THIRD-YEAR OF BACHELOR OF COMPUTER SCIENCE REVISED SYLLABUS ACCORDING TO CBCS

COURSE TITLE: CLOUD COMPUTING

SEMESTER-V, W.E.F. 2021-2022

Recommended by the Board of Studies in Computer Science
And
Approved by the Academic Council
Devrukh Shikshan Prasarak Mandal's
Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and
Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.
Tal. Sangameshwar, Dist. Ratnagiri-415804, Maharashtra,
India

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangameshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Computer Science
Name of the Class	:	Third Year
Semester	:	Six
No. of Credits	:	03
Title of the Course	:	Cloud Computing
Course Code	:	USCST62
Name of the Vertical	:	Elective I
Eligibility for Admission	:	Any 12th Pass seeking Admission to Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	70:30
Status	:	CBCS
To be implemented from Academic Year	:	2021-2022
Ordinances /Regulations (if any)		

Syllabus for Third Year of Bachelor of Science in Computer Science

(With effect from the academic year 2021-2022)

SEMESTER-VI   **Paper No.– 2**

Course Title: Cloud Computing   **No. of Credits - 03**

Type of Vertical: Elective I   **COURSE CODE: USCST62**

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to…		
Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CO-01	Understand	After successfully completion of this course, learner should be able to articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing using open source technology.
CO-02	Apply	Learner should be able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
CO-03	Remember	They should explain the core issues of cloud computing such as security, privacy, and interoperability.

SEMESTER-VI   **Paper No.–2**

Course Title: Cloud Computing   **No. of Credits - 03**

Type of Vertical: Elective I   **COURSE CODE: USCST62**

COURSE CONTENT			
Unit No.	**Content**	**Credits**	**No. of Lectures**
I	Introduction to Cloud Computing, Characteristics and benefits of Cloud Computing, Basic concepts of Distributed Systems, Web 2.0, Service-Oriented Computing, Utility-Oriented Computing. Elements of Parallel Computing. Elements of Distributed Computing. Technologies for Distributed Computing. Cloud Computing Architecture. The cloud reference model. Infrastructure as a service. Platform as a service. Software as a service. Types of clouds.	01	15
II	Characteristics of Virtualized Environments. Taxonomy of Virtualization Techniques. Virtualization and Cloud Computing. Pros and Cons of Virtualization. Virtualization using KVM, Creating virtual machines, oVirt - management tool for virtualization environment. Open challenges of Cloud Computing.	01	15

III	Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat		**01**	**15**
		Total	03	45

Required Previous Knowledge

Students should know basic concepts related to computer and computer handling

Access to the Course

The course is available for all the students admitted for Bachelor of Science (Computer Science).

Forms of Assessment

The assessment of the course will be of Diagnostic, Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 60:40. The detailed pattern is as given below.

Semester End Evaluation (70 Marks)
Question Paper Pattern
Time: 2:30 hours

Question No.	Unit/s	Question Pattern	Marks
Q.1	I ,II &III	MCQ/Fill in the blanks/One line sentence	10
Q.2	I	Descriptive Questions	20
Q.3	II	Descriptive Questions	20
Q4.	III	Descriptive Questions	20
		Total	**70**

Internal evaluation (30 Marks)

Sr. No.	Description	Marks
1	Classroom Tests	10
2	Project/ Viva/ Presentations/ Assignments	10
3	Attendance	10
	Total	**30**

Grading Scale

10 points grading scale will be used. The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.

Reference book:
- Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, S Thamarai Selvi, TataMcGraw Hill Education Private Limited, 2013
- OpenStack in Action, V. K. CODY BUMGARDNER, Manning Publications Co, 2016

Text book:
- Techmax publication book

Additional References:
- OpenStack Essentials, Dan Radez, PACKT Publishing, 2015
- OpenStack Operations Guide, Tom Fifield, Diane Fleming, Anne Gentle, Lorin Hochstein, Jonathan Proulx, Everett Toews, and Joe Topjian, O'Reilly Media, Inc., 2014
- https://www.openstack.org

Course: USCSP68	Practical of USCST62 (Credits : 1, Lectures/Week: 3)
USCSP68	1. Study and implementation of Infrastructure as a Service. 2. Installation and Configuration of virtualization using KVM. 3. Study and implementation of Infrastructure as a Service 4. Study and implementation of Storage as a Service 5. Study and implementation of identity management 6. Study Cloud Security management 7. Write a program for web feed. 8. Study and implementation of Single-Sing-On. 9. User Management in Cloud. 10. Case study on Amazon EC2/Microsoft Azure/Google Cloud Platform