CSDA - Computer Science Data Analytics | Grad

CSDA 5110 Analytics Programming with R (3)

This course teaches students how to program in R and how to use R for effective data analysis. Students will learn how to install and configure software necessary for a statistical programming environment. The course covers practical issues in statistical computing which includes programming in R, reading data in R, accessing R packages, writing R functions, debugging, organizing and commenting R code. Topics in statistical data analysis and optimization will provide working examples.

CSDA 5130 Social and Ethical Issues in Analytics (3)

There is a subtle balance between improvements in business operations by using big data analytics and increased risk if (inadvertently) overstepping certain legal or social boundaries. This course addresses the pros and cons of using data analytics in business and social, ethical and security issues associated with it. Several real world cases will be discussed and analyzed in the course.

CSDA 5210 Databases and Data Warehouses (3)

This course will provide a foundation for understanding organization databases technology by examining the way databases are designed, used and managed. The course will introduce fundamental concepts related to operational and data warehouse databases. The course will also cover the principles of building data warehouse and data mart cubes as well as extracting required data with SQL and MDX techniques. Students use various query designer software to improve their database query proficiency.

CSDA 5230 Data Analytics (3)

This course will introduce the field of data analytics, which has been defined as the extensive use of data, statistical and quantitative analysis, exploratory and predictive models, and fact-based management to drive decisions and actions. The course covers all analytics stages such as setting analytics project objectives, building a data warehouse model, extracting-transforming-loading, implementing analytics, and creating visualization. Also, the application of selected data analytics techniques to business data is illustrated. **Prerequisites**: CSDA 5210.

CSDA 5240 Database Programming (3)

Students in this course will learn programming in SQL that enables users to perform various types of data manipulation to satisfy business requirements. Students will also learn how to use procedural SQL to accomplish actions to implement business applications. **Prerequisite**: CSDA 5210.

CSDA 5310 Data Visualization (3)

This course studies techniques and methods for creating effective reports and dashboards based on principles from graphic design, visual art, perceptual psychology and cognitive science. Students will be introduced to the basic as well as advanced visualization tools. The course is targeted toward building better visualization tools for analytics. **Prerequisite**: CSDA 5230.or CSIS 5320.

CSDA 5320 Analytics Applications using Python (3)

This course emphasizes principles of analytical application development, style and testing with Python. In this course, students will learn how to configure an integrated environment for data analytics applications using Python. Students will utilize libraries for data preparation, analysis, modeling, machine learning and data visualization. **Prerequisite**: BUSN 5760 and CSDA 5110.

CSDA 5330 Machine Learning for Predictive Analytics (3)

This course studies algorithms and computational paradigms that allow computers to find patterns and regularities in data. Students will study what is currently regarded as the key elements of a more general process called "knowledge discovery" that deals with extracting useful knowledge from raw data. The course will cover supervise and unsupervised machine learning models such as association, classifying, and regression models and will illustrate the whole process by industry based applications. **Prerequisites**: CSDA 5110 and BUSN 5760.

CSDA 5410 Time Series Analytics (3)

This course gives students a better understanding of the concepts and the technologies in time series analysis. The course equips students with various forecasting techniques and knowledge on modern statistical methods for analyzing time series data. This course covers three areas in time series analytics: I. Univariate methods; II. Regression methods; III. ARIMA models. **Prerequisites**: CSDA 5320 and CSDA 5330.

CSDA 5430 Predictive Analytics (3)

This course introduces students to predictive modeling methods, approaches and tools. Students acquire skills in predictive analytics that allow them to develop and use advanced predictive analytics methods. They gain expertise in the use of popular tools and software for predictive analytics and learn how to develop predictive analytics questions, identify and select the most appropriate predictive analytics methods and tools, apply these methods to answer the respective questions, and prepare data-driven solutions. **Prerequisites**: CSDA 5320 and CSDA 5330.

CSDA 6010 Analytics Practicum (3)

This practicum puts into practice all the analytics concepts covered in the MS in data analytics program. Students use descriptive, predictive and prescriptive analytics and models, tools and methods to develop multidisciplinary business insights from data. They utilize skills that enable them to present solutions to problems and provide answers to business questions in various business disciplines through hands-on exercises and a term project. Should be taken in the student's last semester. **Prerequisites**: CSDA 5410 and CSDA 5430.

CSDA 6500 Data Analytics Internship

Students undertake, with the supervision of a qualified professional, an approved internship in a data analytics-related setting. The work experience involves professional data analytics duties. The academic aspects involves written assignments by the faculty advisor. The outline of duties and evaluative methods are established by the student and the internship professional mentor and approved by the faculty advisor prior to initiation of the programs. This course is not a required course and cannot be applied to the 36 required credit hours for the program.

Course Descriptions