Course Syllabus

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Class Textbook(s):

**Required**:

Title: Database Systems: Design, Implementation & Management

Edition: 14th Edition

Author(s): Carlos Coronel, Steven Morris

Copyright: 2023

Publisher: Cengage Learning

ISBN-13: 978 - 0357673034

Web Link: <http://www.cengage.com>

<https://www.cengage.com/c/database-systems-design-implementation-management-14e-coronel-morris/9780357673034/>

**Supplemental**:

Textbook: Oracle 12c: SQL, 3rd Edition Author: Joan Casteel Publisher: Cengage Publishing ISBN-10: 1305251032 ISBN-13: 9781305251038 608 Pages

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Web Link: <http://www.cengage.com>

**Supplemental**:

Title: Oracle PL / SQL Programming, 6th Edition

By: Steven Feuerstein, Bill Pribyl

Publisher: O'Reilly Media

Print: September 2009

Pages: 1232

Print ISBN: 9781449324452   
Web Link: <http://shop.oreilly.com/product/0636920024859.do>

**Supplemental**:

Title: Optimizing Oracle Performance By: Cary Millsap, Jeff Holt   
Publisher: O'Reilly Media

Print: September 2003 / Ebook: June 2009

ISBN:978-0-596-00527-6| ISBN 10:0-596-00527-X

[http://shop.oreilly.com/product/9780596005276.do?green=C556D148-B01B-5312-BD1136548109AF7C&intcmp=af-mybuy-9780596005276.IP](http://shop.oreilly.com/product/9780596005276.do?green=C556D148-B01B-5312-BD11-36548109AF7C&intcmp=af-mybuy-9780596005276.IP)

**Optional**: Oracle12c: The Complete Reference. Various on - line reading   
Web Link: <http://www.oracle.com>

Prerequisites: [ ( Essential skills of computing and office productivity tools ) ]

**Course Description**

ITMD 523

Advanced Topics in Data Management

Advanced topics in database management and programming including client server application development are introduced. Students will learn the use of Structured Query Language in a variety of application and operating system environments. Expands knowledge of data modeling concepts and introduces object - oriented data modeling techniques with specific attention to the use of database management systems in response to defined business problems.   
( 3 - 0 - 3 )

**Course Objectives**

Upon completion of this course, students will be able to use a Data Base Management System ( DBMS ) to create and manage files of data on a microcomputer system. The data structures for specific business applications will be created; enter, manipulate, and organize the data; issue data queries; use a report generator; restructure files; use the screen for input and output; and establish relationships between multiple files. The student will become aware of the need for back-up procedures as an integral part of data integrity.

**Course Outcomes**

Students completing this course will be able to:

Data Modeling, ERDs, DFDs, SQL Basics, Datatypes, Character Functions, Date Functions, Aggregate Functions, Joins, Subqueries, Set Operators

Database Objects, DML, Data Dictionary

Database Security, PL / SQL Programming Basics

Error Handling, Cursors, Triggers

**Course Activities**

You will meet the objectives listed above through a combination of the following activities in this course:

View and comprehend all screen recording course content.

Complete all course assignments at a proficient level with high quality and on time.

**Course Requirements**

Student Responsibilities: Class attendance and active participation are essential if students are to receive maximum benefit from the class. Participation requires preparation including completion of reading, labs, projects and exams by the due dates.

If you cannot attend class or complete assignments, labs, projects or exams on time, please let the instructor know beforehand so that we can discuss alternative strategies. It is the student’s benefit to use their time wisely whether it is in preparation for class, during scheduled class, or in the lab. When students are in any IIT lab environment, they should abide by the college policies. Questions and comments are welcome.

**Exams and make - up policy**: There will be a mid - term and final exam for the course. No retakes of exams are allowed unless there are extraordinary circumstances. Any exams may be taken early if the instructor is given adequate time to prepare testing arrangements.

**Assignments & General Grading**: It is extremely critical that students complete all assignments timely otherwise late points will be deducted accordingly. Submitting assignments timely in the order assigned will ensure progression according to the academic design of the course. The instructor will not accept bulk assignments. The only way to learn SQL is to code in SQL. The best SQL programmers are the ones who have invested the time to learn the concepts and applied them to programming problems. Please do not expect to finish the assignments for this class the night before, or during the weekend they are due. The project assignments will take considerable effort. "A" grades on projects are reserved for code that properly fulfills all of the listed requirements in a computationally accurate and reasonably efficient manner, and is well organized and readable based on the basic design principles covered in class.

