

# DECISION ANALYTICS (DAPT)

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## **DAPT 611. Analysis and Design of Database Systems. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Focuses on relational databases for structured data and includes entity relational diagram and extended entity relational diagram and transformation of ERD and EERD into relational schema. The course will give students competence in SQL and other search techniques, data validation and data cleansing.

## **DAPT 612. Text Mining and Unstructured Data. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Focuses on unstructured data and includes the topics: creation of XML documents, creating/validating ontology; identifying terms and their relationships and converting them into an ontology using an ontology editor such as Protégé; object-oriented programs; extracting keywords and key phrases; term similarity measure and term frequency.

## **DAPT 613. Tools for Business Intelligence. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Provides students with techniques and practices for modern decision-making in support of business/corporate performance. Includes hands-on experience with various information analysis, business intelligence and decision-support techniques and tools with applications to various business-problem scenarios, such as portfolio analysis, project selection, market research and supply-chain optimization.

## **DAPT 614. Advanced SQL. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Prerequisite: DAPT 611. This course is designed to prepare students for multiple table queries using structured query language and will provide advanced training in the application of SQL to real data problems.

## **DAPT 615. Emerging Technologies. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. The course emphasizes the study of a variety of big data technologies to gain insight that will be used to get people throughout the enterprise to run the business more effectively and to provide better service to customers. The course focuses on big data solutions that are processed in a platform that can handle the variety, velocity and volume of data by using a family of components that require integration and data governance.

## **DAPT 621. Statistics for the World of Big Data. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Covers single variable and multivariable statistical techniques using commercial computer packages such as SAS and SPSS. Students will learn when different techniques are warranted, conceptually how techniques function, how to perform the analysis using commercial computer packages and how to interpret the program outputs.

## **DAPT 622. Statistics for the World of Big Data II. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: DAPT 621. Continues an emphasis on data visualization and statistical modeling for different types of variables, including relationships between multivariable variables.

## **DAPT 631. Data Mining. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Data mining is the extraction of implicit, previously unknown and potentially useful information from data. Data mining tasks include classification and regression (pattern recognition), cluster analysis, association analysis, and anomaly detection. This class will introduce methods for each of these tasks, their implementation in relevant software and the interpretation of data mining results.

## **DAPT 632. Forecasting Methods and Applications for Managerial Decision-making. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Methods covered include moving average and exponential smoothing, seasonal adjustments, time-series, and forecast averaging. Particular emphasis on developing and implementing forecasting systems in an interactive organization and appreciation of issues and caveats.

## **DAPT 633. Introduction to Marketing and Customer Analytics. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Examines how firms make use of analytic tools to target advertising, improve customer response and service, and improve financial performance. The course will apply quantitative tools students have already seen (statistical analysis, simulation and regression analysis) to marketing and customer-response decisions.

## **DAPT 641. Introduction to Simulation Methods. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. An introduction to the application and theoretical background of simulation. Topics include Monte Carlo simulation and modeling systems using discrete event simulation. Theoretical topics include random variable generation, model verification and validation, statistical analysis of output, and decision-making via simulation. A high-level simulation language will be utilized.

## **DAPT 642. Introduction to Risk Analysis. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Presents a formal methodology for prescriptive decision-making under risk and uncertainty. Decision analysis applies to hard problems involving sequential decisions, major uncertainties, significant outcomes and complex values. The course includes building and solving influence diagrams and decision trees; modeling uncertainty with subjective probabilities; the value of information; and modeling risk preferences with utility functions. Decision and risk analysis applications in business and government are considered.

## **DAPT 643. Introduction to Optimization Models. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Mathematical optimization is used to support quantitative and logical decision-making by providing a prescription of choices that minimize cost or maximize profit. This class provides an introduction to using optimization tools to model, solve and interpret results of real-world decision problems. Examples of applications include loan allocation, workforce scheduling, multi-period financial models and portfolio optimization.

## **DAPT 651. Personal, Interpersonal and Organizational Awareness. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. This is an application-based course involving the understanding and application of communicating information in the personal, interpersonal/team and organizational setting. The focus is on barriers to communication, personal and audience awareness, listening skills, nonverbal communication behaviors, team-building and meetings management. A variety of practica and simulations will be used during this course.

## **DAPT 652. Professional Presentations: Strategy, Delivery and Technology. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. This is an application-based course involving the audience-centered design and application of effective oral presentations. The focus will be on the development and enhancement of public presentation skills in different types of formal and informal public situations. Further ability in appropriate presentation technology will be provided and assessment will be behavior-driven. A variety of practica and simulations will be used during this course.

**DAPT 653. Written Communications: Strategy, Structure and Connection. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. This is an application-based course involving the audience-centered design and application of effective written communications. The focus will be on the development and enhancement of writing and English skills for different types of organization-required documents, including email, proposals, executive summaries, letters and formal reports. Further assessment in grammar and syntax will be provided through online and faculty feedback. A variety of practicum and simulations will be used during this course.

**DAPT 654. Written Communications: Strategy, Structure and Connection II. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Continues topics and lessons from DAPT 653.

**DAPT 661. Issues and Analytics. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. May be repeated for a total of three credits. Academic, business, government and NGO leaders discuss current issues and applications of analytics. Analytics is a dynamically changing and evolving field. Students will have an opportunity to discuss current issues directly with people on the front lines.

**DAPT 670. Analytics Problem Formation. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. An introduction to problem formulation and the decision-making process that must precede the application of analytics. Topics include objectives generation, structuring objectives, decision diagrams for risk and uncertainty modeling, and qualitative approaches to decisions under risk and value tradeoffs.

**DAPT 681. Analytics Practicum I. 1 Hour.**

Sponsored project. 1 credit. This course will allow students to apply the concepts, theories and skills learned in other courses to a real analytics project from a sponsoring organization. Teams of students will formulate a problem based on discussions with management of the sponsoring organization; query the sponsor's and/or public databases for appropriate data; perform required statistical analysis; and present results in both a written report and oral presentation to sponsoring management.

**DAPT 682. Analytics Practicum II. 2 Hours.**

Semester course; sponsored project. 2 credits. Continues project from DAPT 681.

**DAPT 691. Topics in Decision Analytics. 1-3 Hours.**

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit. Study of current topics in decision analytics. Topics may vary from semester to semester.