Master in
BUSINESS ANALYTICS
& BIG DATA
YOU DRIVE INNOVATION
Master in
Business Analytics & Big Data
You drive innovation
One program, two options

FULL-TIME
10 MONTHS
OCTOBER
MADRID

PART-TIME
17 MONTHS
JANUARY
MADRID AND DUBAI

THE NEW ENTERPRISE
COMPETING IN ANALYTICS

MARKETING
Maximize customer value and deliver superior customer experience using marketing analytics.

FINANCE & CONTROL
Optimize, measure, and forecast business performance with advanced analytical models.

OPERATIONS & MANUFACTURING
Align demand and operations to optimize performance and detect potential failures by tracking operational data in real time.

HUMAN RESOURCES & TALENT MANAGEMENT
Use talent analytics to predict employee performance, improve hiring, and better design roles and responsibilities.

THE MARKET

CUSTOMERS
Monitor and analyze sales and social media data to understand and predict consumer behavior.

SUPPORT & DISTRIBUTION
Ensure optimal levels of stock via demand forecasting, and optimize distribution channels to improve delivery performance.

COMPETITORS
React faster to competitive actions by gathering and analyzing diverse data from the market and public sources.

INDUSTRIES
Big Data will impact diverse industries

TECHNOLOGY
 AUTOMOTIVE
 ELECTRONICS

INTERNET & 2.0
 UTILITIES

BANKING
 RETAIL

AGRICULTURE
 MANUFACTURING

OIL & MINING

HEALTHCARE
 CONSUMER GOODS

FINANCE
A few of the many roles in big data:

- Data Scientist
- Marketing Analyst
- Business Consultant
- Business Intelligence Consultant
- Big Data Entrepreneur
- Business Analyst
- Researcher
- Analytics Consultant
- Data Solutions Architect
- Big Data Analytics Manager
- Chief Data Officer

“Data Scientists hold the sexiest job of the 21st century”, Harvard Business Review

“McKinsey predicts that companies will struggle to find Big Data talent due to a shortage in well-trained people”

“Data Scientist is going to be one of the 10 toughest job positions to fill in 2016”, Forbes

Why IE

- Study at the No.1 School in Europe (Financial Times ranking, 2012 and 2013). Located in Madrid, a vibrant and global city.
- #1 Online MBA Programs (Financial Times 2015 ranking)
- 50,000 alumni hold positions of responsibility in over 100 countries.
- 27 international offices around the globe.
- Around 40% of students every year receive some type of Financial Aid.
HANDS-ON CHALLENGES

You will engage in three intensive team challenges that will give you practical, hands-on experience working directly with industry experts. In each challenge, your team will present its results to a panel of experts.

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3 STUDENT PROFILES

**BUSINESS**

You studied and/or are working in business. You want to become an expert in measuring results and using data analytics to drive business and innovation.

**TECHNOLOGY**

You want a front-office job where you can use technology and data to be an integral part of core business decisions.

**QUANTITATIVE**

You studied and/or are doing quantitative work in engineering, statistics or social research. You want to learn how to measure performance in an organization and become an expert in using analytics to drive innovation.

Explore your Big Data career options:  
email: bigdata.advisor@ie.edu  
web: bigdata.ie.edu

Please Note: The information contained in this brochure is subject to change. IE reserves the right to modify program content, regulations and policies when deemed appropriate and in the best interest of the IE community. Please contact the program management team should you have any questions.
YOU DRIVE INNOVATION

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Data Scientists hold the sexiest job of the 21st century.¹ These highly sought-after professionals combine business knowledge, Big Data technologies, and advanced analytical skills to drive decision-making and performance improvements across any organization. Data Scientists discover actionable insights that drive innovation.

According to IBM, around 90% of global data has been created in the past few years alone, so companies are facing the challenge of finding results driven-individuals who know how to use this data to optimize the competitiveness of an organization. McKinsey estimates that there will be a shortage of 140,000-190,000 people with deep analytical talent within five years. The job outlook for Business Analytics professionals is extremely positive for the coming decades.

Companies are looking for dynamic and specialized professionals that come from diverse backgrounds such as business, engineering, technology, economics, mathematics, and applied sciences who are able to identify, collect, analyze, interpret and transform data to drive value and innovation, and to do it in diverse industries like finance, healthcare, consumer goods and high-tech, just to name a few.

