Master of Science in Data Analytics

Drew University
Caspersen School of Graduate Studies

2019-2020

Purpose of the Handbook

The Master of Science in Data Analytics is a rigorous 30-36 credit applied program that teaches students how to draw information from data.

Data Analytics students focus on the intersection of statistics and computer science, with content knowledge from another discipline or industry and an emphasis on applying skills and technologies in case studies courses, internships, and capstones aligned with a student's interests. Experiential learning is a critical component of this curriculum, in line with Drew University's mission across all three schools.

The curriculum involves courses in statistics, data science, and programming, as well as applied data analytics projects and internship opportunities across many different disciplines and industries. Students complete the program with a portfolio of data analytics projects highlighting the application of their skills to internship and case study projects.

This handbook provides:

- A Quick View of key MS in Data Analytics student expectations.
- Requirements and timelines for the program.
- Review of academic policies and processes most relevant to MS in Data Analytics students.
- A program planning checklist.

This handbook is for student, faculty, and staff guidance and convenience, and it should not replace any information in the Caspersen School Catalog. If there is any contradiction between this catalog and the handbook, the catalog dated to the student's semester of entrance takes precedence.

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A Quick View of Student Expectations

✓ Use your Drew email

Always use your Drew email account or have set it to auto-forward to the email address that you access most frequently. Staff and faculty will send important official notices only to your Drew University email account.

✓ Pay attention to Drew's deadlines and policies

Although you will work closely with your professors and fellow students, the responsibility for your degree progress rests with you. All students are expected to work within Drew policies and procedures. Familiarize yourself with the academic calendar and the deadlines related to withdrawals, grade extensions, and academic petitions. Information can be found on the Registrar's office webpage.

✓ Stay in communication

Stay in communication with Drew. Respond to requests from professors or the administration in a timely fashion, especially as you are working to select your courses or making plans for your internship. If you are wrestling with new ideas, talk things over with colleagues or a friend outside school. If you are struggling to meet course expectations, be in touch with your professor right away. Ask about registration, finances, and academics to the appropriate Drew offices.

Quick View of Data Analytics Requirements

DEGREE REQUIREMENTS (See Academic Catalog for more details)	MS Data Analytics
FOUNDATIONAL COURSES	6 CREDITS
DATA 117 – Introductory Statistics	3 credits
DATA 149 – Introduction to Programming	3 credits
REQUIRED COURSEWORK	30 CREDITS
CORE COURSES	
DATA 501 – Data Analytics: Introduction, History, and Case Studies	3 credits
DATA 502 – Data Visualization and Communication	3 credits
DATA 503 – Applied Regression Analysis	3 credits
DATA 504 – Network and Text Mining	3 credits
DATA 551 – Modeling and Simulation	3 credits
DATA 552 – SQL for Big Data	3 credits
DATA 601 – Statistical Machine Learning	3 credits
REQUIRED CAPSTONE COURSES	
DATA 680 – Data Analytics Internship	3 credits
DATA 668 – Capstone: Case studies in Data Analytics	3 credits
ELECTIVE COURSES (choose one)	
DATA 602 – Topics in Data Analytics	3 credits
DATA 610 – Independent Study in Data Analytics	3 credits
FIN 504 – Financial Quantitative Analysis	3 credits
FIN 622 – Computational Finance and Large Data Analysis	3 credits
TOTAL CREDITS	36 CREDITS

Completing the MS Data Analytics in One Year

Students in the MS Data Analytics choose either an accelerated one-year, full-time track, or a two-year, full-time track starting in either the fall or spring semesters. This section describes how a student can finish the degree in one year. See subsequent sections to learn how to complete the degree in two years, either fall or spring semesters.

The Summer Prior

Before starting their first semester of the MS Data Analytics program, students will need to have covered the core essentials of statistics and programming that are vital for success in their first semester. Students must take two 3-credit courses either at Drew or have equivalent courses noted in their transcripts.

