

SRI VENKATESWARA UNIVERSITY
BCA Cloud Computing Honours– W.E.F. 2025-26

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
III	V	12	AWS for Cloud Computing	3	3
			AWS for Cloud Computing Practical Course	2	1
		13	Data Analytics Methods	3	3
			Data Analytics Methods Practical Course	2	1
		14	Big Data Using Hadoop	3	3
			Big Data Using Hadoop Practical Course	2	1
		15	Devop Tools	3	3
			Devop Tools Practical Course	2	1

SRI VENKATESWARA UNIVERSITY::TIRUPATI

BCA Cloud Computing Honours

III Year V Semester

COURSE 12: AWS for Cloud Computing

(w.e.f. 2025-26)

Theory

Credits: 3

3 hrs/week

I. Learning Outcomes:

After completing this course, the student will be able to

1. Configure various virtualization tools such as Virtual Box, VMware workstation. Design and deploy a web application in a PaaS environment.
2. Learn how to simulate a cloud environment to implement new schedulers.
3. Install and use a generic cloud environment that can be used as a private cloud.
4. Manipulate large data sets in a parallel environment.

UNIT- I

Introduction: Definition of Cloud – Evolution of Cloud Computing – Benefits of Cloud Computing - Underlying Principles of Parallel and Distributed Computing – Cloud Characteristics – Elasticity in Cloud – On-demand Provisioning.

UNIT- II

Cloud Enabling Technologies: Service Oriented Architecture – REST and Systems of Systems – Web Services – Publish Subscribe Model – Basics of Virtualization – Types of Virtualization – Implementation Levels of Virtualization – Virtualization Structures-Tools and mechanisms.

UNIT- III

Virtualization of CPU – Memory – I/O Devices –Virtualization Support and Disaster Recovery. Cloud Architecture & Services: Layered Cloud Architecture Design –Public, Private and Hybrid Clouds -Cloud computing models: IaaS – PaaS – SaaS, cloud delivery models, cloud deployment models.

UNIT- IV

AWS & Networking: Introduction to AWS, AWS Global infrastructure, Google cloud platform, network switches & virtual private cloud (VPC) , VPC and Subnets , IP addressing in AWS, AWS security groups, EC2 instance types. EC2 pricing models

UNIT-V

Cloud storage: Cloud Storage –Advantages of Cloud Storage – Cloud Storage Providers – S3 (Simple Storage Service) - S3 Features.

Security in cloud: Software-as-a-Service Security – Security Governance – Virtual Machine Security-Security types: network level, host level, application level.

Text Books:

1. Kai Hwang, Geoffrey C. Fox, Jack G. Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
2. Overview of AWS : AWS whitepaper , copyright@aws,inc, and/or its affiliates. BY AWS.
3. Rittinghouse, John W., and James F. Ransome, —Cloud Computing: Implementation, Management and Security, CRC Press, 2017.
4. Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi, —Mastering Cloud Computing, Tata Mcgraw Hill, 2013.
5. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing - A Practical Approach,Tata Mcgraw Hill, 2009.
6. George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud: Transactional Systems for EC2 and Beyond (Theory in Practice)", O'Reilly, 2009

BCA Cloud Computing Honours
III Year V Semester
COURSE 12: AWS for Cloud Computing

Practical

Credits: 1

2hrs/week

LIST OF EXPERIMENTS:

1. Install Virtualbox/VMware Workstation with different flavours of linux or windows OS on top of windows7 or Windows 8.
2. Install a C compiler in the virtual machine created using virtual box and execute Simple Programs
3. Install Google App Engine. Create hello world app and other simple web applications using python/java.
4. Use GAE launcher to launch the web applications.
5. Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim.
6. Find a procedure to transfer the files from one virtual machine to another virtual machine.
7. Find a procedure to launch virtual machine using trystack (Online Openstack Demo Version)
8. Install Hadoop single node cluster and run simple applications like word count

MODEL QUESTION PAPER
SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Cloud Computing Honours
III Year V Semester
COURSE 12: AWS for Cloud Computing
(w.e.f. 2025-26)

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

1. Short answer question from Unit-1
2. Short answer question from Unit-1
3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
12. Long answer question from Unit-1
13. Long answer question from Unit-2
14. Long answer question from Unit-2
15. Long answer question from Unit-3
16. Long answer question from Unit-3
17. Long answer question from Unit-4
18. Long answer question from Unit-4
19. Long answer question from Unit-5
20. Long answer question from Unit-5

Note: The question paper setter is requested to set question paper based on a model question paper and ensure coverage across all units equally.

SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Cloud Computing Honours
III Year V Semester
COURSE 13: Data Analytics Methods
(w.e.f. 2025-26)

Theory

Credits: 3

3 hrs/week

I. COURSE OUTCOMES: After successful completion of this course, the student will be able to;

1. Ability to distinguish between discrete and continuous distributions.
2. Knowledge related to concept of curve fitting.
3. Knowledge of important discrete and continuous distributions such as Binomial, Poisson, rectangular, normal, distributions.
4. Acumen to apply standard discrete and continuous probability distributions to different situations.
5. Knowledge related to concept of correlations.
6. Knowledge related to concept of regressions.
7. Knowledge of correlation, regression analysis, regression diagnostics.

UNIT – I

Correlation: Introduction, Meaning of Correlation, Types of correlation, probable error, Karl-pearsons coefficient of correlation for individual series only, Spearman's Rank correlation for individual series only.

UNIT –II

Regression: Introduction, definition, difference between correlation and regression, Simple linear regression, properties of regression coefficients, Regression equation x on y, Regression equation y on x, Simple Problems.

UNIT – III

Estimation Techniques: Forward Differences - Backward differences. Newton's forward interpolation formula - Newton's backward interpolation formula

UNIT – IV

Curve Fitting : method of least squares, fitting of a straight line only. Linear trend and find trend values by the method of straight line trend.

UNIT –V

Applications of Numerical Integration: Trapezoidal rule, Simpson's $1/3^{\text{rd}}$ rule, Simpson's $3/8^{\text{th}}$ rule.

Note: Concentrate on numerical problems only. Proofs of theorems and Derivations of expressions are omitted.

Text Books:

1. Mathematical Methods by Dr. T.K.V.Iyengar. - S.Chand Publications.
2. Statistical methods - S.P Gupta.

Reference Books:

Fundamentals of Mathematical statistics - S.C. Gupta & V.K.Kapoor.

BCA Cloud Computing Honours
III Year V Semester
COURSE 13: Data Analytics Methods

Practical

Credits: 1

2hrs/week

LIST OF EXPERIMENTS:

1. Trapezoidal rule
2. Simpson's rule
3. Fitting of a Straight Line.
4. Fitting of a Straight Line Trend.
5. Estimation Techniques
6. Interpolation.
7. Rank Correlation.
8. Correlation coefficient.
9. Regression lines X on Y.
10. Regression lines Y on X

MODEL QUESTION PAPER
SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Cloud Computing Honours
III Year V Semester
COURSE 13: Data Analytics Methods
(w.e.f. 2025-26)

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

1. Short answer question from Unit-1
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3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
12. Long answer question from Unit-1
13. Long answer question from Unit-2
14. Long answer question from Unit-2
15. Long answer question from Unit-3
16. Long answer question from Unit-3
17. Long answer question from Unit-4
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SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA Cloud Computing Honours
III Year V Semester
COURSE 14 : Big Data using HADOOP
(w.e.f. 2025-26)

Theory

Credits: 3

3 hrs/week

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Learn tips and tricks for Big Data use cases and solutions.
2. Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop.
3. Able to apply Hadoop ecosystem components.
4. This course provides practical foundation-level training that enables immediate and effective participation in big data projects.
5. The course provides grounding in basic and advanced methods to big data technology and tools, including map Reduce and Hadoop and its ecosystem.

UNIT- I

DATA: Definition, characteristics of data, classification of digital data.

BIG DATA: Definition, Evolution of big data and its importance, four V's in big data, Drivers for Big data, Big data analytics, Big data applications, designing data architecture

UNIT- II

Introduction to HADOOP: Definition, meeting the big data challenge, Apache Hadoop & Hadoop Ecosystem, Hadoop core components, Hadoop Distributions, developing enterprise application with Hadoop, Storage and analysis in Hadoop, comparison with RDBMS,

Hadoop features: Understanding HDFS, understanding MapReduce, understanding different Hadoop modes, Hadoop installation.

UNIT- III

HDFS: HDFS architecture: Definition, understanding the HDFS components, Blocks, Name Nodes, Data Nodes, HDFS files, HDFS federation, HDFS high availability, Basic file system operations, Reading data from a Hadoop URL, Reading data using the file system API, Writing and Deleting data

UNIT- IV

MAPREDUCE: MapReduce architecture: definition, Mappers and Reducer, Understanding MapReduce components – Job Tracker and Task Tracker. MapReduce Terminology, listing Hadoop MapReduce entities, Limitation of MapReduce, different java concepts used in Hadoop programming.

UNIT-V

Hadoop MapReduce Scenario: Loading data into HDFS, Executing the Map phase, Shuffling and sorting, Reducing phase execution. Map reduce objects, Number of maps in MapReduce, number of reduces in MapReduce, MapReduce dataflow, steps to run a MapReduce job, exploring HDFS data.