IE’s Master in Business Analytics and Big Data is an innovative degree designed to train a new generation of data-driven and innovation-oriented professionals with all the necessary skills to pursue a successful career in Business Analytics and Big Data. We encourage you to read onwards in this brochure. If you are as excited as we are about the world of Business Analytics and Big Data, we invite you to have an informal chat with one of our Big Data career advisors (bigdata.advisor@ie.edu) or apply to join us for this amazing experience.

¹Harvard Business Review
TOP 10 REASONS
...to join the Master in Business Analytics and Big Data

1. Job opportunities: Big Data and Business Analytics are some of the fastest growing job categories in the world. Our graduates are in high demand and have an outstanding placement rate.

2. Most comprehensive training: Data Science, Big Data Technologies, Business Transformation, and Professional Skills

3. Networking: Access to a network of professionals through a program that is in constant contact with real-life business issues. Create your own network amongst the 50,000 IE alumni

4. Recognition: IE is recognized worldwide as an innovative top school

5. Two options: Study with your classmates full-time in Madrid, or part-time while you continue to work

6. Madrid: ¡Olé!

7. An intense program: Our MBD allows you to acquire the necessary skills to transform business through actionable insights and cutting-edge technologies

8. Driving Innovation: You will drive value and innovation in diverse industries and organizations

9. Industry experienced faculty: World-Class faculty including executives from various companies and industries such as IBM, Santander, Amazon and Spotify among others

10. International experience: The world in your classroom. You will benefit professionally and personally from diverse classmates. IE has more than 100 nationalities on campus.
THE IMPACT OF BIG DATA AND ANALYTICS

What is Big Data?

**Volume**
Around 2.3 trillion gigabytes of data are created daily.

**Velocity**
Analysis of data in real-time or nearly real-time to drive decisions.

**Variety**
Different forms and inputs of data.

Big Data & Business Analytics is about the challenges, opportunities and technologies resulting from the unprecedented generation of data.

Marketing
Create models for predicting customer trends.

Manufacturing and Operations
Optimize production and resource usage.

Finance & Control
Measure and optimize financial transactions and risk.

Logistics
Optimize distribution channels to improve delivery processes.

Consumer Behavior
Study consumer behavior to improve sales strategies.

Human Resources
Use talent analytics to optimize employee performance.

IT
Lead innovation in information systems and other emerging technologies.

Transform any business
The massive generation of data is changing the way that companies and governments do business. Leading organizations are tapping into Big Data & Business Analytics to transform their businesses and uncover new sources of value in their industries.
Leading organizations are tapping into Big Data & Business Analytics to transform not only their businesses but also their industries.
Module I: Business Transformation

This module is designed to give you an in-depth understanding of how organizations today collect and use data generated from a wide variety of sources to drive performance. You will understand how companies are adopting advanced technologies to generate new and actionable insights from this data to improve performance across all core functions. You will learn through the use of current cases how leading organizations are applying Big Data & Business Analytics to transform, not only their businesses, but also their industries.

Module II: Data Science

The courses in this module provide practical knowledge in a wide range of quantitative methods, statistical models, and computing techniques. You will learn how to extract knowledge from data and drive key decisions across multiple business functions. This module will also provide the necessary hands-on training to use statistical programs to prepare data, conduct analyses, and create meaningful data visualizations.

Courses

- Introduction to Big Data and Analytics
- Marketing Intelligence
- Risk & Fraud Analytics
- Transforming Financial Services Using Analytics
- Transforming Retail & Consumer Goods Using Analytics
- Digital Analytics
- Smart Cities and Governments
- The Digital Revolution
- Big Data & Health
- Transforming Telco & Utilities Using Analytics

Courses

- Natural Language Processing & Text Mining
- The Knowledge Discovery Process
- Building The Data Science Toolkit
- Forecasting Time Series
- Data Visualization
- Analyzing Social Networks
- Machine Learning I
- Machine Learning II
- Machine Learning III
- Statistical Programming In Python
- Recommendation in Engines
- Statistical Tools SPSS/SAS
- Statistical Programming in R
- Mathematics and Statistics for Data Analysis
You will master the four areas of knowledge and skills needed to become a successful professional in the field of Business Analytics and Big Data. This program is built around the needs of industry recruiters and updated based on their ongoing feedback.

