NYC DATA SCIENCE ACADEMY

Addendum I
To
School Catalog Version 4.1, January 15, 2021 to December 31, 2021

The following item was revised in the *School Catalog* that went into effect on January 15, 2021. The revisions are effective as of February 22, 2021.

This academic calendar for the Residential or Remote Live Bootcamp on P. 5 of the School Catalog is revised as follows:

Winter Quarter
January 11, Monday ………………………………………………………… First Day of Class
January 18, Monday ……………………………………………… Martin Luther King, Jr. Day
February 15, Monday ……………………………………………….…… Presidents' Day
April 2, Friday …………………………………………………………………. Last Day of Class

Spring Quarter
May 3, Monday ………….………………………………………………… First Day of Class
May 31, Monday ……………………………………………… Memorial Day Holiday
July 5, Monday ………………………………………… Independence Day (Observed)
July 23, Friday ……………………………………………………………… Last Day of Class

Summer Quarter
July 6, Tuesday ………….………………………………………………. First Day of Class
September 6, Monday ……………………………………………….…… Labor Day Holiday
September 24, Friday ……………………………………………………… Last Day of Class

2021 Fall Quarter
September 27, Monday…………………………………………………… First Day of Class
October 11, Monday ……………………………………………………… Columbus Day
November 11 Thursday………………………………………………… Veterans Day
November 25-26 …………………………………………………. Thanksgiving Holiday
December 21, Tuesday ………………………………………………. Last Day of Class
Dec. 22 – Dec.31……………………………………………………. Winter Holiday Break

The academic calendar for the Online Bootcamp on PP. 5-6 of the School Catalog is revised as follows:

Winter Quarter	Winter Mid-Quarter
January 4, Monday ……………………………. First Day of Class January 18, Monday ……………… Martin Luther King, Jr .Day February 15, Monday …………….…...……Presidents Day April 5, Monday ……………………………….. Easter Monday April 23, Friday ………………… Last Day of Class (Full-time) May 31, Monday ………………………… Memorial Day Holiday June 18, Friday …………………Last Day of Class (Part-time)	February 16, Tuesday …………………………. First Day of Class May 31, Monday ………………………… Memorial Day Holiday June 7, Monday ……………………… Last Day of Class (Full-time) July 5, Friday…………………… Independence Day (observed) August 2, Monday ……………… Last Day of Class (Part-time)

Spring Quarter	Spring Mid-Quarter
April 6, Tuesday .... First Day of Class May 31, Monday .... Memorial Day Holiday April 5, Monday .... Easter Monday July 5, Friday.........................Independence Day (observed) July 23, Friday .... Last Day of Class (Full-time) September 6, Monday .... Labor Day Holiday September 17, Friday............. Last Day of Class (Part-time)	May 17, Monday .... First Day of Class May 31, Monday .... Memorial Day Holiday July 5, Friday.........................Independence Day (observed) September 3, Friday .... Last Day of Class (Full-time) September 6, Monday .... Labor Day Holiday October 11, Monday .... Columbus Day October 29, Friday .... Last Day of Class (Part-time)
Summer Quarter	**Summer Mid-Quarter**
July 6, Tuesday .... First Day of Class September 6, Monday .... Labor Day Holiday October 11, Monday ....Columbus Day October 22, Friday .... Last Day of Class (Full-time) November 11 Thursday....................................Veterans Day November 25-26................................ Thanksgiving Holiday December 17, Friday .... Last Day of Class (Part-time)	August 16, Monday .... First Day of Class September 6, Monday .... Labor Day Holiday October 11, Monday ....Columbus Day November 11 Thursday....................................Veterans Day November 25-26................................ Thanksgiving Holiday December 3, Friday .... Last Day of Class (Full-time) Dec.24-31,2021 .... Winter Holiday Break Jan.17, 2022...............................Martin Luther King, Jr. Day Feb. 4, 2022........................... Last Day of Class (Part-time)
Fall Quarter	**Fall Mid-Quarter**
September 27, Monday .... First Day of Class October 11, Monday ....Columbus Day November 11 Thursday....................................Veterans Day November 25-26................................ Thanksgiving Holiday Dec.24-31,2021 .... Winter Holiday Break Jan.17, 2022.........................Martin Luther King, Jr. Day Jan.21, 2022............................. Last Day of Class (Full-time) Feb.21, 2022 ....Presidents' Day Mar. 18, 2022........................Last Day of Class (Part-time)	November 8, Monday .... First Day of Class November 11 Thursday....................................Veterans Day November 25-26................................ Thanksgiving Holiday Dec.24-31,2021 .... Winter Holiday Break Jan.17, 2022.............................. Martin Luther King, Jr. Day Feb.21, 2022 ....Presidents' Day Mar.4, 2022 .... Last Day of Class (Full-time) Apr.5, 2022.. Easter Monday Apr.29, 2022............................Last Day of Class (Part-time)

Addendum II

To

School Catalog Version 4.1, January 15, 2021 to December 31, 2021

The following new bootcamps have been approved for offering and will be started on the following calendar dates:

Data Science with Machine Learning, residential 12-week bootcamp with 400 clock hours, currently delivered through remote live instruction, will start on May 3, 2021. This program will replace the residential or remote live Data Science Bootcamp (420 clock hours) currently included in the catalog.

The Academic Calendar as published in Addendum I in the preceding section for the current residential bootcamp also applies to the Data Science with Machine Learning bootcamp.

