



# UE Matrices and functions of multiple variables - MAT334 -

 ECTS  
6 crédits

 Crédits ECTS  
Exchange  
6.0

 Composante  
Département  
de la licence  
sciences et  
technologies  
(DLST)

 Période de  
l'année  
Automne (sept.  
à dec./janv.)

- > **Langue(s) d'enseignement:** Anglais
- > **Ouvert aux étudiants en échange:** Oui
- > **Crédits ECTS Exchange:** 6.0

## Présentation

### Description

MAT334 follows the program of unit MAT304 in L1 SV.

Program summary:

A - Linear algebra:

Reminders on matrices and linear applications.

Resolution of linear systems, Gauss method.

Matrix calculation, block manipulation, LU decomposition.

Practical results on determinants and diagonalization.

B - Functions of several variables:

Definitions, continuity, graphical representations, polar, cylindrical and spherical coordinates

Derivation: partial derivatives, differential, gradient, Jacobian matrix, derivation and change of variables

Optimization: extrema, critical points, practical results in dimension 2, least squares method

Partial differential operators: definition and elementary properties of gradient, divergence, Laplacian, curl

Double and triple integrals, Green's formulas

---

## Objectifs

Targeted skills:

Linear algebra and matrix calculus tools.

Manipulation of functions of several variables. Elementary differential and integral calculus.

---

## Heures d'enseignement

UE Matrices and functions of multiple variables - TD	TD	36h
--	----	-----

UE Matrices and functions of multiple variables - CM	CM	24h
--	----	-----

**Période** : Semestre 3

## Infos pratiques

---

### Campus

› Grenoble - Domaine universitaire