**Module III: Big Data Technologies**

This module is designed to provide you with in-depth understanding of the emerging tools and technologies available to successfully manage Big Data challenges. Students will have the possibility to deal with large-scale structured and unstructured collections of data, moving them into a Hadoop cluster from different sources, and making up MapReduce applications. In this module you will also understand the fundamentals of information management including topics like: data warehousing, logical and physical database design, and relational database theory. You will also cover new trends like cloud computing, stream processing, No SQL storage, and in-memory databases.

**Module IV: Professional Skills**

Professional success is not just about developing and demonstrating expertise in a technical area. It’s also about knowing how to work effectively within an organization. This module is designed to help you develop the behavioral skills required to understand your own professional strengths and weaknesses. You will learn how to navigate the dynamics and politics of companies to maximize the impact of your work.

**Courses**

- Database Modelling for Analytics*
- Mastering The Hadoop Ecosystem*
- Programming SQL for Analytics
- NoSQL Databases
- Business Intelligence & Datawarehousing
  - Spark
- Stream Processing & Real-Time Analytics

**Courses**

- Working Effectively in Teams
- Giving Winning Presentations
- Ethics & Legal
- Running Innovation & Creation Processes
- Influence & Persuasion

* The program covers all of the Hadoop architecture including Hadoop HDFS, Hadoop MapReduce, Hive, HCatalog, HBase, ZooKeeper, Oozie, Pig, Sqoop, and many other related Big Data tools like SPSS, Spark, NLTK and Storm. It also provides the training in SQL, Python and R needed to perform Big Data analytics. Individuals with backgrounds in business, economics, mathematics and statistics, engineering and applied sciences, and technology are encouraged to apply. No prior training in statistics or programming is required.

** Please note that program content may be subject to change.
CHOOSE YOUR PROGRAM

One program, two options*

Full-Time Study

- **MADRID**
- **10 MONTHS**
- **OCTOBER**
- **ENGLISH**

OCT - DEC | JAN - MAR | APR - JUL

- **TERM 1**
  - winter break
- **TERM 2**
  - spring break
- **TERM 3**

**PRE-COURSES (ONLINE)**

**DATA SCIENCE**
**BUSINESS TRANSFORMATION**
**BIG DATA TECHNOLOGIES**
**PROFESSIONAL SKILLS**

**Face-to-face** classes

**3 sessions** a day

At least **1 hour** session of group work per day

Participate in **IE Clubs** and other activities organized after standard class hours

Exposure to **workshops** and **talks** during each term

*Students in both the full-time and part-time program receive a Master degree from IE University. Students of the full-time program may request a second diploma issued by the Spanish government.*
Part-time experience combining four residential periods with interactive online classes

**RESIDENTIAL PERIODS**

- The **face-to-face** periods allow you to create personal relationships and meaningful bonds with the people you will work with throughout the year.
- These four periods include a number of classes that require **physical presence**.

**INTERACTIVE ONLINE PERIODS**

- Thanks to the innovative use of new technology you will be able to enjoy the same experience you would have in a traditional classroom.

**PLATFORM**

- The IE **Online Campus** is a web platform that allows students to access all of the program’s online activities at any time, from any location.
- The campus is also accessible on smartphones and tablets.

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**Videoconference sessions**: Saturdays from 13:00 - 14:30 and 15:00 - 16:30 (GMT+1)

**Online Forum**: Monday to Thursday (open 24/7)
HAN D S - O N CHALLENGES

Practical experience, with real problems

During the master you will engage in three intense projects that will give you hands-on training working directly with industry experts.

1. Analyzing
Companies present real life cases and business problems to you and your team.

2. Executing
You and your team apply Business Analytics and Big Data knowledge to find solutions and propose recommendations.

3. Delivering
You deliver results and receive feedback from experts to hone your Big Data and Business Analytics skills.
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<td>In this challenge, your team integrates the knowledge and skills you have learned from the three program modules. You will develop and propose a Big Data application or idea and transform it into a plan for a start-up business or an innovation initiative.</td>
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**Exposure Workshops**

In addition to courses and Hands-on Challenges, you will participate in a series of workshops designed to expose you to the latest trends and emerging ideas, tools, technologies and business issues. Some examples of topics covered are Ethics and Privacy in Big Data, Statistical Tools SPSS, Interviewing Skills and Careers and Entrepreneurship, among others.
AN INTERNATIONAL CLASS

Become part of a vibrant international class

Imagine yourself in a typical IE project team, working with:

Misael
A technology consultant from the US who wants to become an entrepreneur in the Data Science domain.

