

<p>Course Information</p>	<p>95–703 K: Database Management 12 Unit Course February 2021</p> <p>Instructor: Janusz Szczypula Office: Faculty Area, Level 1 220 Victoria Square Adelaide, SA 5000 Australia Phone: +61 8 8110 – 9950 E-mail: js1m@andrew.cmu.edu Office hours: available on class website</p> <p>Teaching Assistants (TA): schedule of office hours & zoom IDs will be posted to class website</p> <p>Class Times: Tuesday & Thursday, 3:30 p.m. – 4:50 p.m., [Australian CST – Adelaide (GMT+9:30)]</p> <p>Class Website: www.cmu.edu/canvas</p>
<p>Prerequisites</p>	<p>There are no prerequisites for this course for students in MISM, and in MSIT Programs in the Heinz College. For other Heinz College students, 90728 (Introduction to Database Management) is a prerequisite.</p>
<p>Description</p>	<p>Databases systems are central to most organizations’ information systems strategies. At any organizational level, users can expect to have frequent contact with database systems. Therefore, skill in using such systems – understanding their capabilities and limitations, knowing how to access data directly or through technical specialists, knowing how to effectively use the information such systems can provide, and skills in designing new systems and related applications – is a distinct advantage and necessity today. The Relational Database Management System (RDBMS) is one type of database systems that is most often used these days and is the primary focus of this course.</p> <p>Further, to provide students with opportunity to apply the knowledge they learn from the lectures, various homework assignments, SQL assignments, and a database implementation project will be given.</p>

<p>Course Materials</p>	<p>Lecture Notes: Lecture notes will be provided for each class. They can be used during the semester you take the class. They cannot be shared after the class is concluded without permission of the instructor.</p> <p>Textbook: Casteel, J., "Oracle 12c: SQL," Cengage Learning, 2016</p> <p>Suggested Books: Connolly, T. and C. Begg, "Database Systems: A Practical Approach to Design, Implementation, and Management," 6th edition, Addison-Wesley, 2015 Coronel, C. and S. Morris, "Database Systems: Design, Implementation, & Management," 12th edition, Cengage Learning, 2017 Hoffer, J. A., R. Venkataraman, and Heikki Topi, "Modern Database Management," 11th edition, Prentice Hall, 2012 Price, J., "Oracle Database 12c: SQL," McGraw Hill, 2014</p> <p>Software: We will use Oracle Database 11g Express Edition for Windows. No other components of Oracle Software will be used in this class.</p>																
<p>Course Objectives</p>	<table border="1"> <thead> <tr> <th data-bbox="467 873 1097 919">Objective</th> <th data-bbox="1097 873 1419 919">How Assessed</th> </tr> </thead> <tbody> <tr> <td data-bbox="467 919 1097 1045">Gain good understanding of relational data model in terms of data structure, data integrity, and data manipulation.</td> <td data-bbox="1097 919 1419 1045">Homework Assignment, Final Exam</td> </tr> <tr> <td data-bbox="467 1045 1097 1142">Understand and create conceptual database models utilizing entity-relationship modeling.</td> <td data-bbox="1097 1045 1419 1142">Homework Assignment, Final Exam</td> </tr> <tr> <td data-bbox="467 1142 1097 1306">Design data structures that will limit redundancy and enforce data integrity while conforming to organizational requirements utilizing normalization methodology</td> <td data-bbox="1097 1142 1419 1306">Homework Assignment, Final Exam</td> </tr> <tr> <td data-bbox="467 1306 1097 1432">Understand the theory behind the relational data model as it applies to interactions with current database management systems</td> <td data-bbox="1097 1306 1419 1432">Homework Assignment, Final Exam</td> </tr> <tr> <td data-bbox="467 1432 1097 1566">Read and interpret a given data model to query the database and transform the data into information using Structured Query Language (SQL)</td> <td data-bbox="1097 1432 1419 1566">SQL Assignment, Project</td> </tr> <tr> <td data-bbox="467 1566 1097 1663">Implement a data model in a current relational database management system</td> <td data-bbox="1097 1566 1419 1663">Project</td> </tr> <tr> <td data-bbox="467 1663 1097 1789">Create reports, based on transactional data, including elements such as groupings & aggregating data and Analytic SQL functions.</td> <td data-bbox="1097 1663 1419 1789">SQL Assignment, Project</td> </tr> </tbody> </table>	Objective	How Assessed	Gain good understanding of relational data model in terms of data structure, data integrity, and data manipulation.	Homework Assignment, Final Exam	Understand and create conceptual database models utilizing entity-relationship modeling.	Homework Assignment, Final Exam	Design data structures that will limit redundancy and enforce data integrity while conforming to organizational requirements utilizing normalization methodology	Homework Assignment, Final Exam	Understand the theory behind the relational data model as it applies to interactions with current database management systems	Homework Assignment, Final Exam	Read and interpret a given data model to query the database and transform the data into information using Structured Query Language (SQL)	SQL Assignment, Project	Implement a data model in a current relational database management system	Project	Create reports, based on transactional data, including elements such as groupings & aggregating data and Analytic SQL functions.	SQL Assignment, Project
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<p>Evaluation Method</p>	<p>Student's performance in the class will be evaluated based on the following components:</p> <table border="1" data-bbox="505 233 969 415"> <tr> <td>Homework Assignments</td> <td>20%</td> </tr> <tr> <td>SQL Assignments</td> <td>20%</td> </tr> <tr> <td>Project</td> <td>25%</td> </tr> <tr> <td>Final Exam</td> <td>35%</td> </tr> <tr> <td></td> <td>100%</td> </tr> </table> <p><u>Homework Assignments:</u> The homework assignments require students to employ holistic critical thinking to design database models applying the concepts learnt in the lectures. The focus is on understanding business requirement and designing data models to capture good quality data. The range of topics covered in the assignments includes conceptual and logical database modeling, normalization, and relational algebra. The relational algebra assignment is a foundation for learning the Structured Query Language (SQL).</p> <p><u>SQL Assignments:</u> The SQL assignments are hands-on assignments that require students to create and execute various SQL statements and queries using Oracle Database 11g Express Software that address business requirement. The submitted assignments are required to be well formatted and readable.</p> <p><u>Project:</u> Based on the logical model of a small database, the project consists of implementing the data structure, performing specific queries, data manipulation tasks, and querying system catalog to retrieve metadata. The project will integrate and apply the concepts you have learned in class. Guidelines for the project assignment will be distributed and discussed in a later part of the semester.</p> <p><u>Exam:</u> The exam will be a comprehensive closed book, closed notes exam. The exam is to be completed by you individually <i>without</i> help of any other person. The date for the exam will be decide asap. The exam will be graded by the Instructor and class TAs. Final grades will be posted in the official Student Information System that can be accessed by students directly through the Internet.</p>	Homework Assignments	20%	SQL Assignments	20%	Project	25%	Final Exam	35%		100%								
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**Course Policies
& Expectations**