The courses at Drew offered for students are:

- DATA 117 – Introductory Statistics
- DATA 149 – Introduction to Programming.

The Fall Semester

Building on their prior educational experiences, students starting in the fall for the accelerated track will learn basic techniques for data acquisition, visualizing and communicating small and large data sets, and applying methods of regression analysis.

Students should take the following four 3-credit courses:

- DATA 501 – Data Analytics: Introduction, History, and Case Studies
- DATA 502 – Data Visualization and Communication
- DATA 503 – Applied Regression Analysis
- DATA 504 – Network and Text Mining

The Spring Semester

During their spring semester, students become acquainted with methods of modeling and simulating systems of analysis, as well as being introduced to statistical machine learning techniques. In this semester, students will have a choice to either learn how to use SQL databases and the SQL language to manage and query big data, or they can choose to study unstructured

and structured data analysis for questions related to finance. Students will also need to take an additional elective offered at Drew that offer topics of interest related to the Data Analytics program.

Students will take the following three 3-credit courses:

- DATA 551 – Modeling and Simulation
- DATA 601 – Statistical Machine Learning
- DATA 552 – SQL for Big Data **OR** FIN 622 – Computational Finance and Large Data Analysis

Students will also choose between one of the following 3-credit electives:

- DATA 602 – Topics in Data Analytics
- DATA 610 – Independent Study in Data Analytics
- FIN 504 – Financial Quantitative Analysis

The Summer Term

Focusing on experiential learning and collaboration, the final semester will challenge students to apply what they learned through both an internship (DATA 680 – Data Analytics Internship) and through their comprehensive final project (DATA 688 – Capstone: Case studies in Data Analytics).

The data analytics internship offers students the chance to apply their analytics knowledge and skills within an industry setting after completing their main coursework. Students will have regular communication with both the course instructor and peers throughout the internship.

The capstone allows students to bring together their techniques and perspectives gained through the program in a small group, analyzing case studies from diverse industries with attention paid to project goals, method selection, ethical considerations, and data privacy. This course is taken online.

Completing the MS Data Analytics in Two Years (Fall Start)

Students in the MS Data Analytics who wish to undergo the program at a less accelerated pace can choose to complete the program in a two-year, full-time track. This can begin either during the fall semester or the spring semester. This section describes how a student can finish the degree in two years with a fall start. The following section will indicate the plan of action for students beginning in the spring.

The Summer Prior

Before starting the MS Data Analytics program, students will need to have covered the core essentials of statistics and programming that are vital for success in their first semester. Students must take two 3-credit courses either at Drew or have equivalent courses noted in their transcripts.

The courses at Drew offered for students are:

- DATA 117 – Introductory Statistics
- DATA 149 – Introduction to Programming.

The Year One Fall Semester

Students will spend their first fall semester by being introduced to data analytics and learning the basic techniques of data acquisition, data visualization and communication, and methods of regression analysis.

Students should take the following three 3-credit courses:

- DATA 501 – Data Analytics: Introduction, History, and Case Studies
- DATA 502 – Data Visualization and Communication
- DATA 503 – Applied Regression Analysis

The Year One Spring Semester

Building on what they learned in their fall semester, students will become acquainted with methods of modeling and simulating systems of analysis, as well as being introduced to statistical machine learning techniques and the use of SQL databases and languages in order to manage and query big data.

Students should take the following three 3-credit courses:

- DATA 551 – Modeling and Simulation
- DATA 552 – SQL for Big Data
- DATA 601 – Statistical Machine Learning

The Year Two Fall Semester

Year two splits coursework between class-based education and experiential learning and collaboration through an industry setting internship. In the classroom, students focus on three aspects of data analytics: Web search, recommendation systems, and social network analysis. Students will also need to take an additional elective offered at Drew that offer topics of interest related to the program.

The data analytics internship offers students the chance to apply their analytics knowledge and skills within an industry setting as they complete their main coursework. Students will have regular communication with both the course instructor and peers throughout the internship.

