



## **MS in Data Analytics & Visualization Course Descriptions**

### **DAV 5000 Business Modeling and Data Analysis**

While data analysts need to be competent with a variety of tools, they will most often work with stakeholders who only use spreadsheets. Therefore, deep and broad skills working with spreadsheets and fluency in moving data between spreadsheets, business intelligence applications, and relational databases are critical for data analysts to be effective and credible. In this project-based course, students will build and apply key spreadsheet skills in the service of organizational data management, modeling, and analysis.

### **DAV 5100 Structured Data Management**

Organizations require reports and analyses that are both accurate and useful. This course emphasizes the skills that database developers rely on to 1) translate organizational requirements into information architectures, 2) create operational and reporting databases, 3) manage data sources, 4) perform data integration into reporting databases, and 5) create ad-hoc analytics reports using business intelligence reporting tools. Students will gain both essential theory and hands-on practice, enabling them to build the database systems, supporting data workflows, and reporting architectures required to produce accurate and useful information in support of organizational decisions.

### **DAV 5200 Visual Design and Storytelling**

Analysts must present their data in effective and compelling visualizations. This course combines the best heuristics for data presentation with hands-on experience in creating spreadsheet charts and data visualizations from a variety of source data. Students will learn how to combine text and visualizations to craft stories that promote deeper engagement with data analyses and conclusions.

### **DAV 5300 Computational Math and Statistics**

Deeper math literacy and computational thinking are essential for deeper data literacy. Probability, statistics, and mathematics—especially fundamental linear algebra—are critical to the success of data analysts as they implement increasingly complex solutions. This course is designed to give the non-mathematician practice using mathematical and statistical computational methods in the service of data analytic solutions.

### **MAN5580 Project Management**

This course teaches project management using several tools from the leading methodologies for managing software projects. The most effective project managers will combine methods to create a “right-sized” methodology appropriate to the organizational culture and project team members’ background and experience.



### **DAV 5400 Analytics Programming**

Code-based solutions can be richer, more accurate, and more flexible than those that rely on off-the-shelf software and analytic packages. This course teaches the programming skills that data analysts need to prepare structured and unstructured data for downstream analysis. Students will learn to use high-level programming languages to create rich data analysis workflows.

### **DAV 6500 Capstone**

In this course, students will integrate the skills developed in the previous classes into a comprehensive body of knowledge and will provide tangible evidence of analytic and visualization competencies. The capstone will include four components: 1) a brief proposal and project schedule; 2) the main project deliverable; 3) a final presentation; and 4) a reflection on the student's data analytics and visualization skills and competencies.

### **DAV 6000 Talent Analytics**

To survive and prosper, organizations must make good use of data and analytics to improve their workforce-related processes. This is particularly critical at times of low employee engagement and high turnover. In this course, students will learn the key processes, measures, and tools that enable data-driven workforce analysis to deliver competitive organizational advantage.

### **DAV 6050 Data Driven Organizations**

The best data analysis projects are implemented in the context of an organization's business model, culture, key strategic initiatives, and processes. Data analysts who understand these contexts are more likely to see their efforts lead to improved organizational processes and/or decision-making. This course examines three important organizational-level analytical frameworks and emphasizes using data, analysis, and experimentation within each of these frameworks. Students will also be introduced to centralized data warehouses.

### **DAV 6100 Information Architectures**

Organizations combine data from many different sources, including spreadsheets, databases, and data warehouses. As the volume, variety, and velocity of data increases, more enterprise data is stored in cloud-based distributed data stores. In this course, students will learn to design, populate, and report on these enterprise data architectures.

### **DAV 6150 Data Science**

Frequently, analysts use data to describe the current state of an organization. Data science extends the analyst's reach into the future. Data science has been almost exclusively the domain of people who have Science, Technology, Engineering and Math (STEM) degrees, and especially those with a quantitative background. Recent fast-paced tool development and abstraction now allow motivated data analysts to perform useful and rigorous predictive analyses using high level languages and their rich scientific ecosystems. This course will cover classification, regression, and clustering methods, and students will apply these



methods in designing, modeling, and building model applications that use natural language processing and recommender systems.

### **DAV 6200 Data Product Design**

Successful entrepreneurs and consultants create value. Data analysts who can work alongside or act as value architects create more organizational value, more quickly. Today, this means using data, analysis, and experimentation to better understand customer goals and preferences. In this course, students learn analytical frameworks for using data in the service of customer insight, customer development, value proposition refinement, and product development.

### **DAV 6300 Special Topics**

This course provides the opportunity to offer boutique short-term courses on emerging phenomena, policies, processes, technologies, and techniques in data analysis and visualization. The expectation is that this will be an advanced class that requires an appropriate student project and deliverable in line with the number of credits awarded for the course.

### **DAV 6400 Internship**

This course consists of an off-campus internship experience supervised by a staff person at the internship site and overseen by a faculty advisor. The internship site must be approved by the program director, and the overall duration of student work must be no less than 150 hours (based on a 3-credit course). At the start of the internship, the student and faculty advisor will jointly develop specific learning objectives tailored to the nature of the internship. Over the course of the internship, students will be required to submit weekly reflections, and at the end of the internship, students write a final paper that represents the culmination of the work performed.

### **DAV 6450 Independent Study**

This independent study course provides the student with the flexibility to learn more about a topic of interest outside of the formal course setting. The subject should be chosen in consultation with a faculty advisor who acts as the student's supervisor, and with the permission of the program director. The student is required to submit a course contract describing the course of study and its specific learning objectives. Course credit is determined in advance of the course, by the instructor with the approval of the program director.