

Department of

Revised Syllabus of Diploma Programme (UG)

Preamble:

Cloud computing is an emerging computing paradigm where various users access the resources and services offered by service providers. Use of cloud computing at this course encompasses the production services and it can offer benefits in the cost, performance, and delivery of IT services. The use of cloud computing services is forecast to grow significantly over the coming years.

Program Objectives

To access resources and services needed to perform functions with dynamically changing needs.

- To understand the cloud privacy and security concepts to create secure cloud environment.
- To learn the various cloud platforms to implement real time cloud applications.

Program Outcomes:

1. Understand the fundamental concepts of Cloud computing components and architecture.
2. Discuss the technology and tool kits to facilitate the Cloud computing
3. Demonstrate the installation of cloud platform and evaluate the performance

I Year Diploma Programme

1. Title: Cloud Computing
2. Year of Implementation: 2021
3. Duration: One Year
4. Pattern: Semester
5. Medium of Instruction: English
6. Contact hours: 7 hours/week
8. Structure of Course:

Syllabus Structure (UG)

Year	Semester	Course No.	Course Code	Contact Hours	Credits (1Credit=15 H)	Total Marks	
1	I	CT I	DBVT 101	30	2	75	
		CL I	DBV L101	60	2	75	
	II	CT II	DBVT 202	30	2	75	
		CL II	DBV L202	60	2	75	
	Annual	CP I	DBV P101	30	1	50	
		Total			210	9	350
2	III	CT III	D*T 303	30	2	75	
		CL III	D* L303	60	2	75	
	IV	CT IV	D*T 404	30	2	75	
		CL IV	D* L404	60	2	75	
	Annual	CP II	D*P202	30	1	50	
		Industrial and or Incubation and or Research and or Field Training			30	1	-
		Total			240	10	350
	V	CT V	D*T 505	30	2	75	
		CLV	D*L505	60	2	75	
	VI	CT VI	D*T 606	30	2	75	
		CL VI	D*L606	60	2	75	
	Annual	CP III	D*P303	60	2	100	
		Industrial and or Incubation and or Research and or Field Training			30	1	-
		Total			270	11	400
	Total			720	30	1100	

D: Diploma, BV: Departmental Code (C: Chemistry, MI: Microbiology, CSE: Computer Science (Entire), etc)

C: Course, T: Theory, L: Lab (Practical), P: Project

Total No. of Courses: 10 (Theory: 06, Practical: 06, Project: 03) Theory and Practical: Semester, Project: Annual

Semester I

D BVT 101:

(Contact Hrs: 30 Credits: 2)

Learning Objectives:

1. Analyze the cloud computing security issues
2. Identify the issues in resource optimization for cloud computing environment

Unit I: Cloud Computing Fundamentals (15)

Motivation for Cloud Computing , The Need for Cloud Computing, Defining Cloud Computing, NIST Definition of Cloud Computing, Cloud Computing Is a Service, Cloud Computing Is a Platform, Principles of Cloud computing, Five Essential Characteristics, Four Cloud Deployment Models, Three Service Offering Models, Cloud Ecosystem, Requirements for Cloud Services, Cloud Application, Benefits and Drawbacks

Unit II: Cloud Models (15)

Cloud Service Models: Cloud Architecture- Layers and Models Layers in cloud architecture, Software as a Service (SaaS), features of SaaS and benefits, Platform as a Service (PaaS), features of PaaS and benefits, Infrastructure as a Service (IaaS), features of IaaS and benefits, Service providers, challenges and risks in cloud adoption. Cloud deployment model: Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing.

Learning Outcomes:

After completion of the unit, Student is able to

- 1) Explain the core concepts of the cloud computing paradigm
- 2) characteristics, advantages and challenges brought about by the various models and services in cloud computing.

Reference Books:

- 3) 1. Antohy T Velte, et.al,” Cloud Computing: A Practical Approach”, McGraw Hill, 2009
- 4) 2. Gautam Shroff, Enterprise Cloud Computing- Technology, Architecture and Applications, Cambridge University Press, 2010.
- 5) 3. Barrie Sosinsky, “Cloud Computing Bible”, Wiley India, 2011.

DBV L101: (Practical):
(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

- 1) Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost
- 2) study how to leverage and manage single and multiple datacenters to build and deploy cloud applications that are resilient, elastic and cost-efficient.

List of Practical's (15)

- 1) Write Cloud Computing Interview Questions (100 per head), write it in wordpad or word document.
- 2) Prepare on own, copy it from the internet
- 3) 2) Write down questions and answers on each topic which is given in the syllabus (So it will cover all Academic preparations)
- 4) 3) Case Study : Cloud Computing
- 5) 4) Research Paper on cloud computing (Give different topics to students and ask them to prepare a research paper like IEEE etc for ex: Research Issues and Implications, Storage and security problems etc)
- 6) 5) Study and implementation of infrastructure as Service using OpenStack.
- 7) 6) Case Study: PAAS(Facebook, Google App Engine)
- 8) 7) Case Study: AWS, IBM, GCP etc (Give Separate case study in group)
- 9) 8) Design and analyze architecture of Aneka / Eucalyptus / KVM identify different entities to understand the structure of it.
- 10) 9) Give an assignment on each topic on chapter compilation.
- 11) 10) Arrange mock interviews on cloud computing. Cover topics which are mentioned in syllabus

Learning Outcomes:

After completion of the unit, Student is able to

- 1) to know the methodologies and technologies for the development of applications that will be deployed and offered through cloud computing environments.
- 2) to understand the necessary theoretical background for computing and storage clouds environments.

