TED ROGERS SCHOOL
Information Technology Management

Ryerson University
The Chang School of Continuing Education

RYERSON UNIVERSITY

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

(C)ITM 610 – Database Administration

COURSE OUTLINE FOR 2020-2021

1.0 PREREQUISITE(S)

The prerequisite for this course is ITM 500. 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 covers the Database Administration (DBA) role for large-scale relational databases. It specifically will deal with the following: the approach to the installation and upgrading of software and utilities; techniques for the allocation of the database to physical devices and directories; the creation of user authorities and controlling access to data and resources; management of data storage; analyzing database performance and implementing procedures for optimizing performance; procedures for the backup and recovery operations.

4.0 COURSE OBJECTIVES AND LEARNING OUTCOMES

The major objective is to give the student an understanding of the concepts involved with the role of a Database Administrator. They will achieve an understanding of the following: techniques for the allocation of the database to physical devices and directories; the creation of user authorities and controlling access to data and resources; management of data storage; analysing database performance and implementing procedures for optimising performance; procedures for the backup and recovery operations. Major topics will be covered in a formal lecture but the student will be required to master the detail through independent study. The version of the software used is SQL Server 2014

COURSE OBJECTIVES

Upon completion of the course, students will be able to:
1. Define the various roles of a DBA
2. Plan for the installation of the DBMS
3. Plan and define the database
4. Implement physical database Constraints
5. Design and implement the tables
6. Perform detailed space estimates and calculations
7. Identify and implement required indexes
8. Identify and implement required management controls
9. Plan and implement backup and restore procedures
10. Plan and implement database security
11. Understand the role and coding for views, stored procedures, user functions, triggers and transactions
12. Understand and utilize the functions of Integration Services
13. Utilize performance optimization tools
14. Be competent in a representative industry DBMS software

5.0 TEXTS & OTHER READING MATERIALS

Title: Professional Microsoft SQL Server 2014 Administration
Author: Adam Jorgensen, Bradley Hall, Steven Wort, Ross Loforte, Brian Knight
Publisher: Wiley
ISBN: 978-1118859131

6.0 TEACHING METHODS

This course will incorporate the following teaching/learning methods lecture, laboratory assignments, problem-based learning, group projects.

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
Weekly Labs	10%
Assignments(2)	20%
Mid Term Examination	20%
Final Exam	50%
Total	**100%**

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) 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

POSTING OF GRADES

- All grades, on assignments or tests must be posted or made available to students through the return of their work. Grades on final exams must be posted. However, as there may be other consideration in the determination of final grades, students will receive their official final grade in the course only from the Registrar. Final official course grades may not be posted or disclosed anywhere by an instructor.
- Posting of grades on the Course Management System (D2L Brightspace) is preferred. If grades are posted in hard copy they must be posted numerically sorted by student identification number after at least the **first four digits** have been removed. Instructors must inform students in all course management documentation of the method to be used in the posting of grades. Students who wish not to have their grades posted must inform the instructor in writing.
- Some graded work will be returned to students prior to the last date to drop a course without academic penalty.

8.0 TOPICS – SEQUENCE & SCHEDULE

Session	Weekly Topic with Learning Objectives	Readings	Session	Weekly Topic with Learning Objectives
1	Being a DBA • Explain the SQL Server Architecture 1. Explain major roles of a DBA	Chap 1	1	Being a DBA • Explain the SQL Server Architecture • Explain major roles of a DBA
2	Configuring SQL Server • Plan and Execute SQL Server installation 1. Explain post-installation configurations • Troubleshoot common installation issues	Chap 2, 3	2	Configuring SQL Server • Plan and Execute SQL Server installation • Explain post-installation configurations • Troubleshoot common installation issues
3	Core DBA Functions	Chap 4, 5	3	Core DBA Functions
	• Configure instance using Server Management Studio			• Configure instance using Server Management Studio
	• Monitor processes using Dynamic Management Options •			• Monitor processes using Dynamic Management Options •
	• Configure and use SQL Server Agent			• Configure and use SQL Server Agent
4	Security • Understand SQL Server and Windows authentication types • Implement object level security • Maintain row level security	Chap 8	4	Security • Understand SQL Server and Windows authentication types • Implement object level security • Maintain row level security
5	Optimization	Chap 11	5	Optimization

	• Understand benefits of optimizing application performance • Using partitioning and compression • Tuning I/O, CPU and Memory			• Understand benefits of optimizing application performance • Using partitioning and compression • Tuning I/O, CPU and Memory
6	Indexes • Understand Index features of SQL Server • Understand how indexes affect performance • Implement portioned tables and indexes • Maintain and tune indexes	Chap 14	6	Indexes • Understand Index features of SQL Server • Understand how indexes affect performance • Implement portioned tables and indexes • Maintain and tune indexes
7	Mid Term Examination		7	Mid Term Examination
8	Performance Tuning Transact SQL • Understand query processing • Understand query plans and query operators • Implement performance tuning in a production environment	Chap 13	8	Performance Tuning Transact SQL • Understand query processing • Understand query plans and query operators • Implement performance tuning in a production environment
9	Backup and Recovery 1. Understand different failure types and causes 2. Plan for disasters 3. Understand how backup works 4. Configure backup environment 5. Recover databases	Chap 17	9	Backup and Recovery • Understand different failure types and causes • Plan for disasters • Understand how backup works • Configure backup environment • Recover databases

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 aasadmin@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.