SQL SERVER DATABASE ADMINISTRATION PROGRAM

An eleven-week in-depth program covering database administration using Microsoft SQL Server® 2019

DePaul University's SQL Server Database Administration Program is designed to provide an intensive and comprehensive introduction to all essential aspects of Microsoft SQL Server technologies. The program focuses on teaching IT professionals the knowledge for implementing and maintaining a database with the tools and utilities available in SQL Server. It will also explore security, database high availability and performance issues, as well as data integration.

Classroom lectures and demonstrations will be complemented by reading, assignments, and hands-on exercises. In addition, students will be provided with a copy of Microsoft SQL Server 2019 for installation on their personal computers. This computer must be running Windows® 10 and the student should have administrator privileges.

YOU WILL LEARN ABOUT:

- SQL Server architecture
- Installation, upgrading and configuration
- Managing databases and files
- Creating and managing database objects
- SQL Server Management Studio
- SQL Server Security
- Managing large database features – partition, compression
- Backup and recovery
- Database high availability
- Performance and tuning
- SQL Server on Linux®
- SQL Server R Services
- PolyBase
- Big Data Clusters
- Azure Data Studio
- Migrate SQL Server to SQL Azure

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Microsoft’s SQL Server is a comprehensive relational database providing enterprise-class data management along with superior tools in analysis, reporting, integration, and notification. The SQL Server 2019 database engine provides secure, reliable storage for both relational and structured data, enabling one to build and manage highly-available, scalable data applications for line-of-business and analytical applications.

SQL Server’s close integration with Microsoft Visual Studio®, Microsoft Office products, and a suite of development tools—including the SQL Data Tools—sets it apart from its competitors. The latest edition of SQL Server 2019 provides an end-to-end development environment that includes many new technologies that empower developers to significantly increase their productivity.

Harnessing the data explosion to better understand the past and get direction for the future has turned out to be one of the biggest challenges for enterprise information technology departments in global organizations. The new version of SQL Server will include improved support for Big Data Cluster. PolyBase is a technology that accesses and combines both non-relational and relational data, all from within SQL Server 2019. SQL Server 2019 can also run on Linux.

The goal of the SQL Server Database Administration Program is to give the IT professional the knowledge to implement and maintain a SQL Server database and to provide understanding of the capabilities and uses of its services. The ideal participant will have a solid programming background and knowledge of relational database concepts. Students in the program are expected to do a considerable amount of work outside of class. The instructor will be accessible in person and through electronic mail.

**CURRICULUM**

The following topics are covered in the program. Each unit involves reading and assignments. All work can be done with the software provided.

**YOUR LEARNING ENVIRONMENT**

Program overview. Software provided to students.

**SQL SERVER BASICS AND ARCHITECTURE**

SQL Server overview. SQL Server architecture components. SQL Server editions and services. Microsoft SQL Server DBA certification.

**INSTALLING SQL SERVER**

Planning, preparation, installation, configuration, and post installation verification.

**MANAGING DATABASES AND FILES**


**CREATING TABLES AND VARIOUS DATABASE OBJECT**

Creating tables and various database objects, including features: compression, partition, filestream and columnstore indexes.

**CREATING AND TUNING INDEXES**

Planning, creating, and optimizing Indexes.

**AUTOMATING ADMINISTRATIVE TASKS**

Configuring the SQL Server Agent. Creating jobs, operators, and alerts. Managing multiple servers.

**SQL SERVER SECURITY**


**BACKUP AND RECOVERY**

Describe types of failures. Review different recovery models. Planning a backup and recovery strategy. Backing up and restoring user and system databases. Recovering data from database Snapshots. Disaster recovery and business continuity.
**DATABASE HIGH AVAILABILITY AND DISASTER RECOVERY**
Introduction to high availability. Cluster, database mirroring, Availability groups, data replication, and log shipping implementation. Best practices on each technical solution.

**PERFORMANCE AND TUNING**

**SQL SERVER FEATURES**
Overview of SQL Server other features, including Change Data Capture, FILESTREAM Data, Policy-based Management, Data Compression, Master Data Services, Data Quality Services, Column-store indexes, SQL Data Tools, etc.

**SQL SERVER 2019 NEW FEATURES**
Overview of SQL Server 2019 new features, including Big Data Cluster, PolyBase, SQL Server on Linux, Azure Data Studio, etc.

