Master of Science in Information Quality

The Master of Science in Information Quality degree is offered through the Department of Information Science, and is designed to prepare students for careers in industry and government, as well as, advanced graduate studies.

The curriculum is designed to balance information quality theory with industry best practices using state-of-the-art tools and technology. The curriculum is based on the Model Curriculum and Guidelines for Graduate Degree Programs in Information Systems endorsed by the Association for Computing Machinery (ACM) and Association for Information Systems (AIS). The course content has been developed with the support of the Massachusetts Institute of Technology Information Quality Program based at the MIT Center for Technology, Policy, and Industrial Development, and with additional the help from leading practitioners and researchers within the information quality community.

The program is accessible to both day and evening students, and both full-time and part-time studies. For more information, please visit the program’s website at http://ifsc.ualr.edu/msiq.

Admission Requirements

- Baccalaureate degree in information science, computer science, computer information systems, management, or a related discipline from an accredited institution.
- Cumulative grade point average of at least 3.0 on a 4.0 scale.
- Graduate Record Examination general test section (GRE) or Graduate Management Admission Test (GMAT) scores.
- Completion of any remedial course work that may be specified by the department; in particular, all students seeking regular admission to the program are expected to have completed (with a grade of B or better in each course) undergraduate course work equivalent to the following
  - IFSC 2300 Object-Oriented Technology

Waiver of any or all of these prerequisite courses is at the discretion of the Information Quality Graduate Committee.

Program Requirements

There are two options within the Master of Science in Information Quality degree program.

- Thirty-three (33) credit hours, consisting of 27 hours of course work plus INFQ 7686 Graduate Project
- Thirty-three (33) credit hours, consisting of 27 hours of course work plus INFQ 7698 Thesis

Core Requirements

All students must take the following seven courses (21 credit hours)

Information Quality Courses
  - INFQ 7303 Introduction to Information Quality
  - INFQ 7318 Total Quality Management and Statistical Quality Control
INFQ 7322 Information Quality Theory
INFQ 7342 Information Quality Tools and Industry Landscape

Information Science Courses
IFSC 5345 Information Visualization
IFSC 7310 Information Systems Analysis
IFSC 7320 Database Systems

Electives
One Course from the following list
INFQ 7337 Project and Change Management
INFQ 7353 Case Studies for Information Quality Professionals
INFQ 7367 Information Quality Policy and Strategy

One Course from the following list
IFSC 5330 Database Security
IFSC 7325 Advanced Data Mining
IFSC 7355 Data Protection and Privacy

Substitution of Core Requirements
The Information Quality Graduate Committee may substitute other graduate-level courses in Information Quality or Information Science for up to six hours of the core requirements if in the committee’s opinion, an entering student has already completed the same level of work prescribed for that core course or courses through previous academic work or professional experience.

Graduate Assistantships
A limited number of graduate assistantships are available. Contact the program coordinator for more information.

Graduation Requirements
- Cumulative GPA of at least 3.0 in the approved program of study as outlined above
- Successful completion of one of the program options

Courses in Information Quality
INFQ 7303 Introduction to Information Quality
Prerequisites: None.
This course provides a rigorous exploration of information quality concepts, assessment, and problems in organizational information systems, databases and data warehouses. A combination of state of the art literature review and hands-on projects is used to develop knowledge and ability to meet objectives.

INFQ 7318 Total Quality Management and Statistical Quality Control
Prerequisites: None.
This course provides an understanding of how the concepts and techniques of Total Quality Management may be applied to information products. Topics include continuous improvement strategies, statistical process control, experimental design, capability analysis, quality cost assessments, benchmarking, acceptance testing, and auditing.
INFQ 7322 Information Quality Theory  
**Prerequisites: INFQ 7303 and INFQ 7318**  
This course is designed to provide students with the theoretical foundations critical for developing a deep understanding of the state-of-the-art information quality research from the technical, organizational and strategic perspectives. This course will prepare students to work on their thesis, project, and conduct research in the field of information quality. More specifically, students will be exposed to concepts, principles, tools, and models, and techniques that are essential for information quality definitions, measurement, analysis, and improvement. Additionally, students will be exposed to most current, cutting-edge research that go beyond current industry practice in information quality.

