

<b>COURSE TITLE</b>	<b>VCS &amp; CLOUD FUNDAMENTALS</b>
<b>COURSE CODE</b>	<b>05FN0504</b>
<b>COURSE CREDITS</b>	<b>4</b>

**Objective:**

- 1 Apply the concepts and workflows of Version Control Systems (VCS) in software development activities.
- 2 Analyze the architecture of cloud computing and differentiate between various deployment models.
- 3 Evaluate the effectiveness of Version Control Systems and Git in managing code in team-based projects.
- 4 Apply basic cloud services such as compute, storage, and networking in practical scenarios.

**Course Outcomes:** After completion of this course, student will be able to:

- 1 Apply the fundamentals of version control and cloud computing in practical scenarios.
- 2 Apply Git for version control in collaborative development environments.
- 3 Analyze different cloud service models and deployment strategies to understand their structure and use cases.
- 4 Evaluate various cloud service models and platforms to determine their suitability for different business or technical requirements.

**Pre-requisite of course:** Basic programming knowledge, Understanding of file systems and command-line usage.

**Teaching and Examination Scheme**

<b>Theory Hours</b>	<b>Tutorial Hours</b>	<b>Practical Hours</b>	<b>ESE</b>	<b>IA</b>	<b>CSE</b>	<b>Viva</b>	<b>Term Work</b>
3	0	2	0	30	20	0	50

<b>Contents : Unit</b>	<b>Topics</b>	<b>Contact Hours</b>
1	<b>Introduction to Version Control</b> Importance of VCS in software development, Types: Centralized vs Distributed, Git basics: init, clone, commit, push, pull.	11
2	<b>Branching and Merging in Git</b> Branching strategies, Merging and conflict resolution, Git workflows: GitFlow, Forking, Feature Branching.	11
3	<b>Introduction to Cloud Computing</b> Characteristics and benefits of cloud computing, Service models: IaaS, PaaS, SaaS, Deployment models: Public, Private, Hybrid, Community.	11

Contents : Unit	Topics	Contact Hours
4	<b>Cloud Platforms and Services</b> Overview of AWS, Azure, and GCP, Cloud storage: S3, Blob Storage, GCS, Compute: EC2, Azure VMs, GCE, Hands-on lab: Deploy a static website using cloud platforms.	12
<b>Total Hours</b>		<b>45</b>

#### Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	<b>UNIT-1</b> Initialize a local Git repository and commit files, Create a remote repository on GitHub and push changes, Clone a remote repository and pull updates, Use .gitignore and view commit logs, Create and switch between branches, Merge branches with and without conflicts, Use Git tools to visualize history, Practice pull requests and code review.	15
2	<b>UNIT-2</b> Sign up and navigate AWS Free Tier, Create an EC2 instance, Deploy an app using Elastic Beanstalk, Use S3 for object storage, Create a VM on Azure/GCP, Upload a website to cloud storage and serve statically, Set up a basic firewall and networking rule, Analyze pricing and monitoring tools.	15
<b>Total Hours</b>		<b>30</b>

#### Textbook :

- 1 Pro Git, Scott Chacon, Ben Straub, Apress, 2014
- 2 Cloud Computing: Concepts, Technology & Architecture, Thomas Erl, Ricardo Puttini, Zaigham Mahmood, Pearson, 2013

#### References:

- 1 Learning Git, Learning Git, Anna Skoulikari, O'Reilly Media, 2023
- 2 Cloud Computing Bible, Cloud Computing Bible, Barrie Sosinsky, Wiley Publishing, 2010

#### Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
10.00	15.00	25.00	25.00	25.00	0.00

**Instructional Method:**

- 1 White Board,PPT

**Supplementary Resources:**

- 1 <https://git-scm.com/book/en/v2>
- 2 [https://www.tutorialspoint.com/cloud\\_computing/index.htm](https://www.tutorialspoint.com/cloud_computing/index.htm)
- 3 <https://docs.aws.amazon.com/>