IST 659 Database Administration Concepts and Database Management

Corequisite (preferred but not required):

IST552: Information Systems Analysis: Concepts and Practice
IST352: Information Analysis of Organizational Systems

***Audience:**

This course is aimed at information professionals and serves as a foundational introduction to the field of data and database management.

***Description:**

IST 659 is an introductory course to database management systems. This course examines data structures, file organizations, concepts, and principles of database management systems (DBMS) as well as data analysis, database design, data modeling, database management, and database implementation. More specifically, it introduces hierarchical, network, and relational data models; entity-relationship modeling; basics of Structured Query Language (SQL); data normalization; and database design. Using Microsoft's Access and SQL Server DBMSs as implementation vehicles, this course provides hands-on experience in database design and implementation through assignments, lab exercises, and course projects. This course also introduces advanced database concepts such as transaction management and concurrency control, distributed databases, multitier client/server architectures, web-based database applications, data warehousing, and NoSQL.

***Credits:**

3

Learning Objectives:

After taking this course, the students will be able to:

Describe fundamental data and database concepts

Explain and use the database development lifecycle

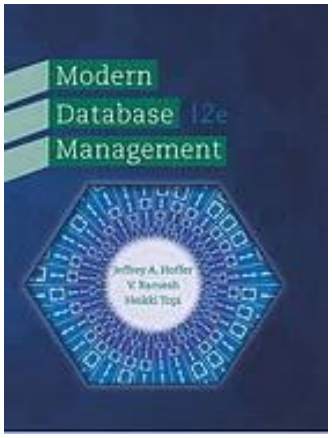
Create databases and database objects using popular database management system products

Solve problems by constructing database queries using Structured Query Language (SQL)

Design databases using data modeling and data normalization techniques

Develop insights into future data management tool and technique trends
Recommend and justify strategies for managing data security, privacy, audit/control, fraud detection, backup and recovery
Critique the effectiveness of DBMS in computer information systems

Bibliography/Texts/Supplies—Required:



Hoffer, J. A,, Ramesh, V., & Topi, H. (2016). *Modern database management* (12th ed.). New York, NY: Pearson.

ISBN13: 9780133544619

http://www.worldcat.org/title/modern-databasemanagement/oclc/902802919

Older editions are OK, but chapters and page numbers may be different.

Bibliography/Texts/Supplies—Additional:
Software

SQL-Server, Visio, draw.io, and Access

The above software packages have been installed on the lab computers.
https://answers.syr.edu/display/ischool/IST-S-STUDENTS
Here are some other options to use the above software.

1. Remote access to the lab from home: https://answers.syr.edu/display/ischool/iSchool+Remote+Lab.
2. You can download and install Microsoft Access and Visio onto your own computers through MSDNAA.

You can also download SQL Server Express from the Microsoft website onto your computer and remotely connect to the class SQL Server. Software access from home is limited for Mac and Unix/Linux users. Please contact the iSchool help desk, TA, or instructor for help when necessary.

Requirements:

Attendance and Class Exercises

Although attendance and class exercises are not a graded component in this class, it is expected that students make every effort to review the materials prior to attending the live session and will actively participate in any class discussion or exercises.

Labs

There is a lab due each week. These labs reinforce the concepts learned in the weekly materials and are intended to be practical applications of the concepts covered in class materials. All labs are graded and are due by the day before your scheduled live session. No late labs will be accepted for grading.

Project

The major portion of grading in this course is the course project. There are two deliverables for this project. This first will be due roughly halfway through the course, the second due at the end. Consult the project instructions and the instructor for specific due dates. This project is a comprehensive demonstration of your mastery of the content of this course.

Grading:

This table outlines each method by which you will be evaluated in this class.

Assessment	Qty	Pts Each	Pts Total
Labs	10	10	100
Project Deliverables	2	100	200
		Total:	300

Grade Expectations

Your grade in this class is based on the quality and accuracy of your submitted work. At any given point during this course, your grade can be calculated as the ratio of points you've earned to points issued, based on the following scale:

	Grade	Expectation of that grade
A	A: [.94, 1.00] A-: [.90, .93]	Your work is outstanding and exceeds expectations.

