Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
MAT202	Differential and Integral Calculus	4	8	5	0	5	8

Prerequisites	
Admission Requirements	

Language of Instruction	
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	The aim of this course is to generalize the notion of derivation and integration for single variable functions to the functions of multivariable functions, and to understand and to be able to apply the Stoke's theorem.
Content	Differentiable functions, Local inverse function theorem, Implicite function theorem, Higher order partial derivatives, Derivatives of integrals, Multiple integral, Change of variables, Differential forms, Stokes' theorem, Closed forms and Exact forms, Vector analysis, Green's theorem.
References	Principes d'Analyse Mathématique, Walter Rudin. Analyse Concepts et Contextes : Volume 2, Fonctions de Plusieurs Variables, James Stewart.

Theory Topics

Week	Weekly Contents
1	Recall (Elementary topology + Linear applications)
2	Limit and continuity of multivariable functions
3	Differentiable functions
4	Fixed point theorem, Local İnverse function theorem
5	Implicit Function theorem
6	Rank theoremi, Determinant
7	Higher order partial derivatives, Derivatives of integrals
8	Multiple integration, primitive functions
9	Change of variables
10	Differential forms, Simlexes and chains
11	Stokes' theorem
12	Closed forms and exact forms
13	Vectorial analysis
14	Vektorial analysis, Green's theorem