“IE’s partnerships with key Big Data companies allowed me to get great insights into the real world applications of data science.”

Christabelle
A tech-enthusiast from India with professional experience in instrumentation in the Oil & Gas sector and an academic background in Electronics and Communications engineering.

“The diverse nature of the program connects us with professionals from all backgrounds and work cultures as peers and industry experts which contribute to an all-rounded learning experience.”

Ashley
A Marketing Manager from the US who wants to learn data science for business application, as a new-generation CMO.

“I joined the MBD program to understand the realms of big data application for business strategy and innovation. Key factors for my decision to select IE -- business expertise, student diversity, and entrepreneurial spirit--have proven to be key benefits shaping my experience.”

Christopher
A software engineer from France who wants to build innovative products based on data.

“Getting access and being mentored on how to use diverse data sources to come up with useful business applications was a rewarding experience.”

3 Student Profiles

Business
You studied and/or are working in business. You want to become an expert in measuring results and using data analytics to drive business and innovation.

Technology
You want a front-office job where you can use technology and data to play a critical role in driving business decisions.

Quantitative
You studied and/or are doing quantitative work in engineering, statistics or social research. You want to learn how to measure performance in an organization and become an expert in using analytics to drive innovation.
Industries Represented

Academics
Quantitative: Engineering, Statistics, Mathematics, applied Sciences and Social Sciences
Technology: Computer Science, IT, among others.

Gender
38% Female
62% Male

Countries represented

Regions
Europe 34%
Asia Pacific 23%
Latin America 22%
North America 12%
Middle East & Africa 8%

* Class profile 2015
Companies, non-profits and governments are struggling to optimize the performance of their operations and the quality of their decisions to stay competitive. As a result, there is a large and growing demand for specialized professionals who can **identify, collect, analyze, interpret and transform** data to drive value and innovation.

The **Master in Business Analytics & Big Data** prepares students for successful careers that involve the following types of professional activities.

### PRIVATE SECTOR
- Business Analytics
- Business Intelligence & IT
- Customer Management and Analytics
- Operations Research
- Market Research
- Talent Analytics
- Financial Analytics
- Management Control
- Advertising and Marketing Effectiveness
- Logistics & Supply Chain Optimization
- Data Analytics Consulting
- Management Consulting

### PUBLIC AND NON-PROFIT SECTOR
- Smart Cities Design
- Environmental & Energy Analytics
- Social & Policy Research
- Voting Behavior Analysis
- Policy Effectiveness Analysis
- Social and Community Analysis
- Epidemiology Research
- Public Utilities Optimization
- Human Development

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In North America alone, companies will need around 1.5 million managers and analysts with the know-how to use the analysis of Big Data to make effective decisions by 2018.

Forbes

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Data Scientist is going to be one of the 10 toughest job positions to fill in 2016

McKinsey
As you graduate, you will be assisted by IE’s Career Management Center, and as alumnus of the program you will have access to their services throughout your career. The Careers Management Center provides IE graduates with the skills and tools to successfully manage their careers in a globalized and increasingly competitive economy.

These are just some of the exciting roles that you could play after completing the program:

- Data Scientist
- Business Analyst
- Business Intelligence Consultant
- Chief Data Officer
- Analytics Consultant
- Business Consultant
- Data Solutions Architect
- Big Data Analytics Manager
- Researcher
YOUR CAREER

The placement possibilities of graduates spreads among several sectors and job functions. Do not miss the chance to see where the Master in Business Analytics and Big Data can take you!

Career statistics of graduates

Situation 3 months after graduation

90% Students Working

63% of international mobility among our students.

Employment by Industry

39%

22%

12%

11%

6%

17%

CONSULTING
TECHNOLOGY
MANUFACTURING
HEALTHCARE
MEDIA & ENTERT.
OTHER

Some Employers

Accenture, EY, Sony Computer Entertainment, Telefónica, Clear Returns, among others...