INFQ 7337 Project and Change Management  
**Prerequisites: INFQ 7303 and INFQ 7318**  
A course on how to manage information quality improvement projects within an organizational context, including the processes related to initiating, planning, executing, controlling, reporting, and closing a project. Additional topics include identifying project champions, working with user teams, training, documentation, project integration, scope, time, cost-benefit studies, risk analysis, and change management.

INFQ 7342 Information Quality Tools and Industry Landscape  
**Prerequisites: INFQ 7303 and INFQ 7318**  
This course is designed to develop and increase capability and skills that students need to critically understand what IQ software tools, techniques, and prototypes are currently used in industry, government, and research laboratories. The course will prepare students to make software tool recommendations on corporate data quality programs. Students will conduct a survey of academic literature and industry practices in terms of IQ tools such as data cleansing, profiling, and auditing, and will participate in a hands-on workshop on commercial IQ tools from participating vendors in the field.

INFQ 7353 Case Studies for Information Quality Professionals  
**Prerequisites: INFQ 7322 and INFQ 7342**  
This intensive and interactive course is designed to develop and increase the student’s capability and skills to critically understand what constitutes data quality, how to analyze and solve data quality problems, and how to institutionalize data quality projects in an organization where data quality is not the most critical priority.

INFQ 7367 Information Quality Policy and Strategy  
**Prerequisites: INFQ 7322**  
This course explores the top management, strategic perspective for aligning competitive strategy, core competencies, and information quality. Topics include the development and implementation of IQ policies and plans to achieve organizational goals; how to define systems that support the operational, administrative, and strategic IQ needs of the organization, its business units, and individual employees; approaches to managing technology and the information systems function in organizations, role of the CIO.

INFQ 7686 Graduate Project  
**Prerequisites: Graduate standing and consent of the student’s graduate advisor.** Students, under faculty supervision, will conduct directed research on a particular problem or area of information quality and will produce reports and other deliverables appropriate to the project.
INFQ 7698 Thesis
Prerequisites: Consent of thesis advisor. Scholarly investigation of a selected problem in information quality culminating in a written and orally defended thesis.

Courses in Information Science

IFSC 5330 Database Security
Focus on security issues in databases systems and introduction of how current and future commercial systems may be designed to ensure secrecy and confidentiality. Topics include security models, basic security mechanisms and software, statistical database security, intrusion detection, security models for next generation databases, tested techniques and proven strategies for securing an Oracle environment - from the operating system to the database to the network, and how to implement security using Oracle's built-in tools.

IFSC 5345 Information Visualization
The design and presentation of digital information. Use of graphics, animation, sound, visualization software, and hypermedia in presenting information to the user. Methods of presenting complex information to enhance comprehension and analysis. Incorporation of visualization techniques into human-computer interfaces.

IFSC 7310 Information Systems Analysis
Methods of problem identification and definition, data collection and measurement, feasibility study methods, work measurement techniques, task analysis, simulation studies, impact analysis, evaluation methods, forms and display design, proposal writing, documentation and programming standards, design strategies, documentation, and evaluation.

IFSC 7325 Advanced Data Mining
Advanced techniques for knowledge discovery and data mining from large databases. graphical and kernel-based machine learning, active and online learning, mining with uncertainty, spatial and temporal data mining, data mining large micro array and protein array data sets.

IFSC 7320 Database Systems
Database systems and data modeling, including entity-relationship model, relational data model, normalization, structured query language (SQL), transaction management, object-oriented databases, and basics of physical database design and query evaluation.

IFSC 7355 Data Protection and Privacy
Concepts and methods for creating technologies and related policies with provable guarantees of privacy protection while allowing society to collect and share person-specific information for necessary and worthy purposes. Methods include those related to the identifiability of data, record linkage, data profiling, data fusion, data anonymity, de-identification, policy specification and enforcement and privacy-preserving data mining.