Data Science with Machine Learning – Online, 400 clock hours with full-time schedule for 16 weeks and part-time schedule for 24 weeks, delivered through interactive distance learning, will start on July 6, 2021. This program will replace Data Science Bootcamp – Online (420 clock hours) currently included in the catalog.

The Academic Calendar as published in Addendum I in the preceding section for the current Online bootcamp also applies to the Data Science with Machine Learning – Online bootcamp.

Data Analytics Bootcamp – Online, 230 clock hours delivered through interactive distance learning over 12 weeks, will start on July 6, 2021. This is a brand new short bootcamp focused on data analytics which enables students to build a strong foundation of data science and seek employment at the entry level in the broad data science field.

The Academic Calendar for the Data Analytics Bootcamp – Online for the four starting dates in 2021 is as follows:

Summer Quarter	Summer Mid-Quarter
July 6, Tuesday …………………………….. First Day of Class September 6, Monday ……………………… Labor Day Holiday September 24, Friday …............... Last Day of Class	August 16, Monday …………………………. First Day of Class September 6, Monday ……………………… Labor Day Holiday October 11, Monday ………………………………Columbus Day November 5, Friday ………………………………. Last Day of Class
Fall Quarter	**Fall Mid-Quarter**
September 27, Monday ………………………. First Day of Class October 11, Monday …………………………………Columbus Day November 11 Thursday……………………………Veterans Day November 25-26…………................ Thanksgiving Holiday December 21, Tuesday …………………………… Last Day of Class	November 8, Monday …………………………. First Day of Class November 11 Thursday………………………………Veterans Day November 25-26……………………………. Thanksgiving Holiday Dec.24-31,2021 ……………………………. Winter Holiday Break Jan.17, 2022…………........................ Martin Luther King, Jr. Day Feb. 4, 2022 ……………………….………………… Last Day of Class

The detailed program and curriculum information for each bootcamp is presented below in the order as listed above.

Data Science with Machine Learning

Program Name: Data Science with Machine Learning
Program Length: 400 Clock Hours; 12 Weeks
Credential Awarded: Certificate of Completion
Mode of Delivery: Residential

Program Objective
Data science is a fast-evolving field and offers many employment opportunities for people with strong operational analysis background. In recent years, technological development in data collection and storage and innovations in data science tools and methodologies have made it even more important to have properly-trained data analysts and data scientists to perform data analyses to gain business insights. NYC Data Science Academy designed the 12-week Data Science with Machine Learning bootcamp to provide accelerated training to fulfill the need of data science professionals in the employment market. The objective of the Data Science with Machine Learning bootcamp is to provide training in major data science tools and methods and how they are used in real business situations, including machine learning and advanced data science topics, which prepares students to seek employment across all industries as data science professionals.

Program Description
The Data Science with Machine Learning bootcamp is an advanced certificate program that is designed primarily for individuals who have earned a baccalaureate or higher degree and want to further their career in the field of data science. It is a very accelerated training program in which students learn the major tools and methods for performing data analyses and apply them to various projects typically found in real-life business situations. At the foundation level of the program, students learn to employ R and Python for two individual data analytics projects and for presenting research results effectively. Beyond the foundational level, students study machine learning with Python and complete a machine learning project and a capstone project in groups. The program also exposes students to concepts and practices in advanced topics such as deep learning and big data.

Data Science Career Opportunities
Data science is a high demand career field based on statistical information published by the U.S. Bureau of Labor. According to the Bureau of Labor statistics, "Employment of operations research analysts is projected to grow 26 percent from 2018 to 2028, much faster than the average for all occupations. As technology advances and companies seek efficiency and cost savings, demand for operations research analysis should continue to grow." (https://www.bls.gov/ooh/math/operations-research-analysts.htm) Graduates from the Data Science with Machine Learning are prepared for employment opportunities across all business industries as Data Analysts, Data Scientists, Machine Learning Engineers, and other

related titles.

Program Exit Competencies
Students who have successfully completed the Data Science with Machine Learning bootcamp are able to:

- Demonstrate proficiency in using GitHub for version control and collaboration with other coders.
- Extract relevant data in a desirable format from a SQL database.
- Operate a Linux system for data science projects.
- Manipulate data proficiently to facilitate advanced data analyses with R.
- Gain business insights through data analytics in a data science project.
- Present effectively the end results and deliverables of a data analytics project to stakeholders, including appropriate visualizations.
- Utilize object-oriented programming and functional programming for better readability and efficiency.
- Manipulate data proficiently with Numpy, SciPy, and pandas.
- Interpret statistical inference implied by a statistical model.
- Perform model selection through statistical analysis and evaluations.
- Explain the roles of data analysts and data scientists in business organizations.
- Conceptualize a data analytics project to determine what objective(s) to achieve, what tools and methods to select, what deliverables to provide, and how the projects should be carried out.
- Characterize the statistical properties of a cluster or factor generated through unsupervised learning.
- Explain the mathematical structure behind a given machine learning model.
- Perform feature engineering to identify alternatives for final feature selection.
- Select machine learning models through comparative analysis and evaluations.
- Identify commonalities among the variables or the observations through unsupervised learning algorithms.
- Explain the obstacles of analyzing increasingly large datasets and how different technologies and paradigms help overcome these obstacles.
- Build artificial neural network models for regression or classification using keras and describe several popular deep learning architectures, including common industry tasks in which each architecture is used
- Complete a data science project by employing appropriate tools and methods to gain business insights and present such insights effectively.

