



# Day 1

March 12, 2018  
8:30 to 3:00 pm

**What is data science, what tools are available for data scientists and where do we use data science?** This module starts with an introduction to data science, a review of different types of data and specific tasks required when dealing with big data. It also presents software available to data scientists and reviews the main application domains related to data science.

**Topics Include:**

1. Introduction to Data Science, structured and unstructured data, static and streaming data, data acquisition, storage and management, data mining, web scraping, data cleaning.
2. Review of some current tools used in data science, like R, Python, SAS, SPSS, Matlab, SQL, Hadoop, Hive, Pig, Spark, HTML, Java, C/C++, DataCleaner, Data Mining, Scala, Excel, Tableau, Tensorflow, GIS.
3. Applications of data science in business, criminal justice, health care, industry, education, Internet of Things (IoT), politics, etc.

# Day 2

March 13, 2018  
8:30 to 3:00 pm

**What are the main statistical methods used in examining big data and what visualization techniques help us present our results in the most efficient way?** This module focuses on statistical methods for big data and visualization techniques used by data scientists to tell the story behind the data.

**Topics Include:**

1. Descriptive and inferential statistics, statistical tests.
2. Regression, statistical modeling and fitting, predictive analytics.
3. Data visualization.
4. Discussions on how to interpret data, present and communicate results.

# Day 3

March 14, 2018  
8:30 to 3:00 pm

**What is machine learning?** This module introduces participants to machine learning, supervised and unsupervised learning, and artificial intelligence.

**Topics Include:**

1. Definition and methods of supervised learning, classification and regression problems; linear regression models and decision trees, logistic regression, random forest, support vector machines, neural networks.
2. Definition and methods of unsupervised learning, clustering and association problems; feature extraction, recommended systems, K-Means, Fuzzy clustering, hierarchical clustering.
3. Applications of artificial intelligence in machine vision, natural language processing, expert systems, gaming, self-teaching systems, intelligent robots.

# Day 4

March 15, 2018  
8:30 to 3:00 pm

**What are some real-life applications of big data in management science?** This module presents everyday problems from areas like management, marketing, business or industry. Participants will learn data-driven decision methods and modeling techniques.

**Topics Include:**

1. Linear programming and optimization.
2. Network flow, project management and transportation problems.
3. Decision analysis and multi-criteria decision making, time series and forecasting, Markov processes.

## SUBJECT MATTER EXPERTS:

### 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.

Dr. Barbosu's experience includes Mathematical Modeling, Data and Predictive Analytics, Academic Management, Dynamical Systems and Space Dynamics.



### Dr. Ernest Fokoue

Dr. Ernest Fokoue 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. Fokoue has an extensive experience in teaching both undergraduate and graduate courses in statistics and data science. His main research interest is in Statistical Machine Learning and Data Science, with a strong leaning towards Bayesian Statistical Paradigm and the Regularization Framework of Learning.



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