Reference Books:

1. Antohy T Velte, et.al,” Cloud Computing: A Practical Approach”, McGraw Hill, 2009
2. Gautam Shroff, Enterprise Cloud Computing- Technology, Architecture and Applications, Cambridge University Press, 2010.
3. Barrie Sosinsky, “Cloud Computing Bible”, Wiley India, 2011.

Semester II

D BVT 202:

(Contact Hrs: 30 Credits: 2)**Learning Objectives:**

- 1) The basic ideas and principles in data center design; cloud management techniques and cloud software deployment considerations
- 2) Cloud storage technologies and relevant distributed file systems, NoSQL databases and object storage.

Unit I: Cloud Computing Architecture and Management (15)

Cloud Architecture, Anatomy of the Cloud , Network Connectivity in Cloud Computing, Applications on the Cloud ,Managing the Cloud, Migrating Application to Cloud

Unit II: Cloud Computing - Get into the cloud (15)

Cloud Concepts & Technologies: Cloud Concepts & Technologies: Virtualization, Load Balancing, Scalability & Elasticity, Deployment, Replication, Monitoring, Service Level Agreement, Data Centers, Web Technology. Cloud Service Providers: Amazon Web Services (AWS), Google Cloud Platform, Microsoft Azure, IBM, Salesforce, and others. Accessing the cloud platform and basic cloud services: Creating AWS, Microsoft Azure and Salesforce free account and accessing the services provided by them.

Learning Outcomes:

After completion of the unit, Student is able to

- 1) Understand the concepts, characteristics, delivery models and benefits of cloud computing
- 2) Understand the key security and compliance challenges of cloud computing

Reference Books:

1. Antohy T Velte, et.al,” Cloud Computing: A Practical Approach”, McGraw Hill, 2009
2. Gautam Shroff, Enterprise Cloud Computing- Technology, Architecture and Applications, Cambridge University Press, 2010.
3. Barrie Sosinsky, “Cloud Computing Bible”,Wiley India, 2011.

DBV L202: (Practical):
(Contact Hrs: 60 Credits: 02)

Learning Objectives:

Students will be able to

- 1) the basic ideas and principles in data center design; cloud management techniques and cloud software deployment considerations
- 2) Cloud storage technologies and relevant distributed file systems, NoSQL databases and object storage.

List of Practical's (15)

1. Access free accounts for different cloud platforms (Provider) which are available. List down the services provided by all of them. Differentiate all the services from each other. Make a chart/ppt/word doc of it and submit
2. Case study: Cloud Computing Architecture and management
3. Paper Presentation / PPT Presentation on Cloud Concepts & Technologies: Virtualization, Load Balancing, Scalability & Elasticity, Deployment, Replication, Monitoring, Service Level Agreement, Data Centers, Web Technology. (Give separate topic for each group)
4. Implement and use sample cloud services with the help of AWS, Microsoft Azure.
5. Create a free tier AWS account and study AWS main services in details
6. Create instances with different operating systems using AWS EC2 service
7. Write Cloud Computing Interview Questions (100 per head), write it in wordpad or word document. Prepare on your own, copy it from the internet. Cover each topic from the above syllabus.
8. Write down questions and answers on each topic which is given in the syllabus (So it will cover all Academic preparations)
9. Implementation of Virtualization in Cloud Computing to Learn Virtualization Basics, Benefits of Virtualization in Cloud using Open Source Operating System.
10. Give an assignment on each topic on chapter compilation.

11. Arrange mock interviews on cloud computing, Cover topics which are mentioned in syllabus.

Learning Outcomes:

After completion of the unit, Student is able to

- 1) Understand the key technical and organisational challenges
- 2) Understand the different characteristics of public, private and hybrid cloud deployment models.

Reference Books:

1. Antohy T Velte, et.al,” Cloud Computing: A Practical Approach”, McGraw Hill, 2009
2. Gautam Shroff, Enterprise Cloud Computing- Technology, Architecture and Applications, Cambridge University Press, 2010.
3. Barrie Sosinsky, “Cloud Computing Bible”,Wiley India, 2011.

D BVP101 (Project):
(Contact Hrs. 30/60, Credits: 1/2)

BOS Sub-Committee

- 1) Mr.Doke S.A. Chairman
- 2) Ms.Jagadale R.S. Member

Expert Committee

1. Mr.GaneshDangat (Academic Expert)
(K.B.P.,College,Satara)
2. Mr.AkshayUthale(Industrial Expert)
(Ameyo,Mumbai)