**PH 601.2 [E1] CLOUD COMPUTING WITH AMAZON WEB SERVICES**

Unit - 1 (**10 hrs)**

* Introduction,
* Cloud Computing at a Glance,
* The Vision of Cloud Computing,
* Defining a Cloud,
* A Closer Look,
* Cloud Computing Reference Model,
* Characteristics and Benefits,
* Challenges Ahead,
* Historical Developments, Distributed Systems,
* Virtualization,
* Web 2.0,
* Service-Oriented Computing,
* Utility-Oriented Computing,
* Building Cloud Computing Environments,
* Application Development,
* Infrastructure and System Development,
* Computing Platforms and Technologies.

**Virtualization :**

* Introduction,
* Characteristics of Virtualized,
* Environments Taxonomy of Virtualization Techniques,
* Execution Virtualization,
* Other Types of Virtualization,
* Virtualization and Cloud Computing,
* Pros and Cons of Virtualization,
* Technology

## Unit II (10 hrs)

* Cloud Computing Architecture,
* Introduction,
* Cloud Reference Model,
* Architecture, Infrastructure / Hardware as a Service,
* Platform as a Service,
* Software as a Service,
* Types of Clouds,
* Public Clouds,
* Private Clouds,
* Hybrid Clouds,
* Community Clouds,
* Economics of the Cloud,
* Open Challenges,
* Cloud Definition,
* Cloud Interoperability and Standards Scalability and Fault Tolerance Security,
* Trust, and Privacy Organizational Aspects,
* Principles of Parallel and Distributed Computing- Elements of parallel computing,
* Elements of distributed computing.
* Technologies for distributed computing.

**Unit III**

* Energy efficiency in clouds .
* Energy-efficient and green cloud computing architecture,
* Market- based management of clouds,
* Market-oriented cloud computing,Reference model,
* A reference model for MOCC ,
* Technologies and initiatives supporting MOCC ,
* Federated clouds/InterCloud- Characterization,
* Cloud federation stack, Aspects of interest,
* Technologies for cloud federations,
* Third-party cloud services.

**Cloud Applications-**

* Scientific applications(Healthcare, Biology, Geoscience),
* Business and consumer applications **(10 hrs)**

## Unit IV

Designing Cloud Applications: [Introducing cloud-based multitier architecture](https://subscription.packtpub.com/book/cloud_%26_networking/9781787281066/2/ch02lvl1sec17/introducing-cloud-based-multitier-architecture) , [Designing for](https://subscription.packtpub.com/book/cloud_%26_networking/9781787281066/2/ch02lvl1sec18/designing-for-multi-tenancy) [multi-tenancy ,](https://subscription.packtpub.com/book/cloud_%26_networking/9781787281066/2/ch02lvl1sec18/designing-for-multi-tenancy) [Understanding cloud applications design principles](https://subscription.packtpub.com/book/cloud_%26_networking/9781787281066/2/ch02lvl1sec19/understanding-cloud-applications-design-principles) [Understanding emerging](https://subscription.packtpub.com/book/cloud_%26_networking/9781787281066/2/ch02lvl1sec20/understanding-emerging-cloud-based-application-architectures) [cloud-based application architectures ,](https://subscription.packtpub.com/book/cloud_%26_networking/9781787281066/2/ch02lvl1sec20/understanding-emerging-cloud-based-application-architectures) [Estimating your cloud computing costs ,](https://subscription.packtpub.com/book/cloud_%26_networking/9781787281066/2/ch02lvl1sec21/estimating-your-cloud-computing-costs) A typical e- commerce web application, AWS Components, Managing costs on AWS Cloud, Application development environments **(9**

## hrs)

**Unit V**

Scalability: Objectives, Designing scalabile application architecture, Leveraging AWS infrastructure services for scalability, architecture –increasing loads, Event handling at scale . High Availability: Objectives, Nature of failures, AWS High availability architecture, Security – Security objectives, Best practices in implementing AWS security **(9 hrs)**

## Text Books

[1]. Rajkumar Buyya, Christian Vecchiola, S Thamarai Selvi, “Mastering Cloud Computing”,

1st Edition, 2015, Tata Mcgraw Hill Publishing Co Ltd

[2]. Aurobindo Sarkar, Amith Shah “Learning AWS” Second edition 2018,Packt Publishing

Ltd

## Reference Books

[1]. Atul V. Mistry ,”Expert AWS Development”, Packt Publishing Ltd ,First edition 2018 [2]. Kris Jamsa, “Clooud Computing”, 1st Edition, 2013, Jones & Bartlett Publishers

[3]. Anthony T Velte, “Cloud Computing: A practical Approach”, 1st Ed, 2010, Tata McGraw Hill.

[4]. Fern Halper, Kaufman, Bloor Robin, Hurwit, “Cloud Computing for Dummies”, 1st Ed, 2010, Wiley

[5]. Joshy Joseph , Craig Fellenstein, “Grid Computing”, 4th Ed, 2013, PearsonAsia

[6]. Ahmar Abbas, “Grid Computing: A Practical Guide to technology and Applications”, 2010,

CRC Press

[7]. Kaittwang Geoffrey C.Fox, Jack J Dongrra,“Distributed and Cloud Computing”,1st Ed, 2012, Elsevier