Learn the principles and practices involved in handling business data and analysis, which are suitable for anyone who designs, administers, tunes, and uses shared databases. UCSC’s Database and Data Analytics certificate program offers up-to-date training for data scientists, analysts, administrators and managers who want to apply analytics to business decision-making.

Who Should Attend?

This program is geared to data professionals seeking to augment their understanding of the latest database systems and stay current with ongoing industry changes and the evolving enterprise environment. Others wishing to start a career in databases or data analytics will find a wide range of courses to establish a solid foundation in the related disciplines.

Curriculum

Certificate | 2 Quarters | 14 Units

Relational Database Design and SQL Programming | 3 Units
Cover the concepts and design for Relational Database Management Systems (RDMS) and the Structured Query Language (SQL) needed to define and manipulate data. Learn how to create conceptual, logical and physical designs of relational databases. The course covers methods for producing readable output, creating and manipulating tables and creating and managing constraints using SQL. Skills needed: Familiarity with general database concepts and ability to install software or databases on a personal computer.

Business Intelligence Solutions | 2 Units
This course takes a hands-on approach to the fundamentals of business intelligence, using the Microsoft BI stack as an example. You will learn the features of PivotTables, Power Pivot and Power View, including how to load data from SQL Server and create PowerView dashboards, charts and maps. You will use Visual Studio to build an Online Analytical Processing (OLAP) cube and dimensions. Learn to use SQL Server Analysis Services (SSAS), Integration Services, and Reporting Services.

Predictive Analytics: Applications of Machine Learning | 3 Units
An introduction to machine learning methods including regression, classification, clustering and recommender systems, and their application to practical scenarios. Review the steps involved in building predictive models, including data collection, feature selection, algorithms, and evaluation. You will learn how to fine tune the performance of these predictive models, and plan for practical implementation issues. Skills needed: Some programming experience is recommended. R will be used in class examples, and Python experience can be helpful. Basic knowledge of probability and statistics is required. Prior machine learning knowledge is recommended but not required.

Introduction to Data Analysis | 3 Units
Examine different approaches to a data analysis project, with a framework for organizing an analytical effort. Popular tools for data analysis are introduced to carry out analysis. Learn how to obtain and manipulate the raw data for use. It covers the basic exploratory analysis and common data analytical techniques such as regression, simulation, estimation and forecasting, and it includes several graphing and visualization tools to understand the data and to present findings and results. Skills needed: Some programming experience is recommended. (R will be covered in class and used in examples, and Python experience can be helpful.) Basic knowledge of probability and statistics is required (at the level of most basic statistics textbooks).

Big Data: Overview, Tools and Use Cases | 3 Units
Learn data management, including how to acquire, cleanse and normalize Big Data. Explore key concepts, schema, data access and methodology of NoSQL, a database management system designed to handle Big Data. Learn the technology infrastructure, Hadoop and SMAQ (Storage, MapReduce and Query) stacks in Big Data. The course concludes with Data Visualization Tools (DVT), analytics tools, and deployment patterns in various industries. Skills needed: A fundamental understanding of databases, programming and data analytics is strongly recommended.
**Courses in the certificate programs are subject to change based on schedule availability and/or student aptitude. Equivalent course substitutions will be made to accommodate.**