Students should take the following two 3-credit courses:

- DATA 504 – Network and Text Mining
- DATA 680 – Data Analytics Internship

Students will also choose between one of the following 3-credit electives:

- DATA 602 – Topics in Data Analytics
- DATA 610 – Independent Study in Data Analytics
- FIN 504 – Financial Quantitative Analysis
- FIN 622 – Computation Finance and Large Data Analysis

The Year Two Spring Semester

In the final semester, students will be challenged to apply what they have learned through their comprehensive final project (DATA 688 – Capstone: Case studies in Data Analytics). The capstone allows students to bring together their techniques and perspectives gained through the program in a small group, analyzing case studies from diverse industries with attention paid to project goals, method selection, ethical considerations, and data privacy. This course is taken online.

Completing the MS Data Analytics in Two Years (Spring Start)

The Summer or Fall Prior

Before starting the MS Data Analytics program, students will need to have covered the core essentials of statistics and programming that are vital for success in their first semester. Students must take two 3-credit courses either at Drew or have equivalent courses noted in their transcripts.

The courses at Drew offered for students are:

- DATA 117 – Introductory Statistics
- DATA 149 – Introduction to Programming.

The Year One Spring Semester

Students will spend their first semester learning how to model and simulate systems using a variety of techniques and statistical models, as well as being introduced to statistical machine learning techniques for analyzing data using the statistical programming language R. Students will also need to take an additional elective offered at Drew that offer topics of interest related to the program.

Students should take the following two 3-credit courses:

- DATA 551 – Modeling and Simulation
- DATA 601 – Statistical Machine Learning

Students will also choose between one of the following 3-credit electives:

- DATA 602 – Topics in Data Analytics
- DATA 610 – Independent Study in Data Analytics
- FIN 504 – Financial Quantitative Analysis
- FIN 622 – Computation Finance and Large Data Analysis

The Year One Fall Semester

During the fall semester, students will be introduced to basic techniques of data acquisition through small projects and case studies. They will also learn methods of data visualization and

communication, as well as methods of regression analysis that will be used throughout their program.

Students should take the following three 3-credit courses:

- DATA 501 – Data Analytics: Introduction, History, and Case Studies
- DATA 502 – Data Visualization and Communication
- DATA 503 – Applied Regression Analysis

The Year Two Spring Semester

Year two splits coursework between class-based education, experiential learning in an industry setting internship, and completion of a comprehensive final project. In the classroom, students will cover the use of SQL databases and the SQL language to manage and query big data.

The data analytics internship offers students the chance to apply their analytics knowledge and skills within an industry setting as they complete their main coursework. Students will have regular communication with both the course instructor and peers throughout the internship.

Finally, students will be challenged to apply what they have learned through their capstone project. The capstone allows students to bring their techniques and perspectives gained through the program in a small group, analyzing case studies from diverse industries with attention paid to project goals, method selection, ethical considerations and data privacy. This course is taken online.

Students should take the following three 3-credit courses:

- DATA 552 – SQL for Big Data
- DATA 680 – Data Analytics Internship
- DATA 688 – Capstone: Case studies in Data Analytics

The Year Two Fall Semester

In their final semester, students will finish their coursework by covering closely related topics in data analytics such as Web search, recommendation systems, and social network analysis.

Students should take the following one 3-credit course:

- DATA 504 – Network and Text Mining

Program Timelines

The following are visual timelines that provide an overview for completing the MS Data Analytics program in its entirety, depending on whether a student is in the one-year accelerated program or the two-year program (fall or spring start). Excluded from the timelines are the prerequisite, foundational courses (DATA 117 – Introductory Statistics and DATA 149 – Introduction to Programming or their equivalent courses), which must be completed prior to starting coursework.

