

# Specialized Master in data science, Big data

Unique year | MS-BGDA

## Cours obligatoires

- INFO-H600 **Computing Foundations of Data Science** | Dimitrios SACHARIDIS (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h, practical work: 12h] 📅 first term 🗨 English
- MEMO-F541 **Mémoire/ Stage en entreprise** | Thomas VERDEBOUT (Coordinator)  
⌚ 20 credits [mfe/tfe: 240h] 📅 academic year
- STAT-F600 **Multivariate and high-dimensional statistics** | Thomas VERDEBOUT (Coordinator)  
⌚ 5 credits [lecture: 24h, practical work: 12h] 📅 first term 🗨 English
- STAT-S502 **Data management and analytics** | Pierre DEVILLE (Coordinator)  
⌚ 5 credits [lecture: 36h, tutorial classes: 24h] 📅 second term 🗨 English

## Module 1 : Statistique

*Two courses chosen from the following*

- INFO-F422 (optional) **Statistical foundations of machine learning** | Gianluca BONTEMPI (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h, project: 60h] 📅 second term 🗨 English
- STAT-F405 (optional) **Time series analysis** | Yves-Caoimhin SWAN (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 first term 🗨 English
- STAT-F408 (optional) **Computational statistics** | Maarten JANSEN (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h, project: 100h] 📅 second term 🗨 English
- STAT-F420 (optional) **Topics in mathematical statistics** | Thomas VERDEBOUT (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 first term 🗨 English
- STAT-F421 (optional) **Topics in probability theory** | Yves-Caoimhin SWAN (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 second term 🗨 English  
Ce cours n'est pas donné en 2024-2025, 2026-2027 etc.
- STAT-F423 (optional) **Statistical learning**  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 second term 🗨 English

## Module 2 : Informatique

*Two courses chosen from the following*

- INFO-F424 (optional) **Combinatorial optimization** | Bernard FORTZ (Coordinator) and RENAUD CHICOISNE  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h, practical work: 12h, project: 30h] 📅 second term 🗨 English
- INFO-F440 (optional) **Algorithms for big data** | John IACONO (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h, project: 60h] 📅 second term 🗨 English

- INFO-F524  
(optional) **Continuous optimization** | Bernard FORTZ (Coordinator) and Dimitrios PAPADIMITRIOU  
⌚ 5 credits [lecture: 24h, project: 60h] 📅 second term 🗨 English
- INFO-H423  
(optional) **Data Mining** | Mahmoud SAKR (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h, practical work: 24h] 📅 first term 🗨 English
- INFO-H501  
(optional) **Pattern recognition and image analysis** | Olivier DEBEIR (Coordinator) and Christine DECAESTECKER  
⌚ 5 credits [lecture: 36h, practical work: 24h] 📅 second term 🗨 English
- INFO-H512  
(optional) **Current trends in artificial intelligence** | Hugues BERSINI (Coordinator)  
⌚ 5 credits [lecture: 24h, project: 30h] 📅 second term 🗨 English
- INFO-H515  
(optional) **Big Data: Distributed Data Management and Scalable Analytics** | Dimitrios SACHARIDIS (Coordinator) and Gianluca BONTEMPI  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h, project: 24h] 📅 second term 🗨 English

## Module 3 : Econométrie

*One course chosen from the following*

- ECON-S428  
(optional) **Graduate econometrics I** | Germain VAN BEVER (Coordinator)  
⌚ 5 credits [lecture: 24h] 📅 first term 🗨 English
- GEST-S503  
(optional) **Financial econometrics** | Olivier SCALLET (Coordinator)  
⌚ 5 credits [lecture: 24h, tutorial classes: 12h] 📅 second term 🗨 English