

## Advanced Analysis

Course title - Intitulé du cours	Advanced Analysis
Level / Semester - Niveau /semestre	M1 / Semestre 1
School - Composante	TSE
Teacher - Enseignant responsable	VILLENEUVE STEPHANE
Other teacher(s) - Autre(s) enseignant(s)	Christine Grün
Other teacher(s) - Autre(s) enseignant(s)	
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Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	15
TP Hours - Volume horaire TP	/
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

### **Teaching staff contacts - Coordonnées de l'équipe pédagogique :**

[stephane.villeneuve@tse-fr.eu](mailto:stephane.villeneuve@tse-fr.eu) T635

[bischristine.gruen@tse-fr.eu](mailto:bischristine.gruen@tse-fr.eu)

Office hours (We will decide the schedule in september)

Interaction by email

### **Course's Objectives - Objectifs du cours :**

Keep it short, presenting all the fundamental concepts and results in linear functional analysis:  
Banach spaces, Hilbert spaces and linear operators to develop significant applications to economics

### **Prerequisites - Pré requis :**

Finite-dimensional linear algebra and calculus are needed competences.

### **Practical information about the sessions - Modalités pratiques de gestion du cours :**

laptop accepted. Hope to have deep students' participation

### **Grading system - Modalités d'évaluation :**

Two exams : midterm and final with weights 30%-70%.

### **Bibliography/references - Bibliographie/références :**

Main references-Brezis, Functional Analysis, Sobolev Spaces and Partial Differential Equations, Universitext, Springer-Verlag, New-York, 2011-Rudin, Functional Analysis, McGraw-Hill, 1973-Stokey and Lucas, Recursive Methods in Economic Dynamics

### **Session planning - Planification des séances :**

Lectures on board Lectures notes available along the courses

### **Distance learning – Enseignement à distance :**

Classe en ligne interactive QCM en ligne