These are just some of the exciting career tracks of our alumni

Regina Berengolts

• Now: Lead Data Scientist at Clear Returns Glasgow, United Kingdom
• Nationality: Canadian
• Background: Strategic marketing

“The Master in Business Analytics and Big Data has definitely helped to prepare me for my current role as a Data Scientist. While the most practical and useful learning I gained were the coding capabilities, I also developed a much more crucial understanding of what kind of skills, languages, and mindsets are required in order to be successful in a data-driven company and how to obtain them.”

Nicky Sarof

• Now: Advanced Analytics Consultant at Accenture Madrid, Spain
• Nationality: Indian
• Background: IT, Business Analyst

“I currently work as a Consultant at Accenture specializing in Advanced Analytics. I believe my experience at IE was pivotal in helping me get to where I am today. The course covered a broad range of topics which helped me understand and focus on how I wanted to position myself for career growth. There were lots of opportunities to network with leading professionals in the industry which not only helped me during my job search but will also continue to be a great asset as I progress.”
A world of exciting opportunities

Business Intelligence
Cloud Computing
Risk Analytics
Customer Analytics
Fraud Detection
Customer Insight
Social Media Analytics
Marketing Intelligence
Data Science
Data Modeling
Talent Analytics
Web Analytics
Operations Optimization

“

You can’t manage what you don’t measure.
IE’s innovative learning methodology focuses on active-learning using case studies, multimedia simulators, team projects, and the most common Big Data tools used in the industry.
IE University and IE Business School are top-ranked schools according to international media:

- **5th European Business School**
  by Financial Times, 2014

- **#1 Worldwide Online MBA Programs**
  by Financial Times, 2015

- **IE University is ranked No.1 in Spain,**

These are some of the factors critical to your learning experience:

- **Practical hands-on learning**
  to work on real life business problems with industry experts and real clients.

- **Employment-focused curriculum**
  designed in conjunction with industry professionals and based on the needs of employers.

- **World-class up-to-date faculty**
  that include full-time professors from across IE University and IE Business School, as well as faculty-practitioners who are working in senior positions in Business Analytics and Big Data.

- **Speakers and events**
  that provide you with a rich source of new ideas and perspectives.

Visit our students blog to learn more about the IE MBD experience [http://iembd.tumblr.com/](http://iembd.tumblr.com/)
Join us at IE and you will be part of more than a Masters program. **Your learning will go beyond classroom training**, and extend to a rich array of on and off-campus activities, and the cultural and professional life in the city of Madrid. You will benefit greatly from your international classmates in the program, from relationships with students in other programs at IE University and IE Business School, and from your relationships with faculty.

**Take part in an unforgettable period of your life in Madrid.** The program is taught entirely in English, and those studying the full-time option will also have the opportunity to learn/improve their Spanish - the native language of **500 million** people worldwide and the world’s second business language.

The campus for postgraduate masters programs of IE is around 20,000m² in size, spread across 17 buildings strategically situated in the Barrio de Salamanca district of Madrid, a very well connected area in the heart of the financial district of the city.
Some highlights of Madrid...

**GO**

on a trip to the beach: Madrid is 300km from the sea (1.5 hours by train, 3 hours by car). Try Valencia, Balearic Islands, or Málaga!

**EXPLORE**

museums and culture: Madrid has three of the most important art museums in the world: The Prado, with four thousand works of art; the Thyssen-Bornemisza, with works by Renoir and Van Eyck; and the Reina Sofía, with over 20,000 works from the 20th century.

**ENJOY**

Madrid’s social life: Madrid is internationally renowned for its nightlife, old cafés, fun bars and restaurants. It has one social venue per 132 people, so many places to go and have fun!

**TASTE**

traditional tapas: Madrid’s famous eating style is tapas! Small portions of different Spanish dishes, something you should try as soon as you arrive to Madrid.

**EXPERIENCE**

flamenco: Spain is where the famous music and dance style flamenco was born, take a trip to Sevilla in the high-speed train and watch live an authentic flamenco show.

**WATCH & PRACTICE**

sports: Attend as a fan to a Real Madrid game or practice any sport from hiking, to skiing, to sailing, Madrid is located in the center of Spain, do it all!

**FEEL**

the sun: Madrid is the European capital with the most sunny days, here comes the sun!
ADMISSIONS & FINANCIAL AID

The objective of the admissions process is to select motivated students with high potential for success and leadership in their chosen field.

