



DATA SCIENCE  
WINTER SCHOOL  
in  
BARCELONA

January 12 - 13, 2019

Barcelona  
**GSE**

Graduate School of Economics



Mercè Rodoreda Building,  
site of the Barcelona Graduate School of Economics

## TOPIC OVERVIEW

### **The Barcelona GSE Data Science Winter School provides training in data analysis and machine learning with Python.**

The approach is hands-on using Jupyter notebooks. All material is motivated by specific information retrieval and data analysis questions, and each thematic unit concludes with a small project.

**Course website:**  
[bgse.eu/DataScienceWinter](http://bgse.eu/DataScienceWinter)

**Contact email:**  
[professional.courses@barcelonagse.eu](mailto:professional.courses@barcelonagse.eu)

This is an intensive 12-hour course that takes place in four 3-hour sessions over a weekend in January 2019 at the Barcelona GSE's Ciutadella Campus.

The course is evaluated by a 1-hour test that will be carried out at the end of the course.

## KEY BENEFITS:

Participants will get a quick, condensed and hands-on introduction to programming and data analysis with Python, fundamental methods in modern Statistics and Machine Learning and the tools in Python for implementing them.

## THE COURSE IS ADDRESSED TO:

- Master and PhD students
- Professionals
- Researchers and academics

## BARCELONA GSE DATA SCIENCE CENTER: LEADING DATA SCIENCE IN BARCELONA

Barcelona has become a hub for Analytics and Data Science within Europe, with many major companies establishing or relocating their Analytics teams in the city. The Barcelona Graduate School of Economics launched the Barcelona GSE Data Science Center in 2016 to boost a wide range of activities in this scientific area, consolidating its role as the academic point of reference related to this emerging field, by training many highly talented people, as well as promoting frontier research in Data Science.

In addition to the Winter School, the Center's education offer includes:

- A nine-month Master's Degree in Data Science
- A popular Data Science Summer School
- Intensive Data Science workshops offered on campus, on client premises, or via streaming

To learn more about these programs, as well as cutting-edge research and consulting services provided by the Center, visit the Barcelona GSE Data Science Center website

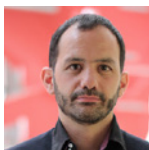
## COURSE SCHEDULE:

Session	Time	Keywords
<i>Saturday, January 12, 2019</i>		
Programming with Python	9:30 - 12:45	data types, functions, objects
Data analysis with Python	15:00 - 18:15	pandas, database management, seaborn
<i>Sunday, January 13, 2019</i>		
Supervised learning	9:30 - 12:45	sklearn, linear models, cross validation, regularization, lasso, trees, ensembles, boosting
Unsupervised learning	15:00 - 18:15	clustering, latent variables: factors, independent component analysis and matrix factorization, topic models

*Times are approximate*

## COURSE DIRECTOR AND LECTURER:

The course will be delivered by Prof. Omiros Papaspiliopoulos, in collaboration with Data Scientists affiliated to the Barcelona GSE Data Science Center.



### **Omiros Papaspiliopoulos** (*ICREA-UPF and Barcelona GSE*)

Professor Papaspiliopoulos is ICREA Research Professor at UPF and Director of the Barcelona GSE Data Science Center. He is also the Scientific Director of the Barcelona GSE Master's Degree in Data Science. His research has appeared in the top journals in Statistics, including several articles in the *Journal of the Royal Statistical Society Series*

*B*, *Biometrika* and the *Annals of Statistics*. He has been an Associate Editor for the first two journals and a Deputy Editor for *Biometrika*. He has delivered more than 80 invited talks, and has given courses at ENSAE in Paris, the Berlin Mathematical School, the Department of Mathematics at University of Copenhagen, and the Engineering Department at Osaka University. In 2010 he was awarded the Royal Statistical Society's Guy Medal in Bronze. His research interests include Monte Carlo Methods, Computational Methods, Bayesian Statistics, Stochastic Processes, Machine Learning.



## PARTICIPATION FEE

**Companies:** 1750 €

**Students:** 1250 €

Special prices apply for the Barcelona GSE community. Please email us for more information.

## APPLICATION AND DEADLINES

**Registration is already open**

Final registration and payment deadline

**December 28, 2018**

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The **Barcelona Graduate School of Economics** is one of the leading schools in postgraduate economic education promoting cutting-edge research and world-class international graduate programs in economics and related fields. The School enjoys close collaboration with its founding academic institutions (Universitat Pompeu Fabra, Universitat Autònoma de Barcelona, CSIC and CREI) in teaching and research as well as in the shared use of resources.

The Barcelona GSE offers one-year, full-time master programs that prepare students for doctoral study and provide solid training for top jobs both in the public and private sector. All programs are taught in English.

### **Programs for 2018-19:**

#### **Master Degree in Economics and Finance**

- Economics
- Finance

#### **Master Degree in Specialized Economic Analysis**

- Competition and Market Regulation
- Economics of Public Policy
- International Trade, Finance, and Development
- Macroeconomic Policy and Financial Markets

#### **Master Degree in Data Science**

- Data Science Program

The Barcelona GSE also offers intensive, targeted short courses for researchers, professionals and graduate students.

### **Summer Schools 2019**

(July 1 - 19, 2019)

- Banking
- Competition
- Finance
- Data Science
- Development Economics
- Labor Economics
- CREI Macroeconomics
- Macroeconometrics
- Microeconometrics

### **Professional Courses 2018-19**

- Competitive Effects of Mergers
- Quantitative Methods for Competition Analysis



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[www.barcelonagse.eu](http://www.barcelonagse.eu)