Text Books:

- Big Data Analytics, Introduction to Hadoop, Spark, and Machine-Learning, Raj Kamal, Preeti Saxena 2019, Mcgraw-Hill Education
- Boris Lublinsky, Kevin T. Smith Alexey Yakubovich, “Professional Hadoop Solutions”. Wiley, ISBN : 9788126551071,2015.
- Big data analytics with R and Hadoop BY Vignesh Prajapati, Packt Publishing.
- Tom White, “HADOOP” : The Definitive Guide”, O Reilly 2012.
- Big Data Analytics, Seemaacharya, Subhasinichellappan, Wiley 2015.
- Chris Eaton, Dirk DeroosEt Al., “Understanding Big Data”, McgrawHill, 2012.

BCA Cloud Computing Honours
III Year V Semester
COURSE 14 : Big Data using HADOOP

Practical

Credits: 1

2hrs/week

LIST OF EXPERIMENTS:

1. Implement various commands in Hadoop environment
2. Implement the Linked List Data Structures
3. Implement the Stack Data Structures
4. Implement the Queue Data Structures
5. Implement the Set Data Structures
6. Implement word count program with Hadoop Map Reduce.
7. Implement Matrix Multiplication program with Hadoop MapReduce.
8. Implement the adding data into files in Hadoop
9. Implement the adding directories in Hadoop
10. Implement the retrieving data from files in Hadoop
11. Implement the deleting data in files in Hadoop
12. Implement the modifying data in files in Hadoop

MODEL QUESTION PAPER
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III Year V Semester
COURSE 14 : Big Data using HADOOP
(w.e.f. 2025-26)

Time : 3 Hrs

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7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
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14. Long answer question from Unit-2
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SRI VENKATESWARA UNIVERSITY::TIRUPATI

BCA Cloud Computing Honours

III Year V Semester

COURSE 15 : Devop Tools

(w.e.f. 2025-26)

Theory

Credits: 3

3 hrs/week

I. Learning Outcomes:

After completing this course, the student will be able to

1. Design and architect applications for DevOps
2. Learn how to simulate a cloud environment to implement new schedulers.
3. Student shall be able to progress as a Developer or Linux System Administrator using the acquired skill set.
4. Able to understand the DevOps way of organizing work.
5. To Be familiar with the range of DevOps tools..

UNIT- I

Introduction: History of DevOps – What is DevOps? – Benefits of DevOps – Need for DevOps –Recognizing the business value of DevOps – How DevOps works? – Software Development life Cycle(SDLC): Waterfall model, Agile model - DevOps tools.

UNIT- II

DevOps capabilities: Paths to DevOps adoption – DevOps/Test : collaborative development and continuous testing – Deploy – Operate – DevOps stakeholders.

DevOps Adoption: People in DevOps - Process in DevOps – Technology in DevOps

UNIT- III

Cloud computing for DevOps: What is cloud? – Evolution of cloud computing – Infrastructure as a service (IAAS) – Software as a service (SAAS) – Platform as a Service (PAAS) – Private-Public clouds: AWS, AZURE, and Google cloud - cloud storages (S3).

UNIT- IV

Linux Basics and Admin Linux OS introduction – Importance of Linux in DEVOPS – Linux Basic Command Utilities – linux Admin.

Shell Scripting Introduction – variables – flow controls - loops – functions - lists

UNIT-V

Jenkins & GIT Introduction to Jenkins – configure Jenkins – Jenkins management – GIT features – 3Tree Architecture– GIT Hub management.

Docker Introduction – build and use case docker – what is docker image – docker installation – docker containers: what is container, docker engine, creating containers with an image , working with images

Text Books:

- 1) DevOps for Dummies@ , 2nd IBM Limited edition published by john wiley & sons, 2015
- 2) Learning DevOps.by MIKEAL KRIEF and copyright @ 2019 Packt Publishing.
- 3) Robert Love, “Linux System Programming” ,O'Reilly Media, 2nd Ed., 2007
- 4) Testing in DevOps by Katrina clokier @ 2017.

BCA Cloud Computing Honours

III Year V Semester

COURSE 15 : Devop Tools

Practical

Credits: 1

2hrs/week

LIST OF EXPERIMENTS:

1. Agile project management : Agile planning and portfolio management with azure

boards Task 1 : working with teams , area, and iterations

Task 2 : working with work items.

Task 3 : Managing sprints and
capacity.

2. Web application load and performance testing with visual studio

2017. Task 1 : recording web tests.

Task 2 : working with web tests. Task

3 :recording sophisticated tests.

3. Monitoring application performance with application

insights. Task 1 :creating azure resources

Task 2 :deploying a web app to azure

Task 3 :generating and reviewing application traffic.

4. Working with pull requests in VS Code and

GitHub Task 1 :creating a new work item

Task 2 : creating a new pull request

Task 3 : managing pull requests.

MODEL QUESTION PAPER
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BCA Cloud Computing Honours
III Year V Semester
COURSE 15 : Devop Tools
(w.e.f. 2025-26)

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Max Marks : 75

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