

IE XL

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Never stop learning

13 Apr/29 Jun 2018 28 Sept/14 Dec 2018 15 Mar/07 Jun 2019

DATA SCIENCE BOOTCAMPS





exposed to new situations, encouraged to push our limits and thus get the chance to see how our learning curve gets steeper and steeper."

Paula (Spain) | hired by EY

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IE BUSINESS SCHOOL IS RENOWNED INTERNATIONALLY AS ONE OF THE WORLD'S TOP BUSINESS SCHOOLS.



#### DATA SCIENCE BOOTCAMPS

# OVERVIEW

By 2020, there will be an estimated 1 million new digital and tech jobs in Europe. However, traditional higher education is unlikely to produce enough graduates to fill even a third of these vacancies.

It is for this reason that the Data Science Bootcamp aims to foster curiosity and interest about data and its decisionmaking possibilities.

The goal of the Data Science Bootcamp is to learn how to acquire, clean, structure, store, manipulate, analyze, and visualize data from diverse sources to answer complex business questions.

The Bootcamp will teach you how to find patterns, use machine learning and other analytical tools that you will be able to implement in various fields such as marketing, product development, project management, or general business administration.

YOU WILL GET THE TOOLS AND RESOURCES TO ENHANCE YOUR SKILLS AND ACCELERATE YOUR CAREER BY OBTAINING PRACTICAL KNOWLEDGE IN DATA SCIENCE.

To set you apart from the competition, the Data Science Bootcamp has an inclusive approach: it provides theoretical and practical knowledge acquired through working with real data sets and industry leaders as well as educators and data experts. It also promotes teamwork and aims to foster data visualization skills for you to learn how to give engaging and insightful presentations to show the impact of data. "It was a great learning experience and a very intensive time"

Sven (Germany)

# PARTICIPANT **PROFILE**

## THE DATA SCIENCE BOOTCAMP IS IDEAL FOR:

**1.** Professionals seeking to learn how to use data across industries more efficiently.

2. Professionals wanting to quickly gain essential skills in Data Science to kick-start their career in this field, using R and Python.

**3.** Professionals that have a Bachelor's Degree and an average of between two and five years of work experience.

**4.** Strong candidates are expected to have a maths and stats background. We encourage candidates with an analytical background to apply.



## MODULE I R & PYTHON PROGRAMMING

This module is designed to give you an in-depth understanding of both the R & Python programming languages from their syntaxes to coding tips and techniques for script optimization. You will understand the different

programming structures in both languages as this module provides the core coding foundation for you to shine in the rest of the Bootcamp.

You will learn to code from scratch in intensive practice-only sessions using exercises and individual programming assignments.

### **KEY TOPICS:**

- Data types and variable assigning
- Mathematical and logical operators
- Loops and conditional code execution
- Advanced data structures
- (lists, dictionaries, data frames, etc...) • Functions
- Loading external modules
- and packages for data analysis (Pandas, Numpy, dplyr, data.table)
- Working with files
- Calculating basic summaries and data transformations

# TAKEAWAYS MODULES

## **MODULE II** MATH & STATS FOR DATA ACQUISITION DATA SCIENCE

This module provides the statistical foundation for the machine learning module as it covers the concepts that support data science and machine learning projects. The sessions in this module provide the background knowledge of quantitative methods and statistical models in a downto-earth but formal way that will complement the R & Python machine learning workshops. You will learn the statistical models to extract insights from data and the statistical tests to support your findings.

#### **KEY TOPICS:**

- Introduction to data. Observational vs. Experimental studies.
- Distributions and basic metrics.
- Introduction to Probability. Conditional probabilities.
- Random Variables and Sampling. The Central Limit Theorem.
- Inferential Statistics and Hypothesis Testing.
- Regression and Classification linear models

# **MODULE III** AND VISUALIZATION

This module will enable you to complement your data analysis skills with the ability to acquire the data from different sources (from text files to SQL databases) using R and Python scripts. Additionally, you will learn how to produce robust and compelling visualizations using both R and Python packages. In this module, you will learn how to represent data to communicate your work.

#### **KEY TOPICS:**

- Working XML, CSV and JSON files in R & Pvthon.
- SQL queries to import into R & Python scripts.
- Exploratory data analysis.
- Creating data visualizations in ggplot2.
- Creating data visualizations in seaborn and matplotlib.

## **MODULE IV** MACHINE LEARNING COMMUNICATION IN R & PYTHON

This module is designed to enhance your understanding of the practical knowledge in implementing the quantitative and statistical models that comprise the machine learning landscape in R and Python. Furthermore, this module will

provide you with the handson training based on analyzing multiple data sets to take your data science and machine learning output to the next level.

#### **KEY TOPICS:**

- Data cleaning and wrangling techniques in R and Python.
- Basic models for regression and classification.
- Feature selection in machine learning algorithms.
- Machine learning packages in R & Python. (scikit-learn, caret).
- Clustering algorithms.
- Advanced machine learning models (Tree based models, ensemble models, neural networks).
- Model fine-tuning in R & Python.
- Assessing statistical models (cross-validation, ROC analysis) in R & Python.