Plan of Study

Course No.	Course Title	Clock Hours
DABC502	Data Science Toolkit	30
DABC506	Data Analytics with Python	60

DABC511	Data Analytics with R	60
DABC516	Business Cases in Data Science	40
DSBC521	Machine Learning I	60
DSBC522	Machine Learning II	60
DSBC525	Data Science: Advanced Topics	40
DSBC530	Data Science Capstone Project	50

Projects

Students in the Data Science with Machine Learning bootcamp are required to complete four graded projects:

- Data Analytics Project with Python (Individual)
- Data Analytics Project with R (Individual)
- Machine Learning Project with Python (Group)
- Data Science Capstone Project (Group)

Data Science with Machine Learning – Online

Program Name: Data Science with Machine Learning - Online
Program Length: 400 Clock Hours; 16 Weeks (Full-Time) and 24 Weeks (Part-Time)
Credential Awarded: Certificate of Completion
Mode of Delivery: Interactive Distance Learning (Online)

Program Objective
Data science is a fast-evolving field and offers many employment opportunities for people with strong operational analysis background. In recent years, technological development in data collection and storage and innovations in data science tools and methodologies have made it even more important to have properly-trained data analysts and data scientists to perform data analyses to gain business insights. NYC Data Science Academy designed the 12-week Data Science with Machine Learning bootcamp to provide accelerated training to fulfill the need of data science professionals in the employment market. The objective of the Data Science with Machine Learning bootcamp is to provide training in major data science tools and methods and how they are used in real business situations, including machine learning and advanced data science topics, which prepares students to seek employment across all industries as data science professionals.

Program Description
The Data Science with Machine Learning bootcamp is an advanced certificate program that is designed primarily for individuals who have earned a baccalaureate or higher degree and want to further their career in the field of data science. It is a very accelerated training

program in which students learn the major tools and methods for performing data analyses and apply them to various projects typically found in real-life business situations. At the foundation level of the program, students learn to employ R and Python for two individual data analytics projects and for presenting research results effectively. Beyond the foundational level, students study machine learning with Python and complete a machine learning project and a capstone project in groups. The program also exposes students to concepts and practices in advanced topics such as deep learning and big data.

Data Science Career Opportunities
Data science is a high demand career field based on statistical information published by the U.S. Bureau of Labor. According to the Bureau of Labor statistics, "Employment of operations research analysts is projected to grow 26 percent from 2018 to 2028, much faster than the average for all occupations. As technology advances and companies seek efficiency and cost savings, demand for operations research analysis should continue to grow." (https://www.bls.gov/ooh/math/operations-research-analysts.htm) Graduates from the Data Science with Machine Learning are prepared for employment opportunities across all business industries as Data Analysts, Data Scientists, Machine Learning Engineers, and other related titles.

Program Exit Competencies
Students who have successfully completed the Data Science with Machine Learning bootcamp are able to:

- Demonstrate proficiency in using GitHub for version control and collaboration with other coders.
- Extract relevant data in a desirable format from a SQL database.
- Operate a Linux system for data science projects.
- Manipulate data proficiently to facilitate advanced data analyses with R.
- Gain business insights through data analytics in a data science project.
- Present effectively the end results and deliverables of a data analytics project to stakeholders, including appropriate visualizations.
- Utilize object-oriented programming and functional programming for better readability and efficiency.
- Manipulate data proficiently with Numpy, SciPy, and pandas.
- Interpret statistical inference implied by a statistical model.
- Perform model selection through statistical analysis and evaluations.
- Explain the roles of data analysts and data scientists in business organizations.
- Conceptualize a data analytics project to determine what objective(s) to achieve, what tools and methods to select, what deliverables to provide, and how the projects should be carried out.
- Characterize the statistical properties of a cluster or factor generated through unsupervised learning.
- Explain the mathematical structure behind a given machine learning model.

- Perform feature engineering to identify alternatives for final feature selection.
- Select machine learning models through comparative analysis and evaluations.
- Identify commonalities among the variables or the observations through unsupervised learning algorithms.
- Explain the obstacles of analyzing increasingly large datasets and how different technologies and paradigms help overcome these obstacles.
- Build artificial neural network models for regression or classification using keras and describe several popular deep learning architectures, including common industry tasks in which each architecture is used
- Complete a data science project by employing appropriate tools and methods to gain business insights and present such insights effectively.

Plan of Study

Course No.	Course Title	Clock Hours
DABC502	Data Science Toolkit	30
DABC506	Data Analytics with Python	60
DABC511	Data Analytics with R	60
DABC516	Business Cases in Data Science	40
DSBC521	Machine Learning I	60
DSBC522	Machine Learning II	60
DSBC525	Data Science: Advanced Topics	40
DSBC530	Data Science Capstone Project	50

Projects

Students in the Data Science with Machine Learning bootcamp are required to complete four graded projects:

- Data Analytics Project with Python (Individual)
- Data Analytics Project with R (Individual)
- Machine Learning Project with Python (Group)
- Data Science Capstone Project (Group)

Data Analytics Bootcamp – Online

Program Name: Data Analytics Bootcamp – Online
Program Length: 230 Clock Hours; 12 Weeks
Credential Awarded: Certificate of Completion
Mode of Delivery: Interactive Distance Learning (Online)

Program Objective
Data science is a fast-evolving field and offers many employment opportunities for people

with strong operational analysis background. In recent years, technological development in data collection and storage and innovations in data science tools and methodologies have made it even more important to have properly-trained data analysts and operations analysts to perform data analyses to gain business insights. NYC Data Science Academy designed the 12-week Data Analytics Bootcamp - Online to provide accelerated training to fulfill the need of data science professionals in the employment market. The objective of the Data Analytics Bootcamp is to provide training in major data analytics tools and methods and their applications in the business cases and prepare students to seek employment across all industries as data analysis professionals.