IE’s admissions process is based on the review of your application materials as well as interviews with our admissions and academic team to ensure a good fit between the program and your preparation and career interests.

Applications follow four steps:

1. APPLY

Start your application process right away through our online application system. Simply go to www.ie.edu/app and choose the Master in Business Analytics and Big Data.

2. REVIEW

Our admissions and academic team will review your application and all accompanying documents.

3. INTERVIEW

If you pass the review, you will be invited to interview with our admissions and academic staff (in-person or online).

4. DECISION

IE Admissions will make a final decision on your application. The admissions process is a rolling process and there is no deadline for application for a particular class. Admission is valid for two years.

If you have any questions or would like to chat about your career, do not hesitate to contact us at bigdata.advisor@ie.edu
Admission requirements

The application form provides the Admissions Committee with important information for evaluating candidates. In addition to the completed form. Please enclose the following documentation in your application package:

- **Evidence of completion of a Bachelor degree** (or equivalent) from an accredited university.

- **Official university transcripts** (certified translation into English or Spanish).

- **One-page CV or resumé**.

- **IE Global Admissions Test** (you may provide a GMAT or GRE instead).

- **English language certificate** for non-native English speakers (Cambridge Advanced or Proficiency, TOEFL, IELTS, or Pearson Academic). A certificate is not required if you completed an undergraduate degree in English.

- **Photocopy of current passport**.

- **One passport-size photo**.

- **Completed application form**, including all supporting documents.

- **Two letters of recommendation**.

- **Application fee 125€** (non-refundable and payable by credit card or cash).

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Financial Aid

The IE Financial Aid Department currently offers a range of scholarships and other financial aid options to help you fund your studies in the Master in Business Analytics and Big Data.

Sign up to the next Virtual Information Session to find out more: [www.ie.edu/financialaid](http://www.ie.edu/financialaid)

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Get in touch

- Have an informal chat: [bigdata.advisor@ie.edu](mailto:bigdata.advisor@ie.edu)
- For more information go to: [www.ie.edu/bigdata](http://www.ie.edu/bigdata)
- Apply now at: [www.ie.edu/app](http://www.ie.edu/app)
The business world is facing both the challenges and opportunities posed by the massive growth in the availability of data that is without precedent in history. A study by IBM shows that that 90% of the existing information in the world today has been generated within the last few years alone, and this flood of data is growing exponentially. Big data technology and advanced analytics have the potential to revolutionize the way organizations manage their operations and make critical decisions. Corporations, local and national governments, and non-profits all stand to benefit enormously from a digital transformation of the way they carry out their work. In fact, 71% of CEOs view analytics as the primary source of competitive advantage for their enterprises in the coming years.

These opportunities exist, but to capture them organizations need professionals who are trained to turn opportunity into reality. And by all measures, the demand for such professionals is far ahead of the supply. At the time we wrote this letter, we had just spoken with an executive at global corporation in need of hiring 200 Data Scientists and whose recruiters were only able to find 20. Startups and small companies are facing the same challenge in identifying and attracting big data and analytics professionals.

For companies, this shortage of data-driven professionals presents a difficult challenge. For our School of Human Sciences and Technology it represents a wonderful opportunity that is aligned with our overall mission: to train the next generation of multidisciplinary technology professionals who can be the drivers of technological and data-centered innovation that organizations around the world so desperately need.

During the intensive months of our Master in Business Analytics & Big Data, we teach our students how to work fluidly within the big data ecosystem, how to analyze large volumes of structured and unstructured data, how to make analytics happen at high velocity, and perhaps most critically we train our students to use analytics to drive innovation across all areas of a business and in diverse industries.

Our Master’s program is designed to be hands-on and practical across all of the stages of what well-trained Data Scientists do: defining the business use-case, deciding what data should be collected and how it should be stored, applying the appropriate analytics to address the target use-case, and interpreting and presenting the results to drive business decisions. Our students also learn through real-world business cases how leading organizations are using big data and analytics to transform their businesses.

If you are ready to become part of the next generation of data-driven professionals that will redefine business, we invite you to apply to our program.
Please do not hesitate to contact the office nearest to you should you need any additional information. You can also contact us via bigdata.advisor@ie.edu

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