B	B+: [.87, .89] B: [.83, .86] B-: [.80, .82]	Your work meets expectations; on par with the average student.
C	C+: [.77, .79] C: [.73, .76] C-: [.70, .72]	Your work is adequate but could be better.
F	D: [.60, .69] F: [0, .59]	Your work is inadequate and needs substantial improvement.

Note: Achieving an A in this course requires **a minimum of 94% of the available points**. As a result, only a few of the highest achieving students will attain an A for the semester. To determine your letter grade, add the total of all of your points earned, dropping the lowest quiz score, and divide by the total points possible. I will round up to the hundredths to determine your percentage score. Use this number to find your letter grade in the table above. There is no grading curve in this class.

Course-Specific Policies on Attendance, Late Work, Make-Up Work, Examinations If Outside Normal Class Time, Etc.:

No late work is accepted for grading, but since each lab and project deliverable builds on the preceding assignment, it is advisable to complete all work.

Academic Integrity Policy

Syracuse University's academic integrity policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations as well as about university-wide academic integrity expectations. The university policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same written work in more than one class without receiving written authorization in advance from both instructors. The presumptive penalty for a first instance of academic dishonesty by an undergraduate student is course failure, accompanied by a transcript notation indicating that the failure resulted from a violation of academic integrity policy. The presumptive penalty for a first instance of academic dishonesty by a graduate student is suspension or expulsion. SU students are required to read an online summary of the university's academic integrity expectations and provide an electronic signature

agreeing to abide by them twice a year during preterm check-in on MySlice. For more information and the complete policy, see http://academicintegrity.syr.edu/.

Disability-Related Accommodations

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498, TDD: (315) 4431371 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Diversity and Disability Syllabus Statement:
Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. My goal is to create learning environments that are useable, equitable, inclusive, and welcoming. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, I invite any student to meet with me to discuss additional strategies beyond accommodations that may be helpful to your success.

Religious Observances Notification and Policy

SU religious observances notification and policy, found at http://hendricks.syr.edu/spiritual-life/index.html, recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes and by the submission deadline for flexibly formatted classes.

For fall and spring semesters, an online notification process is available for students in **My Slice / StudentServices / Enrollment / MyReligiousObservances / Add a Notification.** Instructors may access a list of their students who have submitted a notification in My Slice Faculty Center.

Student Academic Work Policy

SU policy on student academic work may be found at:
http://coursecatalog.syr.edu/content.php?catoid=3&navoid=270#Student_Academic_Work

Educational use of student work:
I intend to use academic work that you complete this semester for educational purposes in this course during this semester. Your registration and continued enrollment constitute your permission.

Educational use of student work:
I intend to use academic work that you complete this semester in subsequent semesters for educational purposes. Before using your work for that purpose, I will either get your written permission or render the work anonymous by removing all your personal identification.

Course Schedule

Week	Topic	Readings, Deliverables*
1	The Relational Data Model	Hoffer Chapter 1
2	Conceptual Modeling	Hoffer Chapter 2
3	Logical Modeling	Hoffer Chapter 4, pp. 155-182
4	Normalization	Hoffer Chapter 4, pp. 182-193 Project Deliverable 1 due
5	Physical Database Design	Hoffer Chapter 5; Chapter 6, pp. 243257
6	Querying, Inserting, Updating, and Deleting Data	Hoffer Chapter 6, pp. 257-275
7	Advanced Querying	Hoffer Chapter 6, pp. 275-277; Chapter 7, pp. 289-313
8	Database Programming	Hoffer Chapter 7
9	Database Administration	No readings
10	User Interface Design	Hoffer Chapter 8 (skim) Project Deliverable 2 due
** There is a lab due 24 hours prior to the live session each week..*		