Lectures:

While no attendance will be taken, it is in your interest to attend each lecture. Class participation is encouraged and expected. As research on learning shows, unexpected noises and movement automatically divert and capture people's attention. I encourage you to avoid any activity not related to class. Please turn off your phone notifications and limit other likely sources of technology disruption, so you can fully focus on the lectures. This will create a better learning environment for everyone.

No student may record any classroom activity without the express written consent of the instructor. This is to protect your FERPA rights and those of your fellow students. If a student believes that he/she has a learning disability and needs to record classroom lectures/activities, he/she should contact the Office of Disability Resources to request an appropriate accommodation.

Missed Classes:

Students are responsible for obtaining class material, which may have been discussed on days when they are absent. This can be done through the class website, contacting a classmate who was present in class, or by contacting the instructor.

Assignments:

All assignments have due dates indicated in the class schedule and are to be submitted in a pdf format by the date and time indicated on the class website.

No assignments submitted after the deadline will be accepted, unless permission is granted by the instructor prior to the due date. Late assignments, if approved, should be submitted directly to the instructor. Do not submit any late assignments to class Teaching Assistants.

Each assignment must be typed, and diagrams created using PowerPoint or an equivalent tool.

No collaboration in any form on assignments is allowed. It is important that the work you turn in is wholly your own.

All assignments are graded by class TAs and reviewed by the instructor before they are returned to students within a week of submission.

If you believe that your assignment was graded incorrectly, you may request that it be re-graded. To do this, turn in your graded assignment in question with an explanation of your arguments within a week from the time the assignment was returned to you. The entire assignment is subject to re-grading, not just the specific item(s) in question and the grade may go up or down.

Accommodations for Students with Disabilities:

If you have a disability and have an accommodation letter from the Disability Resources office, I encourage you to discuss your accommodations and needs with me as early in the semester as possible. I will work with you to ensure that accommodations are provided as appropriate. If you suspect that you may have a disability and would benefit from accommodations but are not yet registered with the Office of Disability Resources, I encourage you to contact them at access@andrew.cmu.edu.

Statement of Support for Students' Health & Well-being:

This semester is unlike any other. We are all under a lot of stress and uncertainty at this time. Attending Zoom classes all day can take its toll on our mental health. Make sure to move regularly, eat well, and reach out to your support system if you need to. We can all benefit from support in times of stress, and this semester is no exception.

If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support. Counseling and Psychological Services (CaPS) is here to help: call 1 412 - 268 - 2922 (CMU main campus) and visit their website at <http://www.cmu.edu/counseling/>. Consider reaching out to a friend, faculty or family member you trust for help getting connected to the support that can help.

Academic Honesty and Integrity

All CMU students are expected to follow the ethical guidelines and adhere to the policies as defined in your Program's Student Handbook or in any other source describing such policies as they apply to students at Carnegie Mellon University. These policies and guidelines are available on the CMU web site. Please read them carefully! You will be held accountable for any violations of these policies and guidelines.

Individual assignments must reflect individual effort. Although I expect you to attempt solving each problem on your own, I encourage you to seek help from the class TAs if you struggle with any assignment. Sharing your assignments with any other student in any form (whether it is a paper document, an electronic document such like a MS Word document, or a document in any other format) is not permitted and will be considered cheating. Any "discussion" between students that results in a similar HW submission is also not allowed. If you are in possession of any other person's document or file from this or any other semester, you are in jeopardy.

Any violations of academic integrity in this class will have the following consequences:

- (a) no credit for assignment in question and lowering final grade by one letter (e.g., from B to C),
- (b) in more serious offences, failing the class.

All incidents are reported to the Office of Community Standards & Integrity at Carnegie Mellon University. Additional penalties may be imposed.