With data now one of the world's most valuable resources, analysis of large quantities of data is a highly sought after skill-set. RIT Dubai's Professional Diploma in Data Science is a multidisciplinary program intended for professionals in diverse fields, including finance, retail, science, engineering or manufacturing, who need to analyze Big Data; data which is so large in volume and variety that it is not amenable to processing or analysis using traditional database and software techniques.

Students studying the professional diploma will:

- Study how to explore and manage large datasets being generated and used in the modern world.
- Be introduced to practical techniques used in exploratory data analysis and mining including data preparation, visualization, statistics for understanding data, and grouping and prediction techniques.
- Present approaches used to store, retrieve, and manage data in the real world including traditional database systems, query languages, and data integrity and quality.
- Study how to use big data analytics to reach data-driven decision making.
- Discuss case studies that will examine issues in data capture, organization, storage, retrieval, visualization, and analysis in diverse settings such as, drug research, census data, social networking, finance, urban planning, energy, mobility, manufacturing, urban crime, security and management projects.

**PROGRAM METHODOLOGY**

Modules are designed to use the most practical approach to deliver the material, using the most effective learning techniques. Participants can expect the following during the course of the program:

- Lecture modules delivered by subject matter experts.
- Use of cutting edge tools on various topics covered in the program.
- Access to a research repository on the subject.
- Discussion of case studies.
- Class room activities.
- Project work.

**PROGRAM MODULES & TIMINGS**

- Four modules - Three days each
- Duration: October, 2017 - January, 2018

Exact dates will be determined at a later stage upon participants' feedback.

*This diploma is a professional training one and hence it is not endorsed by KHDA or Ministry of Education*
Introduction to Data Science and its applications

What is data science, what does a data scientist do and where do we use data science?
This module starts with an introduction to different types of data and specific tasks required when dealing with big data. We will present available technology and data science tools for non-software developers and software developers, we will discuss the main responsibilities of a data scientist and will review the main application domains related to data science.

Topics Include:
1. Structured and unstructured data, static and streaming data, data acquisition, storage and management, data mining, web scraping, data cleaning.
2. Brief review of algorithms, programming, distributed computing, graph analysis and modeling, statistical analysis, natural language processing, machine learning, deep learning, artificial intelligence, cloud tools, APIs.
3. Interpreting data, ethics, presenting and communicating results.
4. Data science tools: R, Python, SAS, SPSS, Stata, Matlab, SQL, Hadoop, MapReduce, Cloudera, Hive, Pig, Spark, HTML, Java, C/C++, XML, Ruby, Perl, Scala, Julia, OpenRefine, DataCleaner, Data Mining, RapidMiner, Scala, Excel, Tableau, BigML, Plotly, Palladio, Tensorflow, etc.
5. Application domains: applications of data science to other disciplines, like business (business intelligence - BI), criminal justice, health care, industry, Internet of Things (IoT) (IoT), politics, etc.

Dr. Mihail Barbosu

Dr. Mihail Barbosu completed his Ph.D. in France at Paris 6 University and Paris Observatory. He is Professor in the School of Mathematical Sciences and Director of the Data and Predictive Analytics Center at RIT. Previously he was Head of the School of Mathematical Sciences at RIT and Chair of the Department of Mathematics at State University of New York at Brockport.

His expertise are in Visualization of Scientific Data and Distributed Systems and Space Dynamics.

Dr. Hans-Peter Bischof

Dr. Hans-Peter Bischof received his Ph.D. in Computer Science from the University of Osnabrück, Germany. He is Professor and Chair of the Computer Science Master Program at RIT and member of RIT’s Center for Computational Relativity and Gravitation.

His expertise are in Visualization of Scientific Data and Distributed Systems and High Performance Computing.

Dr. Ernest Fokoué

Dr. Ernest Fokoué earned his Ph.D. in Statistics from University of Glasgow, United Kingdom.

He is an Associate Professor in the School of Mathematical Sciences at RIT and prior to joining RIT he was a faculty member in the Mathematics Department at Kettering University in Flint, Michigan.

Dr. Fokoué has an extensive experience in Statistical Machine Learning and Data Science, with a strong leaning towards Bayesian Statistical Paradigm and the Regularization Framework of Learning.