

Free Program Overview

Database Systems

From small offices to large corporations, databases play an important role in information access. This program overview addresses the basics of relational databases.

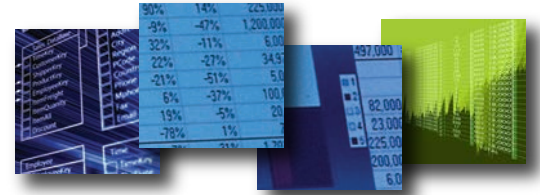
The event will provide an overview of the Database Systems certificate program offered at UCSC Extension. You will hear about our lab-based curriculum and have a chance to ask questions. Several popular products such as Oracle and MySQL will also be discussed.

Instructors will highlight database job opportunities in the industry.

Course 3212
and 22404



ENGINEERING AND TECHNOLOGY



Strong Demand for Qualified Database Management Professionals

Most businesses today use some form of shared data to serve the needs of their enterprises. The engineering, sciences, medical, biotech, financial services and commerce sectors are particularly data intensive. This is why so many database management system (DBMS) products have been developed, either based on mainframes, servers, PCs or the Internet. As a result, the demand for qualified data management professionals will continue to grow robustly.

Comprehensive Curriculum in Database Technologies

Our certificate in Database Systems is designed for technical professionals who want to learn the principles and practices involved in designing, administering, tuning, and using shared databases. The certificate provides not only broad, general knowledge of database systems and concepts, but also state-of-the-art practical skills commonly sought from DBMS professionals.

In addition to database management courses, our curriculum offers training on database applications including data mining and business intelligence. There will be increasing demand for professionals in the enterprise and e-commerce environment who not only understand databases but can also develop applications from them.

Benefits of Studying at UCSC Extension

- Hands-on experience with leading tools such as Oracle 11g and MySQL
- State-of-the-art lab featuring Oracle 11g and MySQL
- Interactive learning with instructors in a disciplined environment
- Convenient course schedules and Silicon Valley location
- Courses taught by expert database professionals
- A solid foundation for obtaining DB certifications

Who Should Attend This Program

The program is geared toward technical professionals seeking to augment their understanding of the latest database systems, keep pace with ongoing industry changes and the evolving enterprise environment. Anyone wishing to start a career in the database field will find a full complement of courses that build a solid foundation in the requisite disciplines.

Benefits of Declaring Candidacy

We encourage you to establish candidacy in a certificate program early in your studies. Benefits of declaring candidacy include:

- Curriculum changes subsequent to the date of your application will not affect your course requirements.
- Candidates are notified of updates or special opportunities related to the program.



About UCSC Extension Silicon Valley

The vital learning community at UCSC Extension Silicon Valley is well known for its collegial atmosphere and rigorous preparation. Our faculty of expert practitioners teaches state-of-the-art solutions to the everyday problems confronting technology professionals working in Silicon Valley. The professional education programs we offer build expertise, open doors to new opportunity, and deliver tangible value. Our broad portfolio of open-enrollment courses and certificates, affordable pricing, experience-based instruction, and central location in Silicon Valley help turn jobs into careers.

Database Systems Certificate

Certificate Requirements

Total: 14 units (minimum)
Required: 1 course
Elective: 11 units (minimum)
GPA: 3.0 (C or better in all courses).

Prerequisites

Each course has different prerequisites.

Please review the course descriptions to ensure that you meet the requirements, whether through job experience or education. For details see full course descriptions at ucsc-extension.edu/engineering.

Recommended Course Sequence

We recommend you take courses in the order presented on the course chart. However, the sequence may vary based on student background and professional interest.

Note: Some courses may be listed in more than one program, however, only one course may be shared between two Engineering and Technology certificate programs unless otherwise noted.

Program Contact

Engineering and Technology Department,
 (408) 861-3860 or e-mail
program@ucsc-extension.edu

Curriculum

REQUIRED COURSE	Units	Course
Relational Database Essentials	3.06195

ELECTIVE COURSES	Units	Course
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Oracle Database

Oracle SQL Programming, Introduction	3.03053
Oracle PL/SQL, Introduction	3.021320
Oracle 11g: Enterprise Architecture and Administration on Linux.....	3.5	.....19069
Oracle 11g: Administration II on Linux	4.0	.....19070

MySQL Database

MySQL Database Administration I	2.0	.....23095
MySQL Database Administration II	2.0	.....23228
MySQL Database for Developers and Designers	3.0	.....22632
Linux Based Web Application Development—Apache, MySQL, PHP	3.0	.....21958

Database Programming and Applications

Data Warehouse Solutions and Business Intelligence.....	2.0	.....3502
Machine Learning and Data Mining, Introduction	3.0	.....2612
Data Mining	5.0	.....20294
PHP (Hypertext Preprocessor) I.....	2.0	.....21343
XML Essentials	2.0	.....3279

Required Course

Relational Database Essentials

Any application that needs to process and store large amounts of information will likely use a commercial database management system (DBMS). This course provides in-depth knowledge of the concepts behind a DBMS, and then focuses on issues related to practical database design. Students learn how to create conceptual, logical and physical designs of relational databases in response to a set of user requirements. The course will lay a solid foundation for technical professionals and others who want to pursue a career in databases and apply that knowledge to the next level of SQL Server as well as the Oracle series of courses. Topics include relational database concepts, entity-relationship model, normalization, SQL fundamentals, and data warehouse fundamentals.

Course 6195

Elective Courses

Data Warehouse Solutions and Business Intelligence

This course provides students with the knowledge needed to plan and implement a business intelligence solution using data warehouse technology. It covers the various aspects of data warehousing, including process, architecture, tools, multi-dimensionality, data marts, requirements, implementation approaches, and how to implement successful projects. The instructor will share real-world cases of data warehouse and BI applications. As part of the project, students will learn to define requirements, and perform basic design tasks, such as developing the Kimball matrix and designing subject areas.

Course 3502

Course Descriptions

Data Mining

This course provides an overview of the principles underlying data mining algorithms and their application, data mining algorithms, and algorithm construction to solve specific problems in a principled manner. The algorithms covered include trees and rules for classification and regression, association rules, belief networks, classical statistical models, nonlinear models such as neural networks, and the local “memory-based” model. How analysis fits together when applied to real-world data mining problems is also covered. Topics include the role of metadata, how to handle missing data, supervised and unsupervised learning, support vector machines, and kernel methods.

Course 20294

Linux Based Web Application Development— Apache, MySQL, PHP

Linux, Apache, MySQL and PHP, collectively known as LAMP, comprise the majority of servers, databases and scripting languages on the Internet today. LAMP belongs to open-source and is very robust, available free, easily configured, deployed and maintained. This course teaches LAMP basics including installation, deployment and development of a Web site. Students will learn the basics of programming MySQL (a popular Web database) and PHP (Hypertext Preprocessor, a Web site scripting language). Teaching method includes theory, practices and case studies. Students will be able to develop basic to intermediate level 3-tier Web sites and Web applications with a database in the back-end.

Course 21958

Machine Learning and Data Mining, Introduction

Machine Learning automatically recognizes complex patterns in all types of data. This survey course covers the concepts and principles of a large variety of data mining methods. The course covers both supervised and unsupervised learning concepts. The supervised techniques include various types of linear regression, decision trees, k- nearest neighbors, Naive Bayes, Support Vector Machines, and ensemble methods. The course also addresses unsupervised techniques such as: k-means, expectation maximization, and density based clustering.

Course 2612

MySQL Database Administration I

MySQL has been widely adopted for use in enterprise and Web applications. This foundation course begins with an overview of MySQL server, including installation, configuration and metadata access. It covers user account management, including security and access privileges. Students will learn the backup and recovery features and techniques, and how to review server logs. The course introduces the various types of storage engines, query cache configuration, various client utility programs, and the underlying configuration parameters which play important roles in query performance and database tuning. Each class meeting includes a lab session.

Course 23095

MySQL Database Administration II

This hands-on lab course outlines and demonstrates the advanced administrative features of MySQL and prepares students for the Certified MySQL Database Administration Part-II (CMDDBA-II) exam. Beginning with the advanced user account management features, the course covers, in sequence, the security aspects of the server OS, network, accounts and data; the optimization techniques for queries, databases, server load, memory tuning and cache utilization; and the diagnostic process and considerations of hardware choices, network and OS for MySQL. The course concludes with scaling up MySQL with multiple servers.

Course 23228

MySQL Database for Developers and Designers

MySQL is a reliable database engine commonly used for storing and serving data as web content. The course begins by reviewing the basic SQL queries and the types of storage engines. It introduces the aggregate, the index merge, data manipulation, and stored procedures in MySQL. You will learn to write complex queries and get hands on experience with advanced features such as creating sub programs, data security, triggers, and dynamic SQL. You will also learn a performance tuning strategy, server configuration, loading techniques and the application architecture for efficient database design.

Course 22632

Oracle 11g: Administration II on Linux

In this course, you'll learn how to configure an Oracle database for multilingual applications and practice various methods of recovering the database using RMAN, SQL, and Flashback technology. Tools to monitor database performance and what steps to take to improve database performance are covered as well as how to use various database technologies, such as Resource Manager, Scheduler, and Automatic Storage Management (ASM). Topics include using globalization support, securing the Oracle listener, diagnostic sources, and automating tasks with the scheduler. The course is designed to prepare you for the corresponding Oracle Certified Professional exam.

Course 19070

Oracle 11g: Enterprise Architecture and Administration on Linux

Oracle DBAs manage the industry's most advanced information systems and command some of its highest salaries. This course is your first step toward success as an Oracle professional, and will give you a firm foundation in basic database administration. You'll learn how to install and maintain an Oracle database, and how to create an operational database and properly manage the various structures including performance monitoring, database security, user management, and backup/recovery techniques. This course is designed to prepare you for the corresponding Oracle Certified Associate exam. Topics include installing Oracle Database 11g Software, creating an Oracle Database, database interfaces and controls, storage structures, administering users, managing data and schema objects, undoing management, and Oracle net services, shared server, and backups.

Course 19069

Oracle SQL Programming, Introduction

This course teaches students how to define and manipulate data in an Oracle database using SQL programming. It also includes methods for producing readable output, creating and manipulating tables, as well as creating and managing constraints. It lays the foundation for learning more specific Oracle products such as iSQL*Plus or SQL Developer. Topics include writing SQL sorting data, aggregating data, multitable operations, subqueries, and hierarchical retrieval. This is an interactive, hands-on lab course.

Course 3053

Oracle PL/SQL, Introduction

This course is applicable to Oracle8i, Oracle9i, Oracle 10g, and Oracle 11g users. It introduces students to PL/SQL and helps them understand the benefits of this powerful programming language. Students learn to create PL/SQL blocks of application code that can be shared by multiple forms, reports, and data management applications as well as anonymous PL/SQL blocks, stored procedures, functions, packages and database triggers. Students will also learn to manage PL/SQL program units, dependencies, manipulate large objects, and use some of the Oracle-supplied packages. The lab uses I*SQLPLUS to develop these program units. Demonstrations and hands-on practice reinforce the fundamental concepts.

Course 21320

PHP (Hypertext Preprocessor)

PHP is one of the best server-side technologies for handling Web content. It is used by millions of sites worldwide. The course starts by covering the development environment, language syntax and programming constructs. It introduces the concepts of OOP in PHP at different levels. It also covers the interactions with HTML Web pages and databases. PEAR (PHP repository) and unit tests are included as the advanced topics. Practical examples and sample codes will be given. You will gain hands-on experience with PHP and how learn to process data to create interactive and dynamic Web pages.

Course 21343

XML Essentials

This course is an introduction to the power of XML and its importance to the Web. The course begins with the history and background of XML and the advantages of moving toward the XML standard. The course introduces basic tags as well as syntax rules for XML and XML environments. Practical examples will be used to demonstrate the basics of working with XML, cascading style sheets and document-type definitions. The course briefly addresses the Document Object Model (DOM) concept and the data manipulation capability.

Course 3279

Program Updates and Enrollment Information

Visit ucsc-extension.edu/engineering, for the most up-to-date information about our courses and programs, including textbooks, instructors, schedules and locations.

Enroll online at ucsc-extension.edu.

Send questions to program@ucsc-extension.edu

UCSCextension
Silicon Valley

Silicon Valley's #1 Professional Engineering Educator

Dynamic, Highly Educated Student Body

Nearly 100 percent of the students who enter our programs have Bachelor's degrees—and more than 40 percent already hold graduate degrees. So when studying at UCSC Extension Silicon Valley, you will learn and network with the best and brightest. Working professionals come here to build their careers rather than earn a degree—yet our certificates' quality and recognition have proven instrumental in helping them advance careers.

Wide Variety of Flexible, Competitively Priced Learning Options

We offer highly practical, real-world instruction in dozens of disciplines of high interest and demand in Silicon Valley. Our applied courses provide a theoretical foundation to enhance on-the-job performance. In addition, our programs are very competitively priced—often less than half that of comparable training available elsewhere—with many offered both in classrooms and online. You can take individual courses in any program or earn a full certificate.

Comprehensive Programs for Technology Industries

Our career-oriented education is organized under eleven certificate programs, each representing a significant technology discipline or industry. Course levels vary from basic to advanced. Students can either be beginners in the field, practicing engineers, or job seekers wanting a rigorous program to broaden their skills and enhance their value in the marketplace. Together these programs offer the broadest technology curriculum in Silicon Valley.

How to Get Started

Go to ucsc-extension.edu. You'll find detailed information about the full range of certificates and courses we offer, including class schedules and online registration. Or call us at (408) 861-3860 for more information.

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Program Contact

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