



THE UNIVERSITY OF  
**SYDNEY**

# **SQL Course: Level 2a**

*Centre for  
Continuing Education*



## SQL Course: Level 2a



This SQL course will show you how to extract and change data in relational databases with SQL (Structured Query Language) that traverses multiple tables with Select, Insert, Update and Delete statements, functions and scripts. SQL is a current hot skill, valued by employers.

Microsoft SQL Server is used for hands on exercises during this course. However, the content of the SQL course is kept as close as possible to standard SQL.

Please note, there will be no instruction on how relational databases work in this course. If you do not understand how databases work or why databases are designed in the way they are or you have never written a simple SQL query from scratch, please complete SQL: Level 1 training before you attempt this SQL training course.

This course is the first part of a two-part coverage of the essentials of traditional and modern SQL, both of which you will need to employ to successfully interrogate and manipulate the structures of relational database management systems.



### Course duration

3 sessions, 22.5 hours total



### Time

9am – 4:30pm



### Format

Face-to-face  
or  
Online in real-time



### Dates

Browse available  
[course dates](#)

### Intended audience

Suitable for those who have completed SQL Course: Level 1, or who have equivalent knowledge and understanding of content covered in the SQL Course: Level 1 course outline.

### Prerequisites

SQL Course: Level 1 or equivalent knowledge.



### Upon completion

Every participant receives a University of Sydney certificate of completion.



## Learning outcomes

By the end of this course, you should be able to:

- expand on the clauses learnt in SQL: Level 1
- include more clauses in an SQL SELECT statements (their purposes, what they consume and produce, and execution order)
- build rows for a query from multiple tables and table expressions in the FROM clause
- perform calculations such as subtotals and grand totals in multiple ways
- write INSERT, UPDATE and DELETE statements in various forms to add, change and delete rows in tables
- solve more complex problems by consuming the result sets of SQL statements in other SQL statements
- build tables and columns, applying constraints in SQL
- advance into the basics of scripting in preparation for creating stored procedures, views, functions and triggers (covered in SQL: Level 2b).



## Content

- A brief recap of the content covered in SQL: Level 1 including:
  - an overview of SQL Server Management Studio
  - scripting conventions
  - commenting
  - creating derived columns with arithmetic
  - concatenating data
  - aliases and the SELECT clause
- Wildcard, the basic FROM clause and the basic WHERE clause. This recap is mainly for people who work in environments other than SQL Server Management Studio to allow them to get up to speed with SQL Server Management Studio by practicing some simple SQL and also to allow the people who did the SQL 1 course to get their “heads back into SQL”
- Understanding and using relational and logical operators (AND, OR, BETWEEN, NOT, IN, LIKE and IS NULL)
- Using FETCH, OFFSET to retrieve a subset rows relative to a row
- Rationalising data sets using DISTINCT
- Retrieving aggregated data into grand totals and subtotals using GROUP BY
- Filtering aggregated result sets with HAVING
- UNION, INTERSECT and EXCEPT queries
- Applying output selection logic to the select clause with simple and searched CASE
- Joining multiple tables in a query (INNER joins, OUTER (LEFT, RIGHT and FULL) joins, CROSS joins)
- Table aliasing
- Further aggregation with multiple dimensions using ROLLUP, CUBE, the GROUPING function and the CASE statement combined
- Queries that use sub-queries in the SELECT, FROM and WHERE clause
- Using the view builder to form the basis of a SQL statement
- Using SELECT INTO to create tables from existing data
- Inserting individual and multiple rows with INSERT
- Modifying individual and multiple rows with UPDATE
- Removing individual and multiple rows with DELETE
- The OUTPUT clause



## Content contd...

- The importance and use of intrinsic SQL functions
- Understanding common SQL Server data types, data type precedence and implicit versus explicit data type conversion
- Scripting basics and variables
- How indexes work
- Essential DDL statements in SQL and their use in modifying tables, normalising data and increasing query execution speed
- Identity columns
- The basics of Windowed columns with the OVER clause using PARTITION BY and ORDER BY, Row numbering, tiling, aggregate and ranking functions



*“I got a lot out of this course and would recommend it for those looking for a solid working knowledge of SQL.”*

**James McCullough**



## What you need to do before the course

For this course, you will need **Microsoft SQL Server Express** and **Microsoft SQL Server Management Studio** installed on your device.

### Face-to-face classes (CCE, Sydney)

Classes are held in a computer lab. You do not need to bring your own device or login details.

### Online classes

For the best experience, we recommend using a computer with a large monitor or dual screens/devices. Small laptop screens can make it difficult to follow the facilitator's display while working in the software.

### Materials

Course materials, including a course booklet, are provided electronically.



## Organisational training and development

This course can be delivered as a private session for groups, and tailored to meet the needs of your business. Contact us to discuss our range of organisational training solutions.

[Learn more](#)



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*inspire leadership*

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+61 2 7255 1577

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