Data Analytics

Data analytics is the application of fundamental scientific principles towards the analysis of large, complex data sets to answer questions, extract patterns and predict behavior. Practitioners in this rapidly growing field have expertise that cuts across core disciplines of computer science, mathematics and statistics, and critical thinking, problem-solving and communication skills. The application of data analytics engages a wide range of fields, including business and finance, energy and the environment, health care, logistics, and security.

Data analytics includes the set of skills necessary to identify how to manage, represent and manipulate large and complex data stores; how to abstract, model and effectively analyze such data; and how to create quantitative visual cues to help explain and make informed decisions from those data. By making sense of a vast information landscape, data analytics has the potential to—and is already starting to—transform the way we understand and interact with the world.

Pursuing Data Analytics at Ohio State
Students interested in studying data analytics in college should develop strengths in quantitative fields. High school courses in pre-calculus, calculus and computer science (including advanced placement and post-secondary courses) would allow a student to start the data analytics major without delay. High school course work in probability and statistics is useful preparation but not necessary. Students interested in data analytics should have a passion for identifying problems; for collecting, organizing and analyzing data that help make sense of the problems; and for communicating insights verbally, visually and in written form.

Students declare a pre-major in data analytics when they apply to the university. To move from the pre-major to the major, students should meet with a data analytics major advisor and fill out the online application form at data-analytics.osu.edu.

There are several possible specializations within the major, as well as areas of focus within specializations. Early planning with an advisor will allow students to make timely progress toward satisfying major requirements.

Data Analytics Educational Objectives
A student graduating with a Bachelor of Science degree with a major in data analytics will demonstrate:

- An understanding of and ability to apply computer science principles relating to data representation, retrieval, programming and analysis of big data.
- An understanding of and ability to apply statistical methods, models and concepts to data analysis and to draw conclusions supported by data.
- Critical thinking skills associated with problem identification, problem solving and decision making.
- The ability to apply knowledge gained from one area to problems and data in another.
- The ability to communicate findings and their implications and to apply them effectively in organizational settings.

Data Analytics Requirements
The requirements for the major are broken down into two components: core fundamentals and an area of specialization. All students take courses covering the fundamentals of data analytics, including:

- Calculus and linear algebra
- Data mining and statistical learning
- Database design and cloud computing
- Optimization
- Probability and statistical inference
- Regression modeling and statistical decision making
- Software design and programming
- Visualization

Each student also chooses one of the following specializations to learn how data analytics is applied in a particular field:

- Biomedical informatics
- Business analytics
- Computational analytics

Course work in some specializations can be tailored based on a student’s interests. Each specialization includes a capstone or integrative experiential component. It is recommended that students choose their specialization early on with the help of their academic advisor.
Co-Curricular Opportunities
Ohio State offers many opportunities for students to learn and grow outside of the classroom. These opportunities range from cooperative education (co-op) and internships to study abroad programs to student organizations. Co-ops and internships place students in professional environments while they are Ohio State students. Ohio State offers more than 100 study abroad programs in 40 countries around the world. In addition, there are hundreds of student organizations on campus to meet the interests of a diverse student population.

Honors Program
Ohio State offers the Honors and Scholars programs to create an environment of intellectual support and stimulation within a close-knit community of high-ability undergraduate students. Through these programs, students have access to smaller classes, undergraduate research opportunities, close working relationships with faculty, priority scheduling and unique housing options. For more information about these opportunities, visit honors-scholars.osu.edu.

Career Prospects in Data Analytics
Although it is a relatively new field, data science and analytics has been described by the Harvard Business Review as the “sexiest job of the 21st century.” A major in data analytics will prepare students to work in a wide range of fields. Companies both locally and nationally are actively recruiting employees who have core and specialized skills in data analytics.

Career prospects in data analytics are very promising. A broad analysis of labor statistics, census data and economic indicators by McKinsey & Company has shown that data analysis is now an integral business function and important factor for production in nearly every segment of the economy, and that there will be a large shortage of prospective employees with data-analytic skills in the near term.

Revised March 2014. Information subject to change. For the most up-to-date information on the data analytics program, visit data-analytics.osu.edu.

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