ACCELERATED ONE YEAR

Year One: 30-36 credits completed		
FALL SEMESTER 12 credits	SPRING SEMESTER 12 credits	SUMMER TERM 6 credits
DATA 501 – Data Analytics: Introduction, History, and Case Studies **DATA 502** – Data Visualization and Communication **DATA 503** – Applied Regression Analysis **DATA 504** – Network and Text Mining	**DATA 551** – Modeling and Simulation **DATA 601** – Statistical Machine Learning **DATA 552** – SQL for Big Data **OR FIN 622** – Computational Finance and Large Data Analysis **An elective course of student's choice**	**DATA 680** – Data Analytics Internship **DATA 688** – Capstone: Case studies in Data Analytics

TWO YEAR (FALL START)

Year One: 18 credits completed	
FALL SEMESTER 9 credits	SPRING SEMESTER 9 credits
DATA 501 – Data Analytics: Introduction, History, and Case Studies **DATA 502** – Data Visualization and Communication **DATA 503** – Applied Regression Analysis	**DATA 551** – Modeling and Simulation **DATA 552** – SQL for Big Data **DATA 601** – Statistical Machine Learning
FALL SEMESTER 3 credits	SPRING SEMESTER 3 credits
DATA 504 – Network and Text Mining **DATA 680** – Data Analytics Internship **An elective course of student's choice**	**DATA 688** – Capstone: Case studies in Data Analytics
TOTAL CREDITS: 30-36 credits completed	

TWO YEAR (SPRING START)

Year One: 18 credits completed	
SPRING SEMESTER 9 credits	FALL SEMESTER 9 credits
DATA 551 – Modeling and Simulation **DATA 601** – Statistical Machine Learning **An elective course of student's choice**	**DATA 501** – Data Analytics: Introduction, History, and Case Studies **DATA 502** – Data Visualization and Communication **DATA 503** – Applied Regression analysis
SPRING SEMESTER 9 credits	FALL SEMESTER 3 credits
DATA 552 – SQL for Big Data **DATA 680** – Data Analytics Internship **DATA 688** – Capstone: Case studies in Data Analytics	**DATA 504** – Network and Text Mining
TOTAL CREDITS: 30-36 credits completed	

Frequently Asked Questions

The Caspersen School of Graduate Studies' Academic Policies are published annually in the CSGS catalog. This document can be accessed in its entirety from the Registrar's webpage.

Who is my advisor?

Dr. Sarah Abramowitz (sabramow@drew.edu) is the Director of the Master of Science in Data Analytics program and serves as faculty advisor for all students in the degree program.

Can I transfer credits into my degree?

Credit transfers are not permitted in the MS Data Analytics degree.

What happens if bad weather prevents me from getting to class?

Students are expected to attend class when the University is open. Long-distance commuting students should stay in close contact with the Professor in cases of inclement weather. The decision to cancel classes due to weather will be made by the University. To sign up for the University's emergency notification system, or to view policies regarding snow closings, visit: https://www.drew.edu/emergency.

How do I get accommodations for a disability?

Students who require accommodations should contact the Office of Accessibility Resources (OAR), in Brothers College, 973-408-3962, for a private, confidential appointment. Accommodation Request Letters are issued to students after documentation, written by a qualified professional, is reviewed and accommodations are approved by OAR. For more information, see: http://www.drew.edu/academic-services/disabilityservices. Accommodations are implemented by faculty only after the student presents the Accommodation Request Letter issued by OAR. Letters should be presented to the faculty at least one week before the accommodation is needed. Students' requests for accommodations thus should be submitted to OAR within the first two weeks of a course. Returning students with previously approved accommodations should make letter requests for the current semester to Accessibility Resources within the first two weeks of class.

What resources are available to help me with my writing?

Located in the Vivian A. Bull Academic Commons in the Library, the University Writing Center (UWC), under the umbrella of the Center for Academic Excellence(CAE), provide services for students, faculty, and staff to strengthen their writing skills. While walk-in visits are welcome, appointments are encouraged and can be made to provide concentrated and intentional assistance. Appointments can be made by visiting https://drew.mywconline.com/. First time users will need to create a registration account to set up an appointment, preferably using their Drew email to sign up.