Program Description
The Data Analytics Bootcamp is an advanced certificate program that is designed primarily for individuals who have earned a baccalaureate or higher degree and want to further their career in the field of data science. It is a very accelerated training program in which students learn the major tools and methods for performing data analyses and apply them to various projects typically found in real-life business situations. Students learn to employ R and Python for data analytics projects and for presenting research results effectively. Students will complete two course-based individual projects and one capstone project in groups.

Data Science Career Opportunities
Data science is a high demand career field based on statistical information published by the U.S. Bureau of Labor. According to the Bureau of Labor statistics, "Employment of operations research analysts is projected to grow 26 percent from 2018 to 2028, much faster than the average for all occupations. As technology advances and companies seek efficiency and cost savings, demand for operations research analysis should continue to grow." (https://www.bls.gov/ooh/math/operations-research-analysts.htm) Graduates from the Data Analytics Bootcamp are prepared to seek employment opportunities across all business industries as Data Analysts, Operations Analyst, and other related titles.

Program Exit Competencies
Students who have successfully completed the Data Analytics Bootcamp are able to:
- Demonstrate proficiency in using GitHub for version control and collaboration with other coders.
- Extract relevant data in a desirable format from a SQL database.
- Operate a Linux system for data science projects.
- Manipulate data proficiently to facilitate advanced data analyses with R.
- Gain business insights through data analytics in a data science project.
- Present effectively the end results and deliverables of a data analytics project to stakeholders, including appropriate visualizations.
- Utilize object-oriented programming and functional programming for better readability and efficiency.
- Manipulate data proficiently with Numpy, SciPy, and pandas.

- Interpret statistical inference implied by a statistical model.
- Perform model selection through statistical analysis and evaluations.
- Explain the roles of data analysts and data scientists in business organizations.
- Conceptualize a data analytics project to determine what objective(s) to achieve, what tools and methods to select, what deliverables to provide, and how the projects should be carried out.
- Complete a data analytics project individually or as a member of a team.

Plan of Study

Course No.	Course Title	Clock Hours
DABC502	Data Science Toolkit	30
DABC506	Data Analytics with Python	60
DABC511	Data Analytics with R	60
DABC516	Business Cases in Data Science	40
DSBC519	Data Analytics Capstone Project	40

Projects

Students will complete the following three grated projects:

- Data Analytics Project with Python (Individual)
- Data Analytics Project with R (Individual)
- Data Analytics Capstone Project (Group)

Transferability of Bootcamp Modules into Data Science with Machine Learning - Online

If a student, who started in the Data Analytics Bootcamp – Online, decides that they want to pursue study in the full-length Data Science with Machine Learning - Online bootcamp before they complete the Data Analytics Bootcamp or after they completed the bootcamp and became employed in the data science field, the first four modules as listed in the Plan of Study above are fully transferrable into the Data Science with Machine Learning – Online bootcamp. The tuition amount paid for the Data Analytics Bootcamp will be credited toward the tuition amount for Data Science with Machine Learning if the enrollment takes place within 12 months of completing the Data Analytics Bootcamp.

<p align="center">Module Descriptions for All Bootcamps</p>

DABC502   Data Science Toolkit
Clock Hours: 30 (Lecture: 17; Lab: 13)
Prerequisite: None

The Unix environment is widely used in the data science field. Being familiar with the common tools is important in order to carry out further data analysis. This course enables

students to communicate with the computers via the command line environment. It also introduces the SQL database, a traditional database that has been widely used in the enterprise setting, as well as GitHub, a file sharing platform generally used by programmers for version control.

DABC506 Data Analytics with Python
Clock Hours: 60 (Lecture: 24; Lab: 36)
Prerequisite: None

This course introduces students to data analysis with the Python programming language. Students learn to work with different data structures in Python and the most popular data analytics and visualization packages such as numpy, scipy, pandas, matplotlib, and seaborn. Ultimately, students will use effective Python code and packages to solve problems; extract, transform, load, and analyze data to gain insights; and communicate the analyses, aided by appropriate visualizations. Students are required to complete a project incorporating these practices, culminating in a presentation of derived insights.

DABC511 Data Analytics with R
Clock Hours: 60 (Lecture: 27; Lab: 33)
Prerequisite: None

This course is designed to provide a comprehensive introduction to the R programming language for data analysis. Students will learn to load, save, and otherwise wrangle data with effective use of functions in R and relevant libraries, including those within the tidyverse collection. Students will practice deriving insights from data using common statistical techniques, including hypothesis testing and basic statistical modeling; effective visualization; and other frequently used techniques within data analysis. Further, students will learn to successfully communicate their insights, including creating reports with tools like knitr. Students are required to complete a project demonstrating the ability to analyze data in R.

DABC516 Business Cases in Data Science
Clock Hours: 40 (Lecture: 15; Lab: 25)
Prerequisite: None

This course was designed to help students place data analytics and data science work in the real-world context of business operations across industries. Students will be presented various business cases in which datasets were explored to gain insights to guide and/or enhance business operations. They will also be required to take given business cases and conceptualize viable project approaches with defined objectives, selected tools and methods, and expected deliverables.