# **MODULE V** AND DATA **STORYTELLING**

In today's competitive world, having the technical proficiency to achieve success in the data science industry is not enough to mobilize an organization towards change. That is why this module aims to complement your technical knowledge with the storvtelling and communication skills required to maximize the impact of your data analysis.

#### **KEY TOPICS:**

- Narrative structures in data storvtelling.
- Selecting audience-specific topics.
- Public speaking workshop.
- Giving winning presentations.
- Influence & persuasion.

# **10** REASONS FOR YOU TO JOIN THE IE DATA SCIENCE BOOTCAMP

### **01** JOB OPPORTUNITIES

Data Science is one of the most demanded skills in today's job market as companies need to strengthen their data analysis capabilities and their ability to extract insights from data.

### **02** INTENSIVE, FOCUSED TRAINING

the Bootcamp focuses on teaching you Data Science in R & Python, without anything else interfering with the learning experience. "I learned a lot and enjoyed the experience! I am glad to have met the other Bootcampers, the instructors, and organizers. It has been a real pleasure to learn from them and with them!"

Azadeh (Iran)

# **06** EXERCISE-ONLY, AS WELL AS DATA LAB SESSIONS:

Learning how to code is challenging. With that in mind, we include the necessary exercise sessions for you to practice daily.

# **07** PRAGMATIC, PRACTITIONER FACULTY

All Bootcamp faculty members have worked in Data Science at top firms like McKinsey and Stratio.

### **08** REAL-LIFE DATASETS

Our partner companies will provide you with o actual data sets from their real-life operations as the basis for your projects.

### **09** NETWORKING

Access to IE's growing data science and Big Data-related network in a variety of contexts ranging from datathons to encounters with companies actively looking for data scientists. **10 MADRID** AN EMERGING TECH SCENE AND A GREAT LIFESTYLE. TAPAS, ANYONE?

## **03 RECOGNITION** LEVERAGE IE'S BRAND AS ONE OF THE MOST-RECOGNIZED HIGHER EDUCATION INSTITUTIONS WORLDWIDE.

### 04 COMPREHENSIVE COVERAGE OF THE DATA SCIENCE VALUE CHAIN

You'll get a full view of the necessary steps, from data acquisition to communication skills.

### **05 SKILLS ACCELERATOR**

The Data Science Bootcamp is an 11-week investment to boost your career in Data Science.

# A TYPICAL WEEK AT THE DATA SCIENCE BOOTCAMP

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				YOGA	
Math and Stats	Math and Stats	Math and Stats	Math and Stats	Math and Stats	Group Work
Math and Stats	Math and Stats	Math and Stats	Math and Stats	Math and Stats	Data Lab
Coffee Break	Coffee Break	Mindful Break	Coffee Break	Coffee Break	Coffee Break
R Coding	Python Coding	Machine Learning in R	Machine Learning in Python	Machine Learning in R	Data Lab
Lunch	Lunch	Lunch	Lunch	Lunch and Learn	
R Coding Exercise	Python Coding Exercise	Machine Learning in R Exercise	Machine Learning in Python Exercise	Machine Learning in R Exercise	
Data Acquisition in R	Data Acquisition in Python	Data Visualization in R	Data Visualization in Python	Machine Learning in R Exercise	
Break	Break	Break	Break		
Resilience	Client Touchpoint / Mentor Session	Master Class	Capstone Project Group Work		
Peer to Peer	Peer to Peer	Peer to Peer	Peer to Peer		
R PYTHON MATH AND STATS DATA LAB COMPANY CONTACT MINDTACT PEER GROUP WORK					

# **FREQUENTLY** ASKED QUESTIONS

## DO YOU HAVE ANY QUESTIONS OR COMMENTS? WE'D BE HAPPY TO HELP YOU. CARLOS.PALMERO@IE.EDU

# How much time should I expect to dedicate to the program?

It is a full-time 11-week program. You will have sessions from 9 AM to 8 PM Monday through Friday as well as from 9 AM to 3 PM on Saturdays.

#### What is the program's dynamic?

In 11 weeks, this program is meant to be a skill-accelerator and very quickly enhance your ability to fill an immediate gap in your skill sets.

# What does a typical day at the Data Science Bootcamp entail?

The typical day at the Data Science Bootcamp begins with an instructor-led session about a concept, followed by time to apply what you have learned in a practical, project-based example - using real data sets from our partner corporations. We cap off each week with DATA LAB and Client Touch-Points. At the IE Data Science Bootcamp, you will be surrounded by likeminded and motivated individuals who want to accelerate their careers and enhance their data skills. A typical day of the Data Science Bootcamp consists of 10 to 12 hours of immersive learning. This entails a mix of time spent in class, peer to peer learning, group work and self-study.

#### Who are we looking for?

The IE Data Science Bootcamp is ideal for young professionals wanting to learn how to utilize data more efficiently across all industries. With these new skills, we will look to combat the current shortage of Data Scientists in the labor market.

We are looking for analytical, datadriven profiles, with a bachelor's degree and a minimum work experience between two and five years.

