Course Title : Cloud Computing Platform			
Course Code : P18CS642	**Semester : 6**	**L :T:P : 2:2:0**	**Credits: 3**
Contact Period: Lecture: 52 Hr, Exam: 3 Hr		**Weightage: CIE:50%, SEE:50%**	

Course Content

Unit-1

Introduction, Cloud Infrastructure: Cloud computing, Cloud computing delivery models and services, Ethical issues, Cloud vulnerabilities, Cloud computing at Amazon, Cloud computing the Google perspective, Microsoft Windows Azure and online services, Open-source software platforms for private clouds, Cloud storage diversity and vendor lock-in, Energy use and ecological impact, User experience and software licensing. Exercises and problems.

Self Study Component**:** Service level agreements

11 Hours

Unit-2

Cloud Resource Virtualization: Virtualization, Layering and virtualization, Virtual machine monitors, Virtual Machines, Performance and Security Isolation, Full virtualization and paravirtualization, Hardware support for virtualization, Case Study: Xen a VMM based paravirtualization, Optimization of network virtualization, vBlades, The dark side of virtualization, Exercises and problems

Self Study Component**:** Performance comparison of virtual machines.

10 Hours

Unit-3

Cloud Resource Management and Scheduling: Policies and mechanisms for resource management, Application of control theory to task scheduling on a cloud, Stability of a two-level resource allocation architecture, Feedback control based on dynamic thresholds, Coordination of specialized autonomic performance managers, A utility-based model for cloud-based Web services, Resourcing bundling: Combinatorial auctions for cloud resources, Scheduling algorithms for computing clouds, Fair queuing, Start-time fair queuing, Borrowed virtual time, Cloud scheduling subject to deadlines, Scheduling MapReduce applications subject to deadlines, Exercises and problems.

Self Study Component**:** Resource management and dynamic scaling

11 Hours

Unit-4

Google Cloud Platform Overview: GCP resource- Google data centers, Accessing resources through services, Global, regional, and zonal resources, Projects, interact with the services, GCP services-Computing and hosting services, Serverless computing, , Containers, Virtual machines, **Cloud services** -Combining computing and hosting options, Storage services, Database services. **Lab sessions on services includes all cloud services**

Self Study Component**:** Cloud Functions, Application platform

10 Hours

Unit-5

Cloud services: Networking services-Networks, firewalls, and routes, Load balancing, Cloud DNS, Advanced connectivity, Big data services-Data analysis, Batch and streaming data processing, Asynchronous messaging, Machine learning services- Machine learning APIs, **Lab sessions on services includes all Google cloud services**

Self Study Component**:** AI Platform.

10 Hours

Text Book :

1. Cloud Computing Theory and Practice, Dan C Marinescu, Elsevier(MK), 2013

Reference Book :

1. Cