Computer Science (COMP) 418

Distributed Database Systems and Database Tuning (Revision 4)

Status:	Replaced with new revision, see the **course listing** for the current revision
Delivery mode:	**Individualized study online** with **eText**
Credits:	3
Area of study:	Science
Prerequisites:	**COMP 378** or equivalent.
Precluded:	None
Challenge:	COMP 418 has a challenge for credit option.
Faculty:	**Faculty of Science and Technology**
Notes:	Students who are concerned about not meeting the prerequisites for this course are encouraged to contact the **course coordinator** before registering

Overview

Computer Science 418: Distributed Database Systems and Database Tuning is a senior-level database course. This follow-up course to COMP 378 focuses on advanced topics in database design, implementation, optimization, and distributed application. The course primarily covers database tuning, distributed database systems, and relevant techniques such as query optimization, transaction processing, and physical database design. It also covers some aspects related to database administration such as database security, concurrency control and crash recovery.

Outline

Computer Science 418 consists of the units listed below.

- Unit 0: Course Information
- Unit 1: Data Storage and Indexing
- Unit 2: Index Structures
- Unit 3: Query Evaluation
- Unit 4: External Sorting
- Unit 5: Evaluation of Relational Operators
- Unit 6: Query Optimization
- Unit 7: Transaction Management
- Unit 8: Concurrency Control
- Unit 9: Crash Recovery
- Unit 10: Physical Database Design and Tuning
- Unit 11: Database Security
- Unit 12: Distributed Database Systems

Learning outcomes

Upon successful completion of this course, you should be able to

- explain the key concepts and techniques for database tuning and administration.
- analyze and tune database systems for performance enhancement.
- analyze and design distributed database systems.
- implement principles and techniques for database secure access and crash recovery.

Evaluation

To **receive credit** for COMP 418, you must achieve a course composite grade of at least **D (50 percent)**; a grade of at least 50 percent on the invigilated final examination; an average grade of 50 percent on the assignments. The weighting of the composite grade is as follows:

Activity	Weight
Assignment 1	15%
Assignment 2	15%
Assignment 3	15%
Assignment 4	15%
Final Online Exam	40%
Total	**100%**

The **final examination** for this course must be taken online with an AU-approved exam invigilator at an approved invigilation centre. It is your responsibility to ensure your chosen invigilation centre can accommodate online exams. For a list of invigilators who can accommodate online exams, visit the **Exam Invigilation Network** .

To learn more about assignments and examinations, please refer to Athabasca University's **online Calendar** .

Materials

Raghu Ramakrishnan and Johannes Gerhrke. 2003. *Database Management Systems*, 3rd edition, McGraw-Hill. ISBN: 978-0071231510. (eText)

Abraham Silberschatz, Henry Korth, and S. Sudarshan. 2010. *Database System Concepts*. McGraw-Hill 6th edition. ISBN-13: 978-0073523323 (Print)

Ramez Elmasri and Shamkrant Navathe. 2010. *Fundamentals of Database Systems*, 6th edition, Addison Wesley. ISBN-13: 978-0136086208 (Print)

eText

Registration in this course includes an electronic textbook. For more information on **electronic textbooks** , please refer to our **eText Initiative site** .

We use both an eText and other reading materials (both required and supplemental) in this course. The required text provides systematic and comprehensive knowledge; the other reading materials cover many state-of-the-art and in-depth topics the text does not.

Challenge for credit

Overview

The challenge for credit process allows you to demonstrate that you have acquired a command of the general subject matter, knowledge, intellectual and/or other skills that would normally be found in a university-level course.

Full information about **challenge for credit** can be found in the Undergraduate Calendar.

Evaluation

To **receive credit** for the COMP 418 challenge, you must achieve a grade of at least **D (50 percent)** on the examination and an average grade of 50 percent on the assignments. The weighting of the composite grade is as follows:

Activity	Weight
Assignment 1	15%
Assignment 2	15%
Assignment 3	15%
Assignment 4	15%
Final Online Exam	40%
Total	**100%**

Challenge for credit course registration form

Important links

- **Academic advising**
- **Program planning**

- **Request assistance**
- **Support services**

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

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View **previous revision**