DABC519 Data Analytics Capstone Project
Clock Hours: 40 (Lecture: 0; Lab: 40)

Prerequisite: DABC502, DABC506, DABC511, and DABC516

The capstone project is designed for students to employ the data analytics concepts, tools, and methods they have learned in the bootcamp to solve a business operational problem with real data sets from a real business entity. Students are presented data sets and potential problems to solve. Students are then required to form project teams, develop a project proposal for instructor review and approval, and execute the project. When the project is completed, each project team is required to present the project findings and share the business insights obtained from the research.

DSBC521 Machine Learning I
Clock Hours: 60 (Lecture: 21; Lab: 39)
Prerequisite: DABC502, DABC506, DABC511, and DABC516

This course introduces students to Supervised Machine Learning from both a theoretical and practical perspective. Students will learn the theoretical foundations and mathematical structure behind several important, classical models; design a reproducible machine learning pipeline, including selection of an optimal model within a given context; and demonstrate the soundness and effectiveness of the final model, with a particular focus on the value of the model for extracting insights from data. Throughout the course, students will see both linear models for regression and classification, Bayesian classifiers, and time series.

DSBC522 Machine Learning II
Clock Hours: 60 (Lecture: 21; Lab: 39)
Prerequisite: DSBC521

This course continues from Machine Learning I to expand the students' arsenal of machine learning algorithms along with their underlying theoretical foundations and implementations in Python. Going further into Supervised Machine Learning, students will learn tree-based models, including Bagging Trees and Random Forest; Gradient Boosting; and Support Vector Machines. Moving into Unsupervised Machine Learning, students will learn techniques of Clustering, including KMeans and Hierarchical approaches; and Matrix Factorization, including Principal Component Analysis and Latent Dirichlet Allocation. Throughout the course, students will adhere to best practices in choosing, tuning, and critiquing their models. Finally, students will be required to complete one machine learning project, in which they will demonstrate their machine learning acumen to distil deeper insights into data.

DSBC525 Data Science: Advanced Topics
Clock Hours: 40 (Lecture: 18; Lab: 22)
Prerequisite: DSBC521, DSBC522

This course introduces students to more advanced data science practices, including Scalability and Deep Learning. On the scalability side, students will gain an overview of contemporary topics such as when to move from the desktop to a database, big data technologies and cloud computing. On the deep learning side, students will learn the basic mathematical construct of deep learning models, understand where deep learning has and has not found success, as well as gain an overview of several important model architectures. Along the way, students will be given examples of where the material they have learned throughout the curriculum compare and manifest in industry.

DSBC530 Data Science Capstone Project
Clock Hours: 50 (Lecture: 0; Lab: 50)
Prerequisite: All Preceding DSBC Modules

The capstone project is designed for students to employ the major data science concepts, tools, and methods they have learned in the program to solve a business operational problem with real data sets from a real business entity. Students are presented data sets and potential problems to solve. Students are then required to form project teams, develop a project proposal for instructor review and approval, and execute the project. When the project is completed, each project team is required to present the project findings and share the business insights obtained from the research.

Addendum III
To
School Catalog Version 4.1, January 15, 2021 to December 31, 2021

The following items are to update or revise certain items in the current catalog are effective as of May 14, 2021.

1. Insert the following subheading and paragraph on P. 27 between the two top lines and the section heading "**ASSESSMENT OF STUDENT WORK.**"

Reinstatement

When the appeal is granted, the student's enrollment is reinstated, and the student will remedy the academic deficiency and is expected to meet or exceed the minimum standards of satisfactory academic progress at the next evaluation point.

2. Update the **Faculty** listing on pp. 45-46 with the following:

a). Delete the information of the following instructors on p. 46:

Aiko Liu
Part-Time Instructor
Ph.D. in Mathematics, Harvard University

Yilei (Drace) Zhan
Python
programming
M.S. in Statistics, Zicklin School of Business at Baruch College

b). Change of employment status of the following on p. 46:
Carlos Afonso
Full-Time Instructor
Research Work toward Ph.D. in Biomedical Engineering (Unfinished), University of Oxford
M.S. & B.S. in Physics Engineering, Instituto Superior Tecnico, Portugal

c). Add the following individuals on p. 46:

Sam Audino
Assistant Data Science Instructor
B.A. in Mathematics, Bard College, New York,
Associate Data Scientist, pymetrics
Data Science Fellow & Teaching Assistant, NYC Data Science Academy

Gabriela Heulga Morales
Assistant Data Science Instructor
Post Doctoral position, University of Minnesota, MN
Ph.D. in Biomedical Sciences
Physiology Institute, UNAM, Mexico City, Mexico
Data Science Fellow, NYC Data Science Academy

Jinsuh (Jay) Lee
Part-Time Instructor
Ph.D. in Marketing, Purdue University (West Lafayette, Indiana)
M.S. in Statistics, UC Santa Barbara (Santa Barbara, California)
B.S. in Computer Science, Purdue University (West Lafayette, Indiana)
B.S. in Statistics, Purdue University (West Lafayette, Indiana)

Shizhu (Kathy) Liu: RML
Ph.D. in Mathematics, New York University (New York City, NY)
M.A. in Applied Economics, Georgetown University (Washington, DC)
B.A. in Economics, Zhejiang University (Hangzhou, Zhejiang, China)

Addendum IV

To

School Catalog Version 4.1, January 15, 2021 to December 31, 2021

The following items are to update or revise certain items in the current catalog and effective as of July 1, 2021.

1. **Revision of Mission Statement**. The mission stated on p. 8 of the School Catalog is replaced with the following as of July 1, 2021:

   NYC Data Science Academy's mission is to provide accelerated data science training programs that prepare people for employment as data science professionals and to offer continuing education courses for professional development.

2. **Revision of Satisfactory Academic Progress Policy**. Under the section of **Evaluation Points** on p. 25 of the School Catalog, the table for evaluation points by program is replaced with the following:

Program	Evaluation Point I	Evaluation Point II	Evaluation Point III	Evaluation Point IV
Data Science with Machine Learning (Residential; 12 Weeks)	Week 3	Week 6	Week 9	Week 12
Data Science with Machine Learning (Online Full-Time; 16 Weeks)	Week 4	Week 8	Week 12	Week 16
Data Science with Machine Learning (Online Part-Time; 24 Weeks)	Week 6	Week 12	Week 18	Week 24
Data Analytics Bootcamp (Online; 12 Weeks)	Week 3	Week 6	Week 9	Week 12

3. **Revision of Make-Up Policy**. The Make-Up policy that appears on p. 30 of the School Catalog is replaced with the following:

   Residential Bootcamps

   When a student wants to make up a missed lesson for both academic benefit and attendance, the student may request a make-up session by completing the Make-Up Request Form, provided that details of any extenuating circumstance that had caused the absence can be supported with appropriate documentation. When the Bootcamp Manager or Bootcamp Coordinator approves the request, the student will follow instructions on the form to complete the make-up session. For comparable academic experience, the student will be required to watch the recorded video of the missed lesson missed and complete the associated assignments. The make-up request and make-up work required must be completed and submitted for review within two weeks of the missed session.

Based on the student's needs, an appointment may be scheduled to meet with the Instructor of that lesson to ask questions or meet with the Teaching Assistant of the Bootcamp section for questions and answers or some private tutoring. When the learning activities are completed and the assignments are submitted to the Teaching Assistant for review, the class is considered "made up." Hours for the same lesson and associated lab activities will be recorded as made-up in the student's attendance record.

This make-up option is available and may be granted to a residential bootcamp student up to 5% of the total program clock hours.

Online (IDL) Bootcamps
Attendance for online or IDL bootcamp students is measured on a weekly basis. When a student misses a full week of attendance and the absence was caused by extenuating circumstances, the student may request make-up for the missed week's academic learning and attendance by completing and submitting the Make-Up Request Form and submit it to the IDL Bootcamp Coordinator or IDL Bootcamp Manager. Once approved, the student must complete all the required activities and other applicable learning activities in that week and notify the IDL Bootcamp Coordinator and/or Bootcamp Manager. Once reviewed and approved, the attendance record would be modified to show "Attendance Made Up" for the applicable week.

Students in the 16-week full-time bootcamp may make up two (2) weeks of attendance. Students in the 24-week part-time bootcamp may make up three (3) weeks of attendance. Students in the 12-week Data Analytics Bootcamp may make up one (1) week of attendance.

4. Revision of Transfer of Credit Policy. (a) Under the subsection of **College Credit Disclaimer** on p. 11 of the School Catalog, the second paragraph is replaced with the following:

   NYC Data Science Academy does not measure its program or courses in credit hours and therefore does not promise or guarantee that any other institution of higher learning would recognize or grant any credit for the training hours a student receives from the Academy. However, should a graduate of a bootcamp program need information on any of the Bootcamp courses to support their effort to request for transfer credit evaluation, the graduate may request in writing to the Student Services Officer for relevant information such as academic transcript, catalog, course description or course syllabus.

   (b) Under the subsection of **Credit for Prior Learning or Experience** on p. 11, the one

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paragraph is replaced with the following four paragraphs:

Applicants with prior learning in the discipline of Data Science may request to have their transcript evaluated for possible transfer of credit. In order for any course credit to be considered for transfer of credit, the course must cover similar topics, have similar number of contact hours, and have similar project outcomes as the corresponding component of the Data Science Bootcamp curriculum. Only courses with a B or higher grade will be considered for possible award of transfer credit, and the maximum number of clock hours to be awarded with transfer credit is limited to sixty (60) clock hours for any bootcamp. Additionally, the course(s) to be considered must be taken within the past two years of the class start date.

The request for evaluation must be submitted at the time of enrollment but no later than one week prior to the first day of class in the program of enrollment. A prospective student may obtain a Transfer Credit Request Form from his/her Admissions Officer. In completing the request, the prospective student is required to provide support documents to demonstrate the required elements for evaluation, e.g., academic transcript, school catalog, course syllabus, and completed project with supporting details. The Academy's faculty will evaluate the request along with supporting documents within a week of submission and make the decision on whether any transfer credit could and will be granted. The applicant will be notified in writing of the decision within 10 business days of the submission of the request.

When granted the 60 clock hours, total tuition of the bootcamp will be adjusted according to the total tuition of the bootcamp and the prorated amount for the 60 hours.

If the student is not satisfied with the evaluation decision of the faculty, the student may discuss the matter with the Bootcamp Manager. If the student is not happy with the Bootcamp Manager's decision, the student may appeal in writing to the School Director whose decision is final.

Addendum V

To

School Catalog Version 4.1, January 15, 2021 to December 31, 2021

At the end of the Addenda document, the OEDS for the 2019-2020 Reporting Period are to be found. The OEDS includes the enrollments, completion rates and placement rates by program and course. These are the statistics NYC Data Science Academy reports to the New York State regulatory agency on an annual basis.

