

# DATA ANALYTICS (DA)

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## Data Analytics (DA) Courses

### DA 6213. Data-Driven Decision Making and Design. (3-0) 3 Credit Hours.

This course introduces students to the process of making organizational decisions using data-driven techniques. Specifically, this course emphasizes question formulation, hypothesis development, data analysis, model building, and model testing using business case studies. The first component of this course focusses on data-driven decision making using linear and logistic regression analysis. The second component of this course focusses on time series analysis using regression, Exponential Smoothing, ARIMA, ARIMAX, and Unobserved Component modeling-based approaches. The third component of this course focusses on survival analysis using non-parametric, semi-parametric, and parametric methods. Appropriate statistical software will be used throughout this course to demonstrate various methods. Differential tuition: \$387.

### DA 6223. Data Analytics Tools and Techniques. (3-0) 3 Credit Hours.

Students will be provided the opportunity to gain education and experience with SAS Enterprise Guide and SAS Enterprise Miner, a leading commercial tool for analytical industry. Students will become familiar with data preparation process, including data imports, data merge, data cleaning, data transformation, conditional processing, data summary, and data visualization techniques using SAS software. Statistical modeling and machine learning are also introduced in SAS Enterprise Guide and Enterprise Miner. Students will not become scientific programmers from this course, nor will they learn the formalisms of programming per se; rather, they will be provided the opportunity to learn and experience a complete process of data analytics.. Differential Tuition: \$387.

### DA 6233. Data Analytics Visualization and Communication. (3-0) 3 Credit Hours.

Since the purpose data analytics is to inform and facilitate better data-driven decisions, and transform data to information and knowledge, the ability to effectively communicate data aggregations, summarizations, and analytic findings to decision makers is very important. The ability to communicate highly complex analyses and scientific findings to a non-technical audience is challenging. This course will educate students on common mistakes and success factors in technical communication, and give them experience communicating findings orally and in writing. The course will also focus heavily on data analytics visualization approaches and tools. Students will be provided the opportunity to learn common methods for data visualization for a wide variety of data types and data analytics applications. Differential Tuition: \$387.

### DA 6813. Data Analytics Applications. (3-0) 3 Credit Hours.

Students will be presented a big picture understanding of data analytics, including its purpose, common benefits and challenges, important analytic processes, and what is needed to perform data analytics, such as skills, tools, technology, etc. Students will be introduced to a wide variety of data analytics applications in a wide variety of fields, which may include some of the topics from fields such as information technology, cyber security, bioinformatics, biomedical/health, insurance and risk, finance, economics, accounting, business intelligence, crime and fraud detection, marketing and customer analytics, energy and environment, manufacturing and operations, and logistics and supply chain. Differential tuition: \$387.

### DA 6821. Data Analytics Practicum I. (1-0) 1 Credit Hour.

This course presents students with practical knowledge, skills, and experience needed to conduct real-world, high-quality data analytics in an application area of interest. Students will meet formally with their peers and the instructor for the purpose of facilitating the practicum experience. In the first 1 credit semester of this course students will learn how to identify the proper statistical technique to apply to a problem, complete a set of modules that review basic statistical fundamentals and have the opportunity to gain a first experience at data analysis using small time series data sets. During the second 2 credit semester of the practicum, students will engage in a project that incorporates the following steps of the data analytics process: problem defining, question formulation, hypothesis development, preliminary analytics, analytical design, data acquisition, data preparation and pre-processing, and initial data analysis as well as develop some fundamental coding skills using a large, real world data set. In addition, they will acquire training in analytical and statistical techniques including introduction to social network analysis as well as an introduction to a number of other statistical methods designed to encourage the student to explore and learn more advanced techniques. may be repeated for credit. Differential Tuition: \$129.

### DA 6822. Data Analytics Practicum I. (2-0) 2 Credit Hours.

This course presents students with practical knowledge, skills, and experience needed to conduct real-world, high-quality data analytics in an application area of interest. Students will meet formally with their peers and the instructor for the purpose of facilitating the practicum experience. In the first 1 credit semester of this course students will learn how to identify the proper statistical technique to apply to a problem, complete a set of modules that review basic statistical fundamentals and have the opportunity to gain a first experience at data analysis using small time series data sets. During the second 2 credit semester of the practicum, students will engage in a project that incorporates the following steps of the data analytics process: problem defining, question formulation, hypothesis development, preliminary analytics, analytical design, data acquisition, data preparation and pre-processing, and initial data analysis as well as develop some fundamental coding skills using a large, real world data set. In addition, they will acquire training in analytical and statistical techniques including introduction to social network analysis as well as an introduction to a number of other statistical methods designed to encourage the student to explore and learn more advanced techniques. Differential Tuition: \$258.

**DA 6823. Data Analytics Practicum I. (3-0) 3 Credit Hours.**

Prerequisites: DA 6213, DA 6813, and STA 6443. This course presents students with practical knowledge, skills, and experience needed to conduct real-world, high-quality data analytics in an application area of interest. Students will meet formally with their peers and the instructor for the purpose of facilitating the practicum experience. In the first 1 credit semester of this course students will learn how to identify the proper statistical technique to apply to a problem, complete a set of modules that review basic statistical fundamentals and have the opportunity to gain a first experience at data analysis using small time series data sets. During the second 2 credit semester of the practicum, students will engage in a project that incorporates the following steps of the data analytics process: problem defining, question formulation, hypothesis development, preliminary analytics, analytical design, data acquisition, data preparation and pre-processing, and initial data analysis as well as develop some fundamental coding skills using a large, real world data set. In addition, they will acquire training in analytical and statistical techniques including introduction to social network analysis as well as an introduction to a number of other statistical methods designed to encourage the student to explore and learn more advanced techniques. Differential Tuition: \$387.

**DA 6833. Data Analytics Practicum II. (3-0) 3 Credit Hours.**

Prerequisite: DA 6823. This course continues the practicum experience in the same manner as Data Analytics Practicum I. Students will continue their major data analytics project, focusing on the analysis and presentation of results portion of the process. The next steps will be detailed data analysis, conclusion drawing, report preparation and refinement, presentation preparation and final presentation. The practicum will culminate in a formal, completed report to the supporting organization, as well as to data analytics peers and professors. Students who earn a grade of "B" (3.0) or better in this course will satisfy the comprehensive examination requirement. A student who receives a grade of "B-," "C+," or "C" may still satisfy this requirement by successfully passing a comprehensive examination as set out in this catalog. Differential Tuition: \$387.