CLOUD COMPUTING WITH AMAZON WEB SERVICES PROGRAM

A five-week in-depth program in cloud computing with the Amazon Web Services® platform

DePaul University’s Cloud Computing with Amazon Web Services Program has been designed for IT professionals and companies that are new to the cloud computing environment. The program has been designed to give students the most comprehensive understanding of the use of the Amazon Web Services (AWS) platform. Students will learn how to design, build, launch, deploy, and scale an application using Amazon Web Services (AWS) along with different development tools. DePaul University collaborates with Amazon’s partners, industry leading service providers and subject matter experts to lead students through the AWS infrastructure service and show them how to architect and deploy applications “in the cloud”.

Classroom lectures and demonstrations will be complemented by hands-on exercises, reading, case studies, and projects. In order to maximize learning, students will be required to bring their own laptop computer to every class session. Each student will be provided with a dedicated account to access AWS along with sample code and scripts to learn best practices and real-world scenarios. However, students should also be prepared to use their own credit card and spend a small fee to access cloud services beyond the basic provisioning provided for class use.

YOU WILL:

- Learn fundamentals of cloud computing, virtualization, and AWS tools and technologies
- Understand the major characteristics of AWS and architecture for the sample use case
- Launch and scale a dynamic web site using Amazon EC2, Auto Scaling and CloudWatch
- Store and distribute files using Amazon S3 and CloudFront
- Query structured data from an application using Amazon RDS, MySQL, and Amazon DynamoDB
- Coordinate and communicate between distributed application components with Amazon SQS
- Explore products and cloud computing solutions available on AWS with a variety of development tools, including the AWS SDK for Java
- Learn how to leverage existing IT resources and AWS technologies to achieve better results
- Learn how to integrate EC2, S3, EBS, VPC, CloudFront and other services to form a scalable web architecture
- Gain hands-on experience with AWS technologies and various products on Amazon Machine Images to provision machines, manage storage, and cache content at network endpoints
- Discover use cases, best practices, and tips to make cloud computing easier

DePaul University
College of Computing and Digital Media
Institute for Professional Development
243 S. Wabash Avenue, Room 301
Chicago, IL  60604-2300
(312)362-6282
ipd.cdm.depaul.edu
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Cloud computing is an emerging paradigm for consumption and delivery of IT services, based on concepts derived from service catalog and on-demand service with shared resources, availability, elasticity, and pay-as-you-go models. Amazon Web Services (AWS) provides a flexible and scalable computing platform that can scale as business needs require. The AWS platform provides infrastructure, operating system, storage, database and application services that simplify administration, streamline maintenance and reduce costs. In addition, AWS offers advanced capabilities to support development and diverse compute workloads in a public cloud deployment as well as on-demand self-service production environment.

The Cloud Computing with Amazon Web Services Program is designed to deeply explore the AWS cloud platform. The ideal participant should have professional work experience in an IT job function and an interest in, or a need to know more about, cloud computing. Prior experience with AWS is not necessary. Programming experience with Java (preferred) or Python is required. Basic Linux command line experience is also required. Students in the program are also expected to bring their own laptop computer to class as well as to complete assignments outside of class. Instructors will be accessible in person and through electronic mail.

CURRICULUM

CLOUD COMPUTING OVERVIEW
Historical overview of traditional workload patterns and practices, current state and future trends. Cloud computing characters, service models and delivery models. Current state of cloud adoption and maturity level.

AMAZON WEB SERVICES (AWS) OVERVIEW
Introduction to AWS environment, products, tools, pricing models, business partners and services.

AMAZON ELASTIC CLOUD COMPUTE (AMAZON EC2®)
EC2 definitions and capabilities along with live demos. Hands-on experience with a virtual computing environment, using web service interfaces to launch instances with a variety of operating systems. Loading pre-configured, templated images to obtain a custom application environment. Managing a network’s access permissions and running your image using as many or few systems as you desire.

SCALABILITY AND ELASTICITY
Address stateful and non-stateful application scaling, vertical and horizontal scaling, and how to use Auto Scaling to scale EC2 capacity up or down automatically according to conditions you define. How to architect massively scalable applications using Amazon SQS.