Addendum VI

To

School Catalog Version 4.1, January 15, 2021 to December 31, 2021

Effective immediately, NYC Data Science Academy will start offering the Data Analytics Bootcamp for the September 27, 2021 cohort. The program and curriculum information is provided as follows:

Data Analytics Bootcamp Program Information

Program Name: Data Analytics Bootcamp
Program Length: 230 Clock Hours; 7 Weeks
Credential Awarded: Certificate of Completion
Mode of Delivery: Residential

Program Objective

Data science is a fast-evolving field and offers many employment opportunities for people with strong operational analysis background. In recent years, technological development in data collection and storage and innovations in data science tools and methodologies have made it even more important to have properly-trained data analysts and operations analysts to perform data analyses to gain business insights. NYC Data Science Academy designed the seven-week Data Analytics Bootcamp to provide accelerated training to fulfill the need of data science professionals in the employment market. The objective of the Data Analytics Bootcamp is to provide training in major data analytics tools and methods and their applications in the business cases and prepare students to seek employment across all industries as data analysis professionals.

Program Description

The Data Analytics Bootcamp is an advanced certificate program that is designed primarily for individuals who have earned a baccalaureate or higher degree and want to further their career in the field of data science. It is a very accelerated training program in which students learn the major tools and methods for performing data analyses and apply them to various projects typically found in real-life business situations. Students learn to employ R and Python for data analytics projects and for presenting research results effectively. Students will complete two course-based individual projects and one capstone project in groups.

Data Science Career Opportunities

Data science is a high demand career field based on statistical information published by the U.S. Bureau of Labor. According to the Bureau of Labor statistics, "Employment of operations research analysts is projected to grow 26 percent from 2018 to 2028, much faster than the average for all occupations. As technology advances and companies seek efficiency and cost savings, demand for operations research analysis should continue to grow." (https://www.bls.gov/ooh/math/operations-research-analysts.htm) Graduates from the Data Analytics Bootcamp are prepared to seek employment opportunities across all business

industries as Data Analysts, Operations Analyst, and other related titles.

Program Exit Competencies

Students who have successfully completed the Data Analytics Bootcamp are able to:

- Demonstrate proficiency in using GitHub for version control and collaboration with other coders.
- Extract relevant data in a desirable format from a SQL database.
- Operate a Linux system for data science projects.
- Manipulate data proficiently to facilitate advanced data analyses with R.
- Gain business insights through data analytics in a data science project.
- Present effectively the end results and deliverables of a data analytics project to stakeholders, including appropriate visualizations.
- Utilize object-oriented programming and functional programming for better readability and efficiency.
- Manipulate data proficiently with Numpy, SciPy, and pandas.
- Interpret statistical inference implied by a statistical model.
- Perform model selection through statistical analysis and evaluations.
- Explain the roles of data analysts and data scientists in business organizations.
- Conceptualize a data analytics project to determine what objective(s) to achieve, what tools and methods to select, what deliverables to provide, and how the projects should be carried out.
- Complete a data analytics project individually or as a member of a team.

Plan of Study

Course No.	Course Title	Clock Hours
DABC502	Data Science Toolkit	30
DABC506	Data Analytics with Python	60
DABC511	Data Analytics with R	60
DABC516	Business Cases in Data Science	40
DSBC519	Data Analytics Capstone Project	40

Projects

Students will complete the following three grated projects:

- Data Analytics Project with Python (Individual)
- Data Analytics Project with R (Individual)
- Data Analytics Capstone Project (Group)

Course Descriptions and Learning Objectives

DABC502   Data Science Toolkit

The Unix environment is widely used in the data science field. Being familiar with the common tools is important in order to carry out further data analysis. This course enables students to communicate with the computers via the command line environment. It also introduces the SQL database, a traditional database that has been widely used in the enterprise setting, as well as GitHub, a file sharing platform generally used by programmers for version control.

Learning Objectives:

1. *Explain the basic structure of a file system in Linux.*
2. *Use the vi text editor to read, write and save the plain text file.*
3. *Utilize different argument of Linux commands to manipulate files and perform more advanced tasks.*
4. *Describe the three stages of git and their relations.*
5. *Use Git to manage version control throughout the project process.*
6. *Demonstrate how to undo changes and differentiate between git reset and git revert.*
7. *Use SELECT command to extract data from the database and transform numerical, datetime or text data with proper operators.*
8. *Apply different JOIN commands to merge multiple tables and aggregate information from different fields.*
9. *Manage the database including creating and dropping tables, inserting and removing records from the table.*

DABC506 Data Analytics with Python

This course introduces students to data analysis with the Python programming language. Students learn to work with different data structures in Python and the most popular data analytics and visualization packages such as numpy, scipy, pandas, matplotlib, and seaborn. Ultimately, students will use effective Python code and packages to solve problems; extract, transform, load, and analyze data to gain insights; and communicate the analyses, aided by appropriate visualizations. Students are required to complete a project incorporating these practices, culminating in a presentation of derived insights.

Learning Objectives:
1. *Build code characterized by readability, portability, and efficiency.*
2. *Apply the class-based, object-oriented programming paradigm to effectively incorporate abstraction, inheritance, and polymorphism into code.*
3. *Assign appropriate data structures to optimize the workflow for future analyses.*
4. *Integrate external storage for persistence of workflow data and objects.*
5. *Extract, transform, and load data through various sources to facilitate exploration for gaining business insights.*
6. *Utilize the numpy and scipy packages to facilitate scientific and numeric computation tasks, including linear algebra and simulation.*

7. *Utilize the pandas package to analyze and wrangle sequential and tabular data.*
8. *Produce data visualizations to effectively communicate data-driven insights using matplotlib and seaborn.*

DABC511 Data Analytics with R
This course is designed to provide a comprehensive introduction to the R programming language for data analysis. Students will learn to load, save, and otherwise wrangle data with effective use of functions in R and relevant libraries, including those within the tidyverse collection. Students will practice deriving insights from data using common statistical techniques, including hypothesis testing and basic statistical modeling; effective visualization; and other frequently used techniques within data analysis. Further, students will learn to successfully communicate their insights, including creating reports with tools like knitr. Students are required to complete a project demonstrating the ability to analyze data in R.