# How can this program add value to my professional career?

In the face of the quick technological development and the upcoming need for professionals possessing these skills across a wide range of industries, the Data Science Bootcamp presents a compact and focused way of preparing oneself for these current and future challenges. Having Data Science tools in vour skill set is a crucial asset in many areas and increases your employability prospects as well as salary expectations. The IE Data Science Bootcamp also gives you a chance to connect with global brands and businesses to develop a real data application for

HAVING DATA SCIENCE TOOLS IN YOUR SKILL SET IS A CRUCIAL ASSET IN MANY AREAS AND INCREASES YOUR EMPLOYABILITY PROSPECTS AS WELL AS SALARY EXPECTATIONS.

real users.

# What do I receive upon completing the program?

At the end of the program, those who complete all the sessions will earn a Data Science Bootcamp certificate from IE Exponential Learning.

The Bootcamp curriculum uses cutting-edge learning methodologies and carefullydesigned content, while also giving the selection of resources and dynamics used great importance to ensure a maximum level of understanding and engagement. The Data Science Bootcamp will serve as an immersive, intense career boost, adding the Data Science toolkit to your existing skill set.

#### **Application Process**

The Data Science Bootcamp Admissions process consists of completing the Data Science Bootcamp application, as well as attaching the following documents to your application in the "Other Documents" section:

• A PDF scan of your diploma from an accredited university (or a statement that you are currently completing, or will have completed, a Bachelor's Degree before beginning the Data Science Bootcamp)

• A motivation letter answering the following question: Why do you want to be part of the Data Science Bootcamp?

After you submit your application, you will then have an interview with Admissions. Following the interview, IE Exponential Learning's Admissions Committee will review the entirety of your application, and shortly after you'll receive a decision from Admissions.

#### How long will the Admissions Committee need to review my application?

The Admissions Committee will need two to three business days to review your application.

# **TEAM & INSTRUCTORS**



### HEAD OF IMMERSIVE LEARNING

#### **Ricardo Mesquita**

Head of Immersive Learning @ IE XL in ricardomesquita2018 ricardo.mesquita@ie.edu

Ricardo is the Head of immersive learning at IE Exponential Learning. The mission of IE XL is to empower professionals and entrepreneurs with the skills to succeed in the digital world of work.

These new learning experiences, designed in modular formats, bring innovative approaches to teaching and learning by combining technology, hands-on learning, and community building.

Former CEO of The LAB Miami, Ricardo is a founding member of Beta-i and co-author of the book "The Soul of Business", a roadmap for entrepreneurs looking to set up shop in Portugal.



#### ACADEMIC DIRECTOR OF DATA SCIENCE BOOTCAMPS AND R MACHINE LEARNING INSTRUCTOR

Iván Martín Maseda CTO, Binfluencer in ivanmartinmaseda imartinm@faculty.ie.edu

Iván Martín is the Chief Technology Officer of Binfluencer, a data driven company leveraging the power of machine learning techniques to detect the most influential people in any sized market globally.

He is a former McKinsey Data Scientist, software engineer specialized in Artificial Intelligence and has a Master's Degree in Business Analytics and Big Data by IE Business School. He is also an adjunct professor in machine learning at the same university.



PROGRAM COORDINATOR Daniela Höfle Program Coordinator at IE Exponential Learning in daniela-höfle



DATA VISUALIZATION Fran Diego Data Scientist at Nextail in frandiego



MATH AND STATS Juanjo Manjarín Math and Stats Teacher at IE in juanjomanjarin



**PYTHON** 

Founder of

Pablo Monfort

Data Scientist at

in pablo-monfort

**R** CODING

PiperLab

in mariamedp

María Medina

Data Scientist at

Canalyticals, Previously

McKinsey & Company



RESILIENCE Rodrigo Aguirre de Cárcer Churruca Director, Social Impact at Grupo Gala Capital in rodrigoaguirredecarcer



COMMUNICATION AND STORYTELLING Ignacio Larrú CFO at KFUND in ignacio-larr



DATA ACQUISITION IN R AND SQL Angela Cabrero Data Science & BI leader. MRM/McCann Spain in angela-cabrero-romeral



DATA LABS Javier Lameda Consultant at EY Artificial Intelligence Center in Madrid in javierlameda

# DETAILS







DURATION

11 Weeks, over 300

class hours

**UPCOMING INTAKES** 15 Mar / 07 Jun 2019



LANGUAGE English



€14.000\*



FORMAT

Full-time on **Madrid Campus** 

2018

28 Jun + 13 Dec \*25% IE Alumni discount



# CONNECT

**Carlos Palmero Director of Student Recruitment** Carlos.Palmero@ie.edu

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is designed to train for future Data Science-related jobs. Employability is the name of the game." Morane (France) | hired



## We want to empower professionals and entrepreneurs with the skills to succeed in the digital world of work.

Our mission is to support individuals in their continuous growth, fueling the ability to adapt and create new professional opportunities.

We develop learning experiences in modular formats bringing innovative approaches to teaching and learning. Join us and never stop learning!



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