The UWC, in particular, is committed to helping students with their academic and professional writing in a friendly and respectful manner. It offers individual tutoring for writing, languages, and ELL; free writing and grammar workshops; thesis and dissertation support; and faculty writing support. The center strives to create an academic community of independent writers who are able to recognize strategies in order to improve their own writing.

Registration Status

Students in the MS Data Analytics are expected to maintain communication and connection with Drew throughout the entire program. Different registration statuses indicate your progress through the program.

Active

Students who are consistently registered for classes will maintain "active" status with Drew. This status allows students access to all academic, support, and student life services at the University. Students who fail to register in any regular semester will have their status revised to "inactive." Students not registered two semesters will be automatically withdrawn from the program and will have to petition for re-entry through the Registrar's webpage.

Leave of Absence

Unexpected life events or personal challenges can interrupt a student's ability to make progress in the degree. At times like this, students might reduce the number of credits they plan to take or consider a complete leave of absence. This status stops the clock on your allowed time to completion of your degree. In addition to the two years allowed to complete the program, students are allowed two semesters of official leave from the program. As a leave of absence is intended to provide time away from the work of the degree, students do not have access to academic, support, and student life services at the University.

Students may apply for a leave of absence at any time during matriculation in the program. To obtain a leave of absence from the program—whether for medical, financial, or personal reasons—students must file a leave of absence application line. This form is found on the Registrar's webpage. Any leave of absence that is approved becomes effective as of the date it is processes and is not applied retroactively.

Students who take the leave during a semester should be aware of the grading and refund policies of the university. A leave of absence does not exempt a student from receiving grades for courses they have been registered for nor does it guarantee a refund of tuition paid. The date a leave is requested determines the amount of tuition refund (if any). For example, a leave of absence requested and received in the middle or at the end of a semester will not be effective from the beginning of the semester. If you are considering a leave of absence, please review the leave policies and deadlines found on the Registrar and Business Office webpages.
RE-ENTRY FOLLOWING LEAVE OF ABSENCE: When a student plans to return to the program following a leave of absence, they must submit a Re-Entry form, which can be found on the Registrar's webpage. If a student does not return from a leave of absence in the semester

following the leave, the student's status will be revise to "inactive." If the student is inactive for two semesters, they will be withdrawn from the program by the University.

Medical Withdrawal from a Semester

Students with personal emergencies that occur after the drop/add dates have passed may apply for a medical withdrawal from an entire semester. The student must provide documentation of the medical situation. Upon approval by the Associate Dean for the Theological School, the student will be put on leave of absence and receive "W"s for all courses in the semester. Regular tuition refund policies apply to medical withdrawals as to leaves of absence.

Voluntary Withdrawal from the Program

If for any reason a student finds it necessary to withdraw from the program, it is important that this decision be discussed with the Director beforehand and that an appropriate and timely written notice is given to the Director and the University. In order to withdraw from the program, a student completes a Withdrawal form on the Registrar's page. Any notice of withdrawal from the program becomes official as of the date it is received. A student who has withdrawn from the program has no access to academic, support, and student life services at the University. A student wishing to re-enter a program after withdrawing must re-apply to the program through the Graduate Admissions office.

All withdrawals are subject to the Drew University refund and grading policies and deadlines. Students are encouraged to review these policies with the Director of Doctoral Studies, the Registrar, and the Business Office before submitting an application for withdrawal.

Academic Standing and Financial Aid

In addition to regular course grading and assessments, students are evaluated each semester according to the standards of academic achievement and progress. The Graduate Academic Standing Committee reviews each student's academic performance after each semester and may revise student standing based on this review.

