

# RYERSON UNIVERSITY

Ted Rogers School of Information Technology Management  
And G. Raymond Chang School of Continuing Education

## (C)ITM 500 – Data and Information Management

### COURSE OUTLINE FOR 2020-2021

#### 1.0 PREREQUISITE(S)

The prerequisite for this course is ITM 207. Students who do not have the prerequisite will be dropped from the course.

#### 2.0 INSTRUCTOR INFORMATION

- Name:
- Office Phone Number:
- E-mail address:
- Faculty/course web site(s): <https://my.ryerson.ca>
- Office Location & Consultation hours:
  - Your instructor is available for virtual consultation during scheduled consultation hours. Information on the consultation format is provided in the D2L course shell. If you wish to make an appointment, kindly do so via email to ensure the professor is available.
- E-mail Usage & Limits:

Students are expected to monitor and retrieve messages and information sent through D2L and Ryerson email on a frequent and consistent basis. In accordance with the policy on Ryerson student email accounts ([Policy 157](#)), Ryerson requires that any electronic communication by students to Ryerson faculty or staff be sent from their official Ryerson email account. Messages from other accounts may be disregarded

#### 3.0 CALENDAR COURSE DESCRIPTION

This course provides the students with an introduction to the core concepts in data and information management. It is centered around conceptual data modeling techniques, converting the conceptual data models into relational data models and verifying its structural characteristics with normalization techniques. The course will include coverage of basic database administration tasks and key concepts of data quality and data security. Building on the transactional database understanding, the course provides an introduction to data and information management

technologies that provide decision support capabilities under the broad business intelligence umbrella.

#### **4.0 COURSE OBJECTIVES AND LEARNING OUTCOMES**

To acquire knowledge of and competency in the major techniques used in the analysis and design of the relational databases for business applications. Specifically, to acquire competency in developing SQL views and queries to extract relevant data to meet business information requirements and in building ERD models that support relational database logical schema design

Upon completion of the course, students will be able to:

1. Understand and articulate the Relational Database concept and its role in business
2. Analyze data requirements for the database
3. Construct an Entity Relationship Diagram
4. Transform the ERD to a Logical Data Model
5. Understand and apply the rules of Normalisation
6. Develop query commands in SQL at an advanced level
7. Design and implement Views using SQL
8. Translate the Logical Data Model to a basic Physical Schema
9. Be competent in the use of relevant industry representative software

#### **5.0 TEXTS & OTHER READING MATERIALS**

**Title:** Database Systems: Design, Implementation, and Management, 13<sup>th</sup> Edition

**Author:** Carlos Coronel & Steven Morris

**Publisher:** Course Technology

**ISBN:** 978-1337627900

#### **6.0 TEACHING METHODS**

This course will incorporate the following teaching/learning methods lecture, laboratory assignments, problem-based learning and group projects. Please note that beside the main textbook, the class lecture notes and assigned labs are the major delivery of the content of ITM 500.

#### **7.0 EVALUATION, ASSESSMENT AND FEEDBACK**

The grade for this course is composed of the mark received for each of the following components:

Evaluation Component	Percentage of the Final Grade	Week Due	Week Evaluation Returned
Weekly Labs	10%	2-11	3-12
Assignment 1	10%	7	9
Assignment 2	10%	11	Exam Week
Midterm Exam	20%	5	7
Final Exam	50%		
<b>Total</b>	<b>100%</b>		

**NOTE:** Students must achieve a course grade of at least 50% to pass this course.

- ❖ At least **20%** of student's grade based on individual work will be returned to students prior to the last date to drop a course in [good academic standing](#).

### Citation Format for Essays and Term Papers

All essay assignments, term paper and other written works must adhere with APA citation format. Technical errors (spelling, punctuation, proofing, grammar, format, and citations) and/or inappropriate levels of language or composition will result in marks being deducted. You are encouraged to obtain assistance from the Writing Centre ([www.ryerson.ca/writingcentre](http://www.ryerson.ca/writingcentre)) for help with your written communications as needed.

You can find APA guidelines and academic referencing from the following online resources:

[Student Learning Support > Online Resources > Writing Support Resources](#)

- [APA Basic Style Guide](#)

[Ryerson Library Citations and Style Guides](#)

- [APA Style](#)
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## 8.0 TOPICS – SEQUENCE & SCHEDULE

Session	Weekly Topic with Learning Objectives	Readings
1	Role of Database Management and Relational Model Overview <ul style="list-style-type: none"> <li>• Explain the advantages of Relational Databases</li> <li>• Explain Relational DB development and role of DBMS</li> <li>• Explain Relational Concept</li> <li>• Explain Primary and Foreign Keys and Referential Integrity</li> </ul>	Chap 1 and 2

