



NJIT@JerseyCity

# Certificate in Big Data Essentials

## Certificate in Big Data Essentials (12 credits) Training Data Engineers

This certificate program provides essential skills for **data engineers** to design their data infrastructure and apply relevant tools and techniques on their data assets. This includes techniques for data modeling, data integration, efficient manipulation of big data and efficient data pipeline processing.

The curriculum focuses on the technologies behind managing vast amounts of data, writing complex queries on the data and optimizing the performance of database/storage systems to reduce operational costs. Participants learn how to store, access and analyze Big Data and how to efficiently extract information from that data to make important financial, business and social decisions.

The program consists of four courses of three credits each, (two core courses two electives), typically taught over two semesters of 15 weeks each. Instruction includes formal lectures as well as hands-on projects involving big data sets and data pipeline processing.

In this program, we make extensive use of software tools such as SQL, MongoDB, Hadoop, Hive, Pig and UML. Students work on assignments and projects covering both theory and applications on real data with guidance from the professor and teaching assistants.

### Recommended part-time credit schedule:

First semester: six, Second semester: six. Total: 12 credits over two semesters (incl. summer).

### Core (required) courses:

- CS 644 Big Data
- CS 636 Data Analytics with R Programming

### Sample electives:

- CS 631 Database Management System Design
- CS 634 Data Mining
- CS 670 Artificial Intelligence
- CS 675 Machine Learning
- CS 677 Deep Learning
- IS 601 Web Systems Development
- Math 661 Applied Statistics

To be eligible for admission to the certificate program, a candidate must hold an undergraduate degree with a minimum GPA of 2.6 on a 4.0 scale.

Credit earned in this certificate program can be used within seven years towards the M.S. in Computer Science or M.S. in Data Science degree. A GPA of 3.0 in the certificate program is required to be eligible for admission into an M.S. program.

### Program Outcomes:

- Design your company's big data management infrastructure to facilitate corporate decision-making.
- Work with the company's software engineers, data analytics teams, data scientists and data warehouse engineers to aid in the implementation of database requirements, analyze performance and troubleshoot issues.
- Perform ad-hoc analyses of data stored in the company databases and write SQL scripts, stored procedures, functions and views.

**Tuition + fees for ALL non-F1 students**  
(independent of residency and visa status)  
at 2020-21 rates, assuming two courses  
per consecutive semester:

**Fall semester:** \$6,522

**Spring semester:** \$6,522

**Summer semester:** \$5,577

**Total tuition + fees for certificate**

**Fall start:** \$13,044

**Spring start:** \$12,099

**Summer start:** \$12,099

For more information and to apply, contact:

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**NJIT**  
New Jersey Institute  
of Technology