



SHARDA
UNIVERSITY
Beyond Boundaries



**SHARDA SCHOOL OF
ENGINEERING &
TECHNOLOGY**



COURSE

**Foundations of
Cloud Computing
and Google Cloud
(Nv65001)**

**VALUE ADDED
COURSE BROCHURE-30 HRS
2024-25**

ABOUT THE UNIVERSITY

Sharda University envisions to serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship. It has 13,000+ students from 95+ countries, 29 states, and Union Territories, providing cultural diversity and global exposure to students. It has 26000+ alumni who are today leaders in their realms. Sharda University is **NAAC A+** University with Overall **NIRF Rank of 86**. Teaching Learning Center at Sharda University is to equip the faculty members with the expertise, skills and knowledge they need for capacity building of students. Teaching as a profession requires highly specialized skills and knowledge to impact significantly on student learning and therefore teachers must refine their conceptual and pedagogical skills.

ABOUT SCHOOL

Sharda School of Engineering and technology is an open platform for diverse voices where teaching runs parallel to the real world and students are groomed to join the global workforce. SSET is distinguished as one of the top-ranked engineering schools in India. The students at SSET benefit through the professional grooming of renowned faculty and industry experts having experience of tackling pressing engineering problems. Students discover their passion in one of the various offered Engineering majors at the School of Engineering and technology.

ABOUT DEPARTMENT

The Department of Computer Science and Applications strives to equip faculty and students with all the computing resources needed to address a wide range of scientific, technological, and socially complex problems. The department imparts technical education for designing quirky technological applications and innovations. The department grails to become a center of excellence and impart knowledge to intellectual professionals so as to equip them with the requisite skills as per Industry standards. The department aims to foster an innovative research environment by providing a supportive, amiable, and challenge-based learning culture. The department utilizes high-performance computing equipment and facilities to impart state-of-the-art technical knowledge to students and instill a desire to pursue lifelong learning. To emerge as a world-class department, we focus on innovative research and quality learning in computer science applications that prepares entrepreneurs and professionals to lead the social, economic, and technical development of society. The department enjoys the full patronage of the Chancellor, Vice-Chancellor, Pro-Vice-Chancellor, and the director of the School of Engineering (SET) where it is housed presently. The Value added Education Courses aim to provide additional learner centric graded skill oriented training, with the primary objective of improving the employability skills of students.

VALUE ADDED COURSE (VAC)

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PURPOSE OF VALUE ADDED COURSE

VACs are pertinent instructional strategies designed to close knowledge gaps in students and provide them a competitive edge in the Job market. The courses' well-defined offspring VACs make them incredibly helpful for enhancing Students' employability quotient by developing a variety of competencies. It aids pupils in laying the creative groundwork for a passion project.(computers project, quantitative analytics,etc) aside from their occupation courses offering characteristics that can assist in transforming their enthusiasm into occupation. Students can understand basic concepts and terminology of cloud technologies in the current IT environment. Students can classify and analyze the terms of virtualization and its types along with services, types, and challenges with cloud applications.

RESOURCE PERSON

Ms. Barkha Nandwana, Assistant Professor, CSA

Ms Neha Kashyap, Assistant Professor, CSA

Mr. Shubhankit Sudhakar, Assistant Professor, CSA

COURSE SCHEDULE

Week	Topic	Duration Hrs.
1	Evolution and Trends in Cloud Computing	2
2	Core Concepts of Google Cloud Platform (GCP) Services	2
3	Fundamentals of Cloud Architecture and Infrastructure	2
4	Google Kubernetes Engine (GKE)	2
5	Google Cloud Storage and Database Services	2
6	Google Cloud Networking	2
7	Building Microservices with Google Cloud	2
8	Serverless Computing with Google Cloud Functions	2
9	Real-time Data Processing with Google Cloud	2
10	Introduction to DevOps	2
11	Continuous Integration with Google Cloud Build	2
12	Continuous Deployment with Google Cloud Deployment Manager	2
13	Google Cloud Security Challenges and Monitoring	2
14	Identity and access management (IAM) best practices	2
15	Stackdriver for monitoring and logging	2

School: SSET**Batch:** 2024-27**Program:** UG (BCA/BCA(AIML/CCIOT) /B.Sc (CS/IT/AIML)**Current Academic Year:** 2024-25**Semester:** II

1. Course Code	Nv65001	
2. Course Title	Foundations of Cloud Computing and Google Cloud	
3. Credits	0	
4. Contact Hours (L-T-P)	30 Hours	
Course Type	Value added course	
5. Course Objective	These courses provide an overview of cloud computing concepts, including the benefits and advantages of using cloud platforms like Google Cloud.	
6. Course Outcomes	<p>CO1: Understand the fundamental concepts and principles of cloud computing and the Google Cloud Platform (GCP)</p> <p>CO2: Develop proficiency in utilizing various Google Cloud services for application development, data analytics, and machine learning.</p> <p>CO3: Master the advanced features and functionalities of Google Cloud services for networking, security, and monitoring.</p> <p>Co4: Gain expertise in deploying and managing containerized applications using Google Kubernetes Engine (GKE)</p> <p>CO5: Acquire skills in implementing DevOps practices and establishing CI/CD pipelines on Google Cloud.</p> <p>Co6: Prepare for Google Cloud certifications and demonstrate the ability to architect and build scalable applications on GCP.</p>	
7. Course Description	The Google Cloud and Applications course is designed to provide students with a comprehensive understanding of cloud computing principles and practical skills in utilizing Google Cloud Platform (GCP) services. This course covers a wide range of topics, including cloud computing fundamentals, GCP architecture, application development, data storage and analytics, security, monitoring,	
8. Outline syllabus		CO Mapping
Unit 1	Overview Cloud Computing and Google Cloud Platform	
A	Evolution and Trends in Cloud Computing	CO1
B	Core Concepts of Google Cloud Platform (GCP) Services	CO1
C	Fundamentals of Cloud Architecture and Infrastructure	CO1, CO2
Unit 2	Advanced Google Cloud Services	
A	Google Kubernetes Engine (GKE)	CO2, CO3
B	Google Cloud Storage and Database Services	CO2, CO3
C	Google Cloud Networking	CO2, Co3
Unit 3	Building Scalable Applications on Google Cloud	
A	Building Microservices with Google Cloud	CO3
B	Serverless Computing with Google Cloud Functions	CO3
C	Real-time Data Processing with Google Cloud	CO1, Co3
Unit 4	DevOps and Continuous Integration/Continuous Deployment	
A	Introduction to DevOps	CO2, CO3, CO4
B	Continuous Integration with Google Cloud Build	CO4
C	Continuous Deployment with Google Cloud Deployment Manager	CO4, Co5
Unit 5		
A	Google Cloud Security Challenges and Monitoring	CO1, CO6
B	Identity and access management (IAM) best practices	CO5, CO6
C	Stack driver for monitoring and logging	Co6
Mode of examination	Jury/Practical/Viva	
Text book/s*	<p>1. Cloud Computing Principles and Paradigms, Edited by Rajkumar Buyya, Jam</p> <p>2. Cloud Computing: A Practical Approach, Anthony T. Velte, Toby J. Velte, Robert Elsenpeter</p>	