AMAZON RELATIONAL DATABASE SERVICE (AMAZON RDS)
How to easily set up, operate, and scale a relational database in the cloud. Compare MySQL, Amazon DynamoDB, and other relational database functions and capabilities.

S3 AND EBS
How to use both the object-based AWS storage service and the block-based AWS storage service.

DATA MOVEMENT
How to bring data in and out of the cloud. Use Amazon Simple Queue Service (Amazon SQS) to simply move data between distributed components of their applications. Review Amazon import/export and third party vendors’ products.

SECURITY
How to use security zones, custom firewall rules and virtual private cloud services to secure corporate data. How to use AWS Identity and Access Management (IAM) to create multiple users and manage the permissions for each of these users within your AWS Account.
VIRTUAL PRIVATE CLOUD How to use VPC to leverage the AWS cloud as an extension of your corporate datacenter to secure data and also meet regulatory requirements.

RESOURCE MANAGEMENT Reviewing best practices on each business model and technical solutions. Various real-world case studies.

MONITORING AND REPORTING Overview of different monitoring & reporting options, with specific focus on using Amazon CloudWatch to track, graph, and set alarms for custom application metrics.

ELASTIC BEANSTALK Speed to the market – quickly deploy and manage applications in the AWS cloud with full control over the AWS resources powering the application and access to the underlying resources at any time.

ELASTIC MAPREDUCE Leverage a hosted Hadoop framework running on the web. Scale infrastructure of Amazon EC2 and S3 to easily and cost-effectively process vast amounts of data.

GENERAL INFORMATION

ADMISSION Applicants should have professional work experience in an IT job function. Programming experience Java (preferred) or Python is required. Basic Linux command line experience is also required.

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

FACILITIES 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.

CLASSES The Institute offers one section of the program each quarter. Classes meet one day per week.

FACULTY The faculty consists of a team of instructors from the College of Computing and Digital Media and experts from industry. Faculty will be available throughout the program both in person and through e-mail.
COLLEGE OF COMPUTING AND DIGITAL MEDIA

The college, through its School of Computing and its School of Cinema and Interactive Media, offers a variety of programs at the undergraduate and graduate levels. Over 1,000 students are enrolled in the college’s bachelor’s programs and over 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 200 courses each quarter, many in the evening, in several locations: the Loop Campus, the Lincoln Park Campus, the O’Hare Campus, the Naperville Campus, and the Rolling Meadows Campus. Most of the degree programs are also available exclusively online.

Current offerings at the undergraduate level include:

**Offerings at the undergraduate level include:**
- Animation B.S. / Animation B.A.
- Computer Games Development B.S.
- Computer Graphics and Motion Technology B.S.
- Computer Science B.S.
- Computing B.A.
- Digital Cinema B.S. / Digital Cinema B.A.
- Graphic Design B.F.A.
- Information Assurance and Security Engineering B.S.
- Information Systems B.S.
- Information Technology B.S. / Information Technology B.A.
- Interactive Media B.S.
- Math and Computer Science B.S.
- Network Technologies B.S.

**Offerings at the graduate level include:**
- Animation M.A.
- Applied Technology M.S.
- Business Information Technology M.S.
- Cinema Production M.S.
- Computer Game Development M.S.
- Computer Graphics and Motion Technology M.S.
- Computational Finance M.S.
- Computer Science M.S.
- Computer, Information and Network Security M.S.
- E-Commerce Technology M.S.
- Human-Computer Interaction M.S.
- Information Systems M.S.
- Information Technology M.A.
- IT Project Management M.S.
- Network Engineering and Management M.S.
- Predictive Analytics M.S.
- Software Engineering M.S.
- J.D./M.A. in Computer Science Technology
- J.D./M.S. in Computer Science Technology

**Master’s of Fine Arts**
- Animation
- Cinema
- Screenwriting

**Ph.D. in Computer and Information Sciences**

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 SQL
- Cloud Computing Fundamentals
- Cloud Computing with Amazon Web Services®
- IPv6
- IT Project Management
- Java™ Developer
- Java™ Web Services
- Lightweight Java™ Web Development

- .NET Developer
- Ruby on Rails®
- SharePoint® Developer
- SQL Server® Business Intelligence
- SQL Server® Database Administration
- Web Development with Ajax Technologies
- Web Development with Python®
- Wireless LAN Security

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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