Learning Objectives:
1. *Build code characterized by readability, portability, and efficiency.*
2. *Utilize various data analysis libraries in R to effectively analyze and wrangle data.*
3. *Extract, transform, and load data from various sources to facilitate exploration for gaining business insights.*
4. *Create clear and appealing visualizations which are used to successfully communicate insights derived from the data.*
5. *Interpret the results of statistical tests, techniques, and models, and translate those into actionable insights within the given context.*
6. *Establish meaningful and achievable objectives with business value, and formulate a workflow in R to accomplish those objectives.*
7. *Create effective presentations using various tools in order to create a complete story around a data analysis project, particularly focusing on insights discovered*

DABC516 Business Cases in Data Science
This course was designed to help students place data analytics and data science work in the real-world context of business operations across industries. Students will be presented various business cases in which datasets were explored to gain insights to guide and/or enhance business operations. They will also be required to take given business cases and conceptualize viable project approaches with defined objectives, selected tools and methods, and expected deliverables.

Learning Objectives:
1. *Explain the roles of data analysts and data scientists in today's business world.*
2. *Discuss real world business cases to illustrate the significance of data analytics and data science in different industries and business operational functions.*
3. *Identify tools and methods that were employed by data science professionals in certain business cases to discuss the reasons for such choices.*

4. *Analyze given business cases to determine what objective(s) to achieve, what tools and methods to select, what deliverables to provide, and how the projects should be carried out.*
5. *Incorporate an array of data analytic tools and techniques within project pipelines for various business cases.*
6. *Evaluate data science project proposals for strengths, weaknesses, and opportunities for improvement.*

DABC519 Data Analytics Capstone Project
The capstone project is designed for students to employ the data analytics concepts, tools, and methods they have learned in the bootcamp to solve a business operational problem with real data sets from a real business entity. Students are presented data sets and potential problems to solve. Students are then required to form project teams, develop a project proposal for instructor review and approval, and execute the project. When the project is completed, each project team is required to present the project findings and share the business insights obtained from the research.

Learning Objectives:

1. *Formulate a project objective which aims to reveal actionable and valuable insights.*
2. *Build high quality code that is effective, efficient, robust, and easy to reuse and share.*
3. *Demonstrate proficiency in version control and collaboration for coding and data sharing.*
4. *Select promising methods of exploration and analyses based on the project objectives.*
5. *Apply suitable statistical tools to confirm significance of the finding and properly exclude the possibilities of other confounding factors.*
6. *Gain nontrivial business insights through proper interpretation of the outcome of the analytical methods.*
7. *Integrate appropriate data sources into the exploratory, analytic, and report generating pipeline.*
8. *Present the findings in a comprehensible and effective way.*

<div align="center">**Addendum VII**

To

School Catalog **Version 4.1, January 15, 2021 to December 31, 2021**</div>

Effective on September 2, 2021, the following changes are updated in the School Catalog:

1. On p. 8 toward the bottom, the subheading "**LICENSURE AND APPROVAL**" is replaced with "**LICENSURE, APPROVAL, AND ACCREDITATION**." The same change also applies to the TABLE OF CONTENTS on p. 2 wherein "Licensure and Approvals" is replaced with "Licensure, Approvals, and Accreditation."

2. On the very top of p. 9 of the catalog, delete the sentence "NYC Data Science Academy is currently not accredited by any accrediting agency." The following paragraph is inserted in that place:

   NYC Data Science Academy is accredited by the Accrediting Council for Continuing Education & Training (ACCET). ACCET is listed by the U.S. Department of Education as a nationally recognized accrediting agency. It is located at 1722 N Street, NW, Washington, D.C. 20036, Tel. (202)955-1113, www.accet.org.

3. On p. 44, under the subheading of "**Grievance**," and below the contact information on New York State Education Department toward the bottom of the page, the following paragraphs are added:

   Students may also file a complaint with ACCET by following the instructions below:

   ACCET
   Chair, Complaint Review Committee
   1722 N Street, NW
   Washington, DC 20036
   Telephone: (202) 955-1113 Fax: (202) 955-1118 or (202) 955-5306
   Email: complaints@accet.org
   Website: www.accet.org

   Note: Complainants will receive an acknowledgement of receipt within 15 days.

   Complaints should be in writing and mailed, faxed, or emailed to the ACCET office. Complaints received by phone will be documented, and the complainant will be requested to submit the complaint in writing.

   The letter of complaint must contain the following:
   - A detailed description of the problem(s);
   - The approximate date(s) that the problem(s) occurred;

- The full name(s) and title(s) or position(s) of the individual(s) involved in the problem(s), including both institutional staff and/or other students who were involved;
- Evidence demonstrating that the institution's complaint procedure was followed prior to contacting ACCET;
- The name and mailing address of the complainant; if the complainant specifically requests that anonymity be maintained, ACCET will not reveal his or her name to the institution involved.

In addition to the letter of complaint, copies of any relevant supporting documentation should be forwarded to ACCET (e.g., the enrollment agreement, the syllabus or course outline, correspondence between the student and NYC Data Science Academy).