

# Introduction to SQL Syllabus

High School (20 Contact Hours)

## Course Overview and Goals

In this beginner-friendly course, students will explore the foundational concepts of SQL (Structured Query Language), the standard language used to manage and manipulate relational databases. No prior experience with SQL or databases is required, making this course an ideal starting point for anyone interested in data organization, analysis, or backend development.

## Learning Environment

The course utilizes a blended classroom approach. The content is a mix of web-based and physical activities. Students will reinforce their learning with hands-on coding exercises, real-world inspired examples, short video tutorials, quizzes, and challenges that gradually build in complexity. By the end of the course, students will be able to write and understand a wide range of SQL queries to analyze, manipulate, and report on data effectively.

## More Information

Browse the content of this course at <https://codehs.com/course/introsql/overview>

## Prerequisites

The Introduction to SQL course is designed for complete beginners with no previous background in computer science. The course is highly visual, dynamic, and interactive, making it engaging for those new to computer science.

## Course Breakdown

### Module 1: Introduction to SQL (1 week/ 3-5 hours)

In this module, students will be introduced to the fundamentals of SQL and relational databases. They will learn how to structure data into tables, write basic SELECT queries, and apply simple filters to retrieve relevant information.

Browse the full content of this unit at <https://codehs.com/course/25/explore/module/89>

Topics Covered	<ul style="list-style-type: none"><li>• What is SQL?</li><li>• Structuring Data in SQL</li><li>• Basic Querying in SQL using SELECT</li><li>• Filtering Queries in SQL using WHERE</li><li>• Advanced Filters (BETWEEN, LIKE, IN)</li></ul>
Example Assignments	<ul style="list-style-type: none"><li>• Harry Potter Names<ul style="list-style-type: none"><li>◦ Return a table with the first_name and last_name of everyone in the Person table.</li></ul></li><li>• The Patil in Ravenclaw<ul style="list-style-type: none"><li>◦ Write a query that returns the first name of a student whose last</li></ul></li></ul>

	<p>name is "Patil" and is in the Ravenclaw house.</p> <ul style="list-style-type: none"> <li>Using BETWEEN <ul style="list-style-type: none"> <li>Find the first and last names of all people whose ID is between 35 and 45.</li> </ul> </li> </ul>
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## Module 2: SQL Part II: The SQL (2 weeks/10 hours)

In this module, students will deepen their understanding of SQL by practicing advanced filtering, sorting, and data presentation techniques. They will explore the use of logical operators, compound conditions, and the ORDER BY and AS clauses. Additionally, students will learn how to join multiple tables to answer complex data questions and simulate real-world database scenarios.

Browse the full content of this module at <https://codehs.com/course/25/explore/module/101>

Topics Covered	<ul style="list-style-type: none"> <li>More Filtering Practice using LIKE</li> <li>Ordering Results using ORDER BY</li> <li>Renaming Fields using AS</li> <li>Joining Tables using JOIN</li> </ul>
Example Assignments	<ul style="list-style-type: none"> <li>Compound Queries with BETWEEN <ul style="list-style-type: none"> <li>Find the first and last names of all people with IDs between 67 and 77 who are in Slytherin.</li> </ul> </li> <li>Sort the P Names <ul style="list-style-type: none"> <li>Return a list of all the first and last names of people whose last name starts with P.</li> <li>Order the list by last name alphabetically and then by first name in reverse alphabetical order.</li> </ul> </li> <li>Courses and Professors <ul style="list-style-type: none"> <li>Return a list of all courses along with the first and last names of the professors who teach them.</li> <li>Sort the results alphabetically by course name.</li> </ul> </li> <li>Defense Students by House <ul style="list-style-type: none"> <li>Return a class roster with last name, first name, and house for the Defense Against the Dark Arts course.</li> <li>Sort the results first by house, then by last name, then by first name (all alphabetically).</li> </ul> </li> </ul>

## Module 3: SQL Functions (1 week/5 hours)

In this module, students will learn how to perform data analysis using SQL's built-in functions. They will use aggregate functions like COUNT and SUM, group data using GROUP BY, filter grouped results with HAVING, and limit result sets using LIMIT. These skills allow students to summarize and extract insights from larger datasets effectively.

Browse the full content of this module at <https://codehs.com/course/25/explore/module/108>

Topics Covered	<ul style="list-style-type: none"> <li>Counting in SQL using COUNT(*)</li> <li>Filtering with COUNT</li> <li>Grouping Data using GROUP BY</li> <li>Filtering Calculations using HAVING</li> <li>Ordering and Limiting Results (ORDER BY and LIMIT)</li> </ul>
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Example Assignments	<ul style="list-style-type: none"> <li>● Course Enrollments <ul style="list-style-type: none"> <li>○ Return a table showing the name of each course and the number of students enrolled.</li> <li>○ Label the columns Course and Enrollment, and sort by the number of students (highest to lowest).</li> </ul> </li> <li>● Families <ul style="list-style-type: none"> <li>○ Return a table of all last names in the database that have more than 1 person.</li> <li>○ Label the columns Family and Count, and sort by the count (descending), then by last name.</li> </ul> </li> <li>● Graduation <ul style="list-style-type: none"> <li>○ Return a list of the last 5 people who will be called at graduation, in reverse order.</li> <li>○ Sort by last_name and then first_name, both in descending order.</li> <li>○ Return only the first_name and last_name columns</li> </ul> </li> </ul>
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#### Module 4: Data Aggregation (1 week/5 hours)

In this module, students will explore how to aggregate and analyze data using SQL. They will work with a new HousePoint table to calculate totals, ranks, and summaries across different groups using functions like SUM and clauses like GROUP BY, HAVING, and LIMIT. Students apply these tools to rich, real-world-inspired scenarios to draw meaningful insights from data.

Browse the full content of this module at <https://codehs.com/course/25/explore/module/147>

Topics Covered	<ul style="list-style-type: none"> <li>● Aggregate Functions using SUM()</li> <li>● Filtering Aggregates</li> <li>● Summing Points</li> <li>● Point Distributions</li> </ul>
Example Assignments	<ul style="list-style-type: none"> <li>● Gryffindors With House Points <ul style="list-style-type: none"> <li>○ Return a table of all Gryffindor students who received House Points.</li> <li>○ Include the first_name, last_name, and number of points.</li> <li>○ Sort by highest to lowest points, breaking ties alphabetically by last and first name.</li> </ul> </li> <li>● House Cup Standings <ul style="list-style-type: none"> <li>○ List all houses along with the total points earned by their members.</li> <li>○ Label the columns House and Points, and sort by highest to lowest total.</li> </ul> </li> <li>● Debbie Downer <ul style="list-style-type: none"> <li>○ List the top 4 professors who have taken away the most house points.</li> <li>○ Return their first_name, last_name, and total negative points.</li> <li>○ Sort by most points taken away, then alphabetically by name.</li> </ul> </li> </ul>