2	<p>Simple Query formation in SQL</p> <ul style="list-style-type: none"> <li>Analyze information request requirements</li> <li>Explain components of SELECT statement</li> <li>Design and implement a single table SQL query</li> <li>Implement Conditional and Ordering requirements</li> <li>Analyze output for completeness and accuracy</li> </ul>	Chap 7
3	<p>Simple Aggregates</p> <ul style="list-style-type: none"> <li>Implement String searches</li> <li>Implement Date functions</li> <li>Implement Simple Aggregate functions</li> </ul>	Chap 7
4	<p>Complex Aggregates, Joins and DML Commands</p> <ul style="list-style-type: none"> <li>Design and Implement queries using GROUP BY</li> <li>Design and Implement queries using INNER JOINS</li> <li>Apply Data Manipulation commands</li> </ul>	Chap 7
5	Midterm Exam	
6	<p>The Relationship Model</p> <ul style="list-style-type: none"> <li>Analyze Information Needs and Business Rules</li> <li>Identify Constraints</li> <li>Design and Implement an ERD</li> </ul>	Chap 3
7	<p>Entity Relationship Diagrams</p> <ul style="list-style-type: none"> <li>Implement the Transform of Many to Many Relationships</li> <li>Define and Implement Conceptual Relational Model</li> </ul>	Chap 4
8	<p>Complex Relationship Diagrams and Physical Design of Relational Model</p> <ul style="list-style-type: none"> <li>Implement Recursive and Network Hierarchical structures</li> <li>Implement Multiple and Bi-Directional Relationships</li> <li>Design Entities to support Referential Integrity</li> </ul>	Chap 5
9	<p>Sub Queries</p> <ul style="list-style-type: none"> <li>Design and Implement Sub Queries to access Aggregate Results</li> <li>Design and Implement Sub Queries to for Recursive Relations</li> <li>Combine Sub Query results in single command</li> </ul>	Chap 7
10	<p>Views</p> <ul style="list-style-type: none"> <li>Explain the role and structure of Views</li> <li>Design and Implement Views</li> <li>Design and Implement queries that utilize Views</li> </ul>	Chap 8 Sect 5
11	<p>Normalization</p> <ul style="list-style-type: none"> <li>Understand the role of Normalization in Data Base Design</li> <li>Define the rules of Normalization</li> <li>Create a set of Normalized Relations for a data structure</li> <li>Convert a set of Relations to an ERD</li> </ul>	Chap 6
12	<p>Review</p> <ul style="list-style-type: none"> <li>Adequately prepare for Final Exam</li> </ul>	

## 9.0 VARIATIONS WITHIN A COURSE

All sections of a course (Day and CE sections) will follow the same course outline and will use the same course delivery methods, methods of evaluation, and grading schemes. Any deviations will be posted on D2L Brightspace once approved by the course coordinator.

## 10.0 OTHER COURSE, DEPARTMENTAL, AND UNIVERSITY POLICIES

For more information regarding course management and departmental policies, please consult the [Course Outline Appendix](#) which is posted on the [Ted Rogers School of Information Technology Management website](#).

**NOTE:** Students must adhere to all relevant university policies found in their online course shell in D2L and /or on the following URL: [senate-course-outline-policies](#).

The appendix covers the following topics:

- Attendance & Class Participation
- Email Account
- Request for Academic Consideration
- Examinations & Tests
- Late Assignments
- Standard of Written Work
- Academic Grading Policy
- Academic Integrity
- Student Rights

### Important Resources Available at Ryerson

- [Academic Accommodation Support](#): Ryerson University acknowledges that students have diverse learning styles and a variety of academic needs. If you have a diagnosed disability that impacts your academic experience, connect with Academic Accommodation Support (AAS). Visit the [AAS website](#) or contact [asadmin@ryerson.ca](mailto:asadmin@ryerson.ca) for more information. Note: All communication with AAS is voluntary and confidential, and will not appear on your transcript.
- [The Library](#) provides research workshops and individual assistance. If the University is open, there is a Research Help desk on the second floor of the library, or go to [Workshops](#).
- [Student Learning Support](#) offers group-based and individual help with writing, math, study skills, and transition support, as well as [resources and checklists to support students as online learners](#).

- You can submit an [Academic Consideration Request](#) when an extenuating circumstance has occurred that has significantly impacted your ability to fulfill an academic requirement.
- [Ryerson COVID-19 Information and Updates for Students](#) summarizes the variety of resources available to students during the pandemic.
- Familiarize yourself with the tools you will need to use for remote learning. The [Continuity of Learning Guide](#) for students includes guides to completing quizzes or exams in D2L or Respondus, using D2L Brightspace, joining online meetings or lectures, and collaborating with the Google Suite.