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**GENERAL INFORMATION**

**ADMISSION**
Applicants should have professional database administration experience; familiarity with computer programming, including Structured Query Language (SQL); and, knowledge of relational database concepts.

A substantial commitment of time is required for this intensive course of study. Final admission will be determined by the admissions committee on the basis of an applicant's overall qualifications, including work history and educational background.

**FACILITIES**
To promote the learning process, the Institute maintains special-purpose laboratories as well as dedicated classrooms equipped with state-of-the-art audio/visual equipment.

In addition, the college's unique Course OnLine (COL) technology allows students to replay classes over the Internet. COL captures and replays five components of the classroom experience—audio, video, PC screen, whiteboard, and document camera input—and incorporates them into one interface to provide an innovative rebroadcast system.

**SCHEDULE**
The Institute schedules a session in the fall, winter, and spring quarters. Classes generally meet on Saturdays. The option to take the program strictly online is also available.

**FACULTY**
The program will be taught by a faculty member from the College of Computing and Digital Media and experts from industry. Faculty will be available throughout the program both in person and through electronic mail.
The college, through its School of Cinematic Arts, School of Computing, and its School of Design, offers a variety of programs at the undergraduate and graduate levels. Almost 4,000 students are enrolled in the college’s bachelor’s programs and more than 2,000 students are enrolled in the master's and Ph.D. programs making the college’s graduate program one of the largest in the country. The college offers more than 400 courses each quarter, many in the evening, and primarily in the Loop and Lincoln Park Campuses. Most of the degree programs are also available exclusively online.

**Offerings at the undergraduate level include:**
- Animation B.A. / B.F.A.
- Computing B.A.
- Computer Science B.S.
- Cyber-Physical Systems Engineering B.S.
- Cybersecurity B.S.
- Data Science B.S.
- Film and Television B.A. / B.F.A.
- Game Design B.S.
- Game Programming B.S.
- Graphic Design B.F.A.
- Industrial Design M.F.A.
- Information Systems B.S.
- Information Technology B.S.
- Math and Computer Science B.S.
- Network Engineering and Security B.S.
- User Experience Design B.S.

**Offerings at the graduate level include:**
- Animation M.A.
- Business Information Technology M.S.
- Computational Finance M.S.
- Computer Science M.S.
- Cybersecurity M.S.
- Data Science M.S.
- Digital Communication and Media Arts M.A.
- Experience Design M.A.
- Film and Television M.S.
- Game Programming M.S.
- Health Informatics M.S.
- Human-Computer Interaction M.S.
- Information Systems M.S.
- Network Engineering and Security M.S.
- Product Innovation and Computing M.S.
- Software Engineering M.S.
- J.D./M.S. in Computer Science Technology

**Master's of Fine Arts**
- Animation
- Creative Producing
- Documentary
- Film and Television Directing
- Game Design
- Screenwriting

**Ph.D. in Computer and Information Sciences**
- Ph.D. in Human Centered Design

**INSTITUTE FOR PROFESSIONAL DEVELOPMENT**

The Institute for Professional Development was formed by the college in 1984 to assist both individuals and businesses in keeping pace with the rapid development of computer technologies. The Institute currently offers a variety of intensive certificate programs in these areas:

- Advanced Python
- Advanced SQL
- Artificial Intelligence for Enterprise
- Automated Software Testing
- Big Data and NoSQL
- Big Data Using Hadoop
- Big Data Using Spark
- Cloud Computing Technologies
- Cybersecurity Risk Management
- DevOps
- Data Analytics with Excel and Tableau
- Data Science for Business
- Data Science: Programming with Python
- Fundamentals of Statistics and Machine Learning Using R
- Fundamentals of R
- Incident Response and Digital Forensics
- Introduction to SQL
- iOS Developer
- Modern Information Technology
- Machine Learning and Deep Learning
- Modern .NET Web Development
- SQL Server® Business Intelligence
- SQL Server® Database Administration
- Technology and Innovation
- Web Development with JavaScript and HTML5

**APPLICATION PROCEDURE:**

Complete the enclosed application and return it with a non-refundable $40.00 application fee (check or money order made payable to DEPAUL UNIVERSITY) to:

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Chicago, IL 60604-2300

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