GUJARAT TECHNOLOGICAL UNIVERSITY

COMPUTER ENGINEERING (SYSTEMS AND NETWORK SECURITY) (56)

CLOUD COMPUTING
SUBJECT CODE: 2725603
SEMESTER: II

Type of course: Major Elective II

Prerequisite: NA

Rationale: Objective behind designing this subject is to help student understanding use of cloud computing in an organization. It is a major resource that can radically affect the structure of an organization, the way it serves customers and the way an organization runs its business. This subject focuses on many strategic and contemporary uses of Cloud Computing

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks		Practical Marks				
				ESE (E)	PA(M)	ESE (V)		PA(I)		
						PA	OEP	PA	RP	
3	2#	2	5	70	30	20	10	10	10	150

Content:

Sr. No	Topics	Teaching Hrs.	Module Weightage
1	**Cloud Computing Fundamental:** Cloud Computing definition, private, public and hybrid cloud. Cloud types; IaaS, PaaS, SaaS. Benefits and challenges of cloud computing, public vs private clouds, role of virtualization in enabling the cloud; Business Agility: Benefits and challenges to Cloud architecture. Application availability, performance, security and disaster recovery; next generation Cloud Applications.	6	20
2	**Cloud Applications:** Technologies and the processes required when deploying web services; Deploying a web service from inside and outside a cloud architecture, advantages and disadvantages	5	15
3	**Cloud Services Management:** Reliability, availability and security of services deployed from the cloud. Performance and scalability of services, tools and technologies used to manage cloud services deployment; Cloud Economics: Cloud Computing infrastructures available	10	30

	for implementing cloud based services. Economics of choosing a Cloud platform for an organization, based on application requirements, economic constraints and business needs (e.g Amazon, Microsoft and Google, Salesforce.com, Ubuntu and Redhat)		
4	**Application Development:** Service creation environments to develop cloud based applications. Development environments for service development; Amazon, Azure, Google App.	8	20
5	**Best Practice Cloud IT Model :** Analysis of Case Studies when deciding to adopt cloud computing architecture. How to decide if the cloud is right for your requirements. Cloud based service, applications and development platform deployment so as to improve the total cost of ownership (TCO).	6	15

Reference Books:

1. Gautam Shroff, Enterprise Cloud Computing Technology Architecture Applications [ISBN: 978-0521137355]
2. Toby Velte, Anthony Velte, Robert Elsenpeter, Cloud Computing, A Practical Approach [ISBN: 0071626948]
3. Dimitris N. Chorafas, Cloud Computing Strategies [ISBN: 1439834539]

Course Outcome:

After successful completion of the course, student will be able to

- Understand the use of Cloud Computing to make decisions for business organization
- Understand the core concepts and gain knowledge of managing Cloud services
- To be familiar with Cloud applications
- Understand use of Cloud IT to manage applications and infrastructure

Practical List
1. Working with Web Services
2. Working with Web Services
3. RESTFul APIs
4. RESTFul APIs
5. Developing applications using Google App Engine
6. Developing applications using Google App Engine
7. Developing applications using Google App Engine
8. Working with Web Sockets
9. Working with Web Sockets
10. Designing application for Cloud

Open Ended Problems:

Based on Theory taught/Study of Research papers related to Cloud Computing

List of Open Source Software/learning website:

http://www.lynda.com/Cloud-Computing-training-tutorials/1385-0.html

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.