CLOUD COMPUTING TECHNOLOGIES PROGRAM

An eleven-week high-level overview of the principles, methods, and technologies of Cloud Computing

DePaul University’s Cloud Computing Technologies Program provides a broad understanding of the different leading Cloud Computing technologies. The program is designed to quickly educate information technology professionals on various Cloud implementations and the organizational considerations necessary to effectively and wisely utilize Cloud services within their organizations.

The Cloud Computing Technologies Program is offered solely online. Program content will consist of instructor-led video, reading, homework assignments, lab exercises, and projects. The lab exercises will give the student first-hand knowledge of the skills needed to build and deploy a Cloud application using a variety of common services. While access to most Cloud services explored in the program will be provided to students in class, there may be some Cloud services that are only accessible via the use of a student’s own credit card. Students should expect to spend a small fee to access these services.

YOU WILL LEARN TO:

- Explain Cloud Computing Concepts
- Describe Cloud Computing Architecture
- Understand Cloud Computing Standards
- Summarize Cloud Computing Implementation Strategies
- Apply Software as a Service (SaaS)
- Construct Platform as a Service (PaaS)
- Use Infrastructure as a Service (IaaS)
- Analyze Workload Patterns and Resource Management
- Build your own Cloud using services from providers such as Amazon®, IBM® and Microsoft®
- Design on premise to Cloud migration
- Apply Best Practices

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The term “Cloud Computing” commonly refers to computing services available on demand, over the Internet, and that allow for dynamic elastic growth based on business needs. It encompasses a range of services: from basic infrastructure hosting (servers, databases, etc.) to hosting of development platform environments, to applications hosting. The services can reduce the time it takes to get products and/or services to market; reduce application development and deployment barriers and increase the flexibility of the IT organization.

Cloud Computing represents a major shift in the economics, development, and services provisioning of IT, and of business development in general. It has the potential to reduce an IT organization’s capital and support costs, enable applications to be implemented faster and allow applications to grow to accommodate user needs, it is a computing trend that has already made a major impact and can only be expected to grow in the future. As with many great opportunities, Cloud Computing also presents many challenges and some risks, which IT workers and decision-makers need to be aware of.

The Cloud Computing Technologies Program is designed to explore the essential aspects of Cloud Computing. The program is ideally suited to business and IT professionals who need a firm overall knowledge of the technologies involved, including: Senior IT managers and those assessing the potential for Cloud Computing in their organization; Systems Architects looking to design cloud-based systems; IT operations managers responsible for infrastructure and staffing; application developers assessing computing options for development projects; and application engineers responsible for deploying and managing Cloud applications. 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. Advanced computer programming skills are not required; however, students should have been exposed to basics of programming logic in a prior course. Instructors will be accessible in person and through electronic mail.

### CURRICULUM

#### YOUR LEARNING ENVIRONMENT
Program overview. Tools used in the program.

#### CLOUD CONCEPTS
Review different computing models such as Grid Computing, Utility Computing, Super Computing, Cluster Computing, and Distributed Computing. Understanding the difference in resource management between on-premise and Cloud, and real-world workload patterns.

#### CLOUD ARCHITECTURE

#### CLOUD STRATEGY
Identify business situations which may benefit from a Cloud solution. Learn how to develop a Cloud strategy and cloud migration roadmap based on business objectives and ROI, target markets, go-to-market approach, pricing strategies and sales alignment.

#### CLOUD COMPUTING TERMS AND STANDARDS
Introduce Cloud Computing terms and definitions. Review existing Cloud Computing standards and the various efforts to develop new Cloud Computing standards.

#### CLOUD COMPUTING DEPLOYMENT MODELS
The class will discuss various Cloud Delivery Models as defined by the National Institute of Standards:

**Software as a Service (SaaS)** – that provides a full application software solution, using an on-demand subscription or “pay-as-you-go” model, which can be implemented in various application delivery approaches. (single instance, multi-tenant architecture). Review Pricing, partnering, and management to quickly implement standard applications.
### Platform as a Service (PaaS)

- Provides an applications development platform with operating system, storage approaches and development tools to enable developers to quickly implement custom solutions.

### Infrastructure as a Service (IaaS)

- Provides a virtualized hardware environment where the developer can install their own operating systems, development environments and management tools to provide highly customized solution required to satisfy their business needs.

### BUILDING A CLOUD

- Topics like dynamic provisioning of servers, storage on demand, capacity management, elastic storage devices, management and monitoring tools will be discussed at a high level.

- Hands-on lab using services from providers such as IBM, Amazon, and Microsoft will enable students to build their own simple Cloud solutions.

### MIGRATING TO A CLOUD

- Discuss issues related to migrating applications to the Cloud, with a focus on business cases, reducing IT development, support and licenses costs while better connecting people and improve service delivery.

### CASE STUDIES AND BEST PRACTICES

- Review the ever-changing environment of Cloud Computing Standards and best practices. Various real-world case studies will be presented.

### GENERAL INFORMATION

#### ADMISSION

Professional work experience in an IT job function is required. Advanced computer programming skills are not required; however, students should have been exposed to basics of programming logic in a prior course.

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.

#### LAB EXERCISES

Students will be assigned hands-on lab exercises at regular intervals through the program to reinforce concepts learned. Required lab exercises will include Microsoft Azure, Amazon Web Services, Google, IBM Bluemix, and others.

Some lab exercises will be done through the installation of publicly-available freeware on the student’s own computer. Free trail Cloud accounts will be available through various Cloud service providers. Lab support via e-mail will be available throughout the program duration.

#### CLASSES

The Institute offers one section of the program each quarter. Students will have access to course materials through DePaul University’s Desire to Learn (D2L) course management system available at [https://d2l.depaul.edu](https://d2l.depaul.edu).

#### 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.
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. Over 3,000 students are enrolled in the college’s bachelor’s programs and about 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 close to 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.
- 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.
- Information Systems B.S.
- Information Technology B.S.
- Interactive and Social Media 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.
- Applied Technology M.S.
- 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.
- E-Commerce Technology M.S.
- 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 SQL
- Big Data and NoSQL
- Big Data Using Hadoop
- Big Data Using Spark
- Cloud Computing Technologies
- Cybersecurity Risk Management
- Data Science for Business
- Data Science: Programming with Python
- Fundamentals of R
- Fundamentals of Software Testing
- Incident Response and Digital Forensics
- Introduction to Artificial Intelligence and Deep Learning
- Introduction to SQL
- iOS Developer
- Java™ Developer
- Modern Information Technology
- Modern .NET Web Development
- SQL Server® Business Intelligence
- SQL Server® Database Administration
- Technology and Innovation
- Web Development with JavaScript and HTML5

**APPLICATION PROCEDURE:**

You do not have to be an existing DePaul student to take this certificate program. All interested parties must apply for admission. Prospective students may complete the [online application](#) and pay the (non-refundable) $40.00 application fee online during the application process. Alternatively, prospective students may print, complete and return the [printable application](#) via mail or email (ipd@cdm.depaul.edu), and mail the (non-refundable) $40.00 application fee (check or money order made payable to DEPAUL UNIVERSITY) to:

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