



# Data Science Major

[www.Statistics.Pitt.edu](http://www.Statistics.Pitt.edu)

[www.Mathematics.Pitt.edu](http://www.Mathematics.Pitt.edu)

well as the development of new methodologies spanning these fields. The undergraduate Data Science major establishes a framework to train University of Pittsburgh students to participate fully in this data revolution.

This major will allow students to gain skill sets that span key areas of statistics, computer science and mathematics, with foundational training providing literacy in four areas (data, algorithmic, mathematical, and statistical) that every student needs to master data science; the development of expertise that connects theory to the solution of real-world problems; and specialization towards more specific career focuses. Completing this major will prepare students to work as a data science professional or to pursue graduate study in a direction involving data in a significant way.

## Required courses for the Data Science major

The Data Science major requires the completion of 61 credits distributed as follows.

### Foundational courses

All of the following courses are required except as noted.

CS 0401 Intermediate Programming

CS 0445 Data Structures

MATH 0220 Analytic Geometry and Calculus 1

MATH 0230 Analytic Geometry and Calculus 2

MATH 0280 Introduction to Matrices **or**

MATH 1180 Linear Algebra

MATH 0480 Applied Discrete Mathematics **or**

CS 0441 Applied Discrete Mathematics

STAT 1061 Data Science Foundations **or**

CMPINF 1061 Data Science Foundations

STAT 1151 Introduction to Probability **or**

STAT 1631 Introduction to Probability

STAT 1152 Introduction to Mathematical Statistics **or**

STAT 1632 Introduction to Mathematical Statistics

### Expertise courses

All of the following courses are required except as noted.

CS 0590 Social Implications for Computing Technology

CS 1501 Algorithm Implementation

CS 1656 Introduction to Data Science

MATH 1101 Optimization

STAT 1261 Principles of Data Science

STAT 1361 Statistical Learning and Data Science **or**

CS 1675 Introduction to Machine Learning

## Specialization

**Modeling**

Students pursuing a modeling specialization will enhance their ability to develop and harness theoretical tools to characterize structure within data and to represent and analyze processes that may underlie this structure.

CS 1538