i praksa Stieltjesova integrala*, Srpska Akademija Nauka, Posebna izdanja CLIV, Matematički institut, Knjiga I, Beograd, 1949.

2. P.D. Miller, Applied Asymptotic Analysis, American Mathematical Society, 2006.