MS Data Analytics degree students must maintain a minimum 3.0 GPA each semester and a cumulative minimum 3.0 GPA. Any student who fails to achieve this GPA minimum is placed on academic probation for one semester. If that student is placed on strict academic probation for the following semester, they may be ineligible for financial assistance. Full-time students in the accelerated track are expected to complete the degree in two semesters, while full-time students in the two-year track are expected to complete the degree in four semesters. Drew's financial aid awards are limited to a total of six semesters. All academic requirements for the degree must be completed within five years from the date of initial matriculation.

Warning or Probation

Students who do not achieve a 3.0 GPA in any semester will be placed on warning or probation based on the criteria outlined in the Caspersen School of Graduate Studies catalog posted on the Registrar's webpage. Students placed on academic probation are returned to good standing if they achieve an overall 3.0 GPA average or better at the next time of review.

Required Withdrawal

A student may be withdrawn from the program by the University for any of the following:

- Receiving all "F" grades in any one semester
- Being on probation and not returning to Good Standing at the end of the probationary semester
- Having two or more non-consecutive semesters on Warning or Probation
- A violation of the University's Academic Integrity or Human Rights policies

Under exceptional circumstances only, a student on Required Withdrawal may appeal to the Graduate Academic Standing Committee to be re-admitted to the next term. If the appeal is approved, the student will be reinstated and placed on Probation. Such re-admissions are granted only in unusual cases, and in no cases may a student be re-admitted twice.

Standards of Academic Integrity

Drew University Standards

Drew University has established standards of academic integrity and procedures. These basic standards apply to all work done at Drew. Students are expected to study and comply with these principles. You can find the Academic Integrity policy for the Caspersen School of Graduate Studies in the academic catalog on the Registrar's webpage.

The standards of academic integrity apply to information that is presented orally, in writing, or via the computer, in any format ranging from the most informal comment to a formal research paper or the writing of the final paper in reference to the project. These standards apply to source material gathered from other people, from written texts, from computer programs, from the Internet, or from any other location.

The following are examples of academic dishonesty, as defined in this policy:

Duplicate Submission - Submitting one's work in identical or similar form to fulfill more than one requirement without prior approval of the relevant faculty members is a breach of academic integrity. This includes using a paper for more than one course or submitting material previously used to meet another requirement.

False Citation - Listing an author, title, or page reference as the source for obtained material, when the material actually came from another source or from another location within that source, is a breach of academic integrity. See the *Turabian Manual of Style* (latest edition and/or online quick guide) for how to cite quotations within the body of another author.

Plagiarism - Plagiarism is the act of appropriating or imitating the language, ideas, or thoughts of another and presenting them as one's own or without proper acknowledgment. This includes submitting as one's own a thesis, a paper, or part of a paper written by another person, whether that material was stolen, purchased, or shared freely. It also includes submitting a paper containing insufficient citation or misuse of source material. When in doubt, err on the said of referencing material. Note that each syllabus will outline clearly the Drew University policy.

Sanctions

Sanctions are imposed for demonstrated breaches of academic honesty or scholarly integrity. See the section of the catalog on procedures for dealing with allegations of academic dishonesty. If dishonesty is determined, the sanctions may range from requiring that an assignment be redone to automatic failure of a course to dismissal from the Caspersen School.

Drew University Offices

Center for Academic Excellence
Rose Library, Vivian A. Bull Academic Commons (First Floor)
https://www.drew.edu/center-academic-excellence/

Campus Life and Student Affairs
Ehinger Center, Room 147
(973) 408-3390
stuaff@drew.edu

Financial Aid Office
Brother's College, Lower Level
(973) 408-3112
finaid@drew.edu

Student Accounts
Brother's College, Lower Level
(973) 408-3114
studentaccounts@drew.edu

Office of the Registrar
Brother's College, Lower Level
(973) 408-3025
regist@drew.edu

Graduate Academic Services
Soren M. Hessler, Director
Seminary Hall, Room 20
(973) 408-3410
shessler@drew.edu

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