**Email**: Every attempt will be made to answer email daily. Please indicate in your email clearly the problem you are experiencing in your subject and body of your email. Please also include your name and course enrolled.

**Academic Policy**: Any violations of IIT policies regarding academic honesty and or integrity will be referred automatically to the appropriate college authorities for disposition. Please see appropriate pages in the college catalog for definitions and regulations. The minimum penalty for cheating will be a zero for all parties involved on that exam, assignment, lab, project or quiz.

**Withdraw policy**: No longer attending a class does not constitute an automatic withdrawal. Students are expected to withdraw from the course if they have decided not to pursue the course anymore.

**Classroom behavior**: During the class time, considerate conduct by all persons is important to a favorable learning environment. Any infringement on the rights of others to get an education will be dealt with in an appropriate manner. Please set all electronic devices such as cell phones or pagers to silent or vibrate mode. No cell phone talking is permitted in the classroom. If you must take the call, please continue your conversation outside of the classroom and please make it short so as to not miss your lecture material.   
  
Use of smartphones during class time is prohibited. Laptop / tablet use in the classroom is limited to the current lecture subject matter. Course assignments are to be completed outside of lecture time and not during classroom time.

**Illinois Tech’s Sexual Harassment and Discrimination Information:**

Illinois Tech prohibits all sexual harassment, sexual misconduct, and gender discrimination by any member of our community. This includes harassment among students, staff, or faculty. Sexual harassment of a student by a faculty member or sexual harassment of an employee by a supervisor is particularly serious. Such conduct may easily create an intimidating, hostile, or offensive environment.

Illinois Tech encourages anyone experiencing sexual harassment or sexual misconduct to speak with the Office of Title IX Compliance for information on support options and the resolution process.

You can report sexual harassment electronically at iit.edu/incidentreport, which may be completed anonymously. You may additionally report by contacting the Title IX Coordinator, Virginia Foster at foster@iit.edu or the Deputy Title IX Coordinator at eespeland@iit.edu.

For confidential support, you may reach Illinois Tech’s Confidential Advisor at (773) 907-1062. You can also contact a licensed practitioner in Illinois Tech’s Student Health and Wellness Center at student.health@iit.edu or (312)567-7550

For a comprehensive list of resources regarding counseling services, medical assistance, legal assistance and visa and immigration services, you can visit the Office of Title IX Compliance website at: <https://www.iit.edu/title-ix/resources>

**General notes**: In order to achieve the course objectives, it is important to enjoy the class in addition to complying with the above requirements, and the rules and policies of IIT. Most students sign up for the courses with the best intentions. If you are experiencing course / college related problems, please feel free to discuss it with your instructor before a crisis develops so we can resolve them in a manner beneficial to all parties involved.

**Reasonable accommodations** will be made for students with documented disabilities. In order to receive accommodations, students must obtain a letter of accommodation from the Center for Disability Resources and make an appointment to speak with me as soon as possible. The Center for Disability Resources ( CDR ) is located in the Life Sciences building, in room 218, with telephone 312-567-5744 or with email at disabilities@iit.edu.

**Grading and Evaluation Criteria**. Grade distribution is represented as follows:   
  
 A - 90 % and up

B - 80 % to < 90 %

C - 70 % to < 80 %

D - 60 % to < 70 %

E - 59 % and below

**Grading Policy**

Visit the Assignments link in Blackboard for details about each assignment listed below. Click on Assessments to access quizzes and exams. Be sure to pay close attention to deadlines. There will be no make - up assignments or quizzes, or late work accepted without a serious and compelling reason and instructor approval. Points you receive for graded activities will be posted to the Blackboard Grade Book. Click on the My Grades link on the left navigation to view your points. The instructor or TA will update the online grades each time a grading session has been complete — typically 10 days following the completion of an activity. You will see a visual indication of new grades posted on your Blackboard home page under the link to this course. Final grades assigned for this course will be based on the percentage of total points earned and are assigned as outlined above including other soft skill participation.   
Refer to the [ITM Student Handbook](http://www.itm.iit.edu/resources/studentresources.php) for grade percentage to letter grade table.

