

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
MAT201	Series and Multivariable Functions	3	3	2	0	5	8
Prerequisites							
Admission Requirements							
Language of Instruction French							
Course Type	Compulsory						
Course Level	Bachelor Degree						
Objective	To teach the notion of convergence of sequences and series						
	To teach certain technics for testing their convergence						
	To enable participants to work with multivariable functions, their limits and derivatives						
	Convergence of series and power series						
	Convergence tests						
Content	Taylor Series						
	Multivariate functions and their graphs						
	Their limits						
	Notion of continuity for multivariate functions						
	Partial and directional derivatives of multivariate functions						
	Differentiability of multivariate functions						
	Analyse 2eme année, François Liret, Dominique Martinais						
References	Analiz 1,2, Ali Nesin						
	Calculus, James Stewart						

## Theory Topics

Week	Weekly Contents
1	Series, Absolute convergence.
2	Series with positive terms. Comparison theorems. Riemann series.
3	Convergence tests: Cauchy, d'Alembert, Abel.
4	Alternating series
5	Power Series
6	Taylor Series
7	Midterm
8	Series of functions, pointwise and uniform convergence of series of functions.
9	Stone-Weierstrass theorem
10	Multivariate functions, their graphs
11	Limits of multivariate functions, continuity
12	Partial derivatives, differentiability
13	Second derivatives, Schwarz theorem
14	Optimization of multivariate functions