



**GRADUATE PROGRAMS ADDENDUM**  
**SOUTHERN METHODIST UNIVERSITY**  
**2014–2015**

# INTERDISCIPLINARY PROGRAMS AND COURSES

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the SMU campus is also required. There may be additional expenses related to the on-campus immersion course.

<i>Requirements for the Major</i>	<i>Credit Hours</i>
Immersion on Campus	1
Introduction to Data Science	3
Statistical Sampling	3
Experimental Statistics I, II	6
New Approaches to Managerial Economics	3
Visualization of Information	3
File Organization and Database Management	3
Data Mining	3
Quantifying the World	3
Data and Network Security	3

Offers students the chance to meet in-person with classmates and faculty for collaborative, hands-on workshops and informational sessions. Emphasizes group work, networking, and relationship building. Takes place on the SMU campus in Dallas, Texas. Reserved for students in the M.S.D.S. program.

An introduction to methods, concepts, and current practice in the growing field of data science, including statistical inference, algorithms, financial modeling, data visualization, social networks, and data

databases. Includes a survey of file structures and access techniques. Also, the use of a relational database management system to implement a database design project. Reserved for students in the M.S.D.S. program.

Introduces data mining topics, with an emphasis on understanding concepts through an applied, hands-on approach. Includes other related topics such as data warehousing and dimensional modeling. All material covered is reinforced through hands-on implementation exercises. Reserved for students in the M.S.D.S. program.

In the global information age, data can be leveraged to rapidly answer previously unanswerable questions. Students explore how to make sense of the large amounts of data frequently available, from hypothesis formation and data collection to methods of analysis and visualization. Includes ways to set up Internet-level measurements and formulate testable hypotheses; ways to automatically gather, store, and query large datasets; and ways to apply statistical methods (descriptive and predictive) and information visualization to collected datasets. Students learn to use Python and R programming languages to carry out data collection, analysis, and visualization. Culminates in a final project using real data of the students' choosing. Reserved for students in the M.S.D.S. program.

Covers conventional and state-of-the-art methods for achieving data and network security. Private key and public key encryption approaches are discussed in detail, with coverage of popular algorithms such as DES, Blowfish, and RSA. In the network security area, the course covers authentication protocols, IP security, Web security, and system-level security. Reserved for students in the M.S.D.S. program.