**Grade Weights**

The class has the following tentative grade weight based on a point scale: Quizzes - 300 points

Midterm - 300 points

Final - 400 points

Final Project - 200 points

Labs - 1,000 points

Homework - 1,000 points

Attendance / Participation - 300 points

Total points - 3,500 points

**Incomplete Grading Policy**

Under emergency / special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned based on department protocol including instructor approval. All incomplete course assignments must be completed the following term as noted in the IIT Academic Calendar.

**Academic Dishonesty**

Academic Dishonesty is not acceptable and will not be tolerated in ITMD 523. Papers found to be Plagiarized and Homework found to be Copied will result in a zero grade for all parties involved. Please read the ITM Student Handbook to review the department's policies on plagiarism and identical or substantively identical work.

**Grading Rubric**

Homework and Lab Projects grading will be based on these point allocations:

Program correctness: 60 points

( Your program / application runs and executes without errors, meeting all program requirements with readable program output display )

Design / Solution Approach and Documentation: 30 points

( Program / application must follow standard programming style. Please examine programming styles from class demo’s, textbooks, proper usage of blocks and indentations, proper documentation, meaningful variable names, comment statements, algorithm development and programming logic used/approach to resolve assigned problem. Label each lab with your name at the top of your source code as well as your lab number!!! ( Each lab must have adequate snapshots of output for full credit as well. )

Program / Assignment enrichments: 10 points

( Error proof program, extra features included, OOP methodology consideration, reliability and ease of maintenance – above and beyond )

Note: only currently assignment projects / homework will be accepted for submission.

**Late Assignment Policy**

Points / marks will be deducted when assignment are submitted after the due dates. Up to 50% of the assignment points may be deducted.

**Technology Requirements**

• A Windows, Mac or Linux computer, preferably with a Core 2 Duo or better processor, and 2 or more Gigabytes of ram. The Eclipse 4.3 Integrated Development Environment for Java and the Java Development Kit ( both are free software ) .   
• Internet Connection (DSL, LAN or cable connection desirable)

Access to IIT Online System ( blackboard.iit.edu )

**Blackboard - The IIT Online Classroom**

We will use IIT's Blackboard system ([http://blackboard.iit.edu)](http://blackboard.iit.edu/) to communicate weekly agendas, submit homework, labs, ask questions, to post lecture materials and get feedback. Each student should have been notified of his or her Blackboard account for this course. If you have not been notified, go to above web page where there is contact information. Blackboard weeks start from Monday through Sunday.

**Graduate Students**

Graduate students are expected to provide graduate level work to complete all computer laboratory and homework assignments. Lab assignments and projects are to be thoroughly documented to ensure a professionally enhanced submission.

**[ Tentative Course Schedule ]**

**Week 1 Topics**

-RDBMS Systems and Concepts

-Database Terminology

-The Language of Database Systems

-Database Set Theory

-MS Access

-OLAP ( Online Analytical Processing )

**Week 2 Topics**

-Data Modeling

-ERDs, UML

-Business Requirements / Business Rules

**Week 3 Topics**

- The Relational Database Model

-A Review of SQL

-SQL Statements

**Week 4 Topics**

-Using Database Tools

-Entity Relationship (ER) Modeling

**Week 5 Topics**

-More on SQL / Data Analytics and Data Management

-Advanced Data Modeling

**Week 6 Topics**

-Topics in PL / SQL

-Topics in Database Table Normalization

**Week 7 Topics**

-More Topics in PL / SQL

**Week 8 Topics**

-Topics in Data Analytics

-Decision Making

-Forecasting

-Advanced SQL Concepts

**Week 9 Topics**

-Object - Oriented Database Practices

-Database Design

**Week 10 Topics**

-Web Applications of Database Systems

( ASP and the Web / PHP and the Web )

-Transaction Management

**Week 11 Topics**

-Intelligent - Based Database Systems

( Search Engines / Cortana )

-Database Performance Tuning / Optimization

**Week 12 Topics**

-Big Data

-Data Mining

-Data Science

-Distributed Database Management Systems

**Week 13 Topics**

-Queuing Theory for Oracle Professionals

-Business Intelligence and Data Warehouses

**Week 14 Topics**

-Eliminating Data Redundancy

-Big Data Analytics and NoSQL

**Week 15 Topics**

-General Course Review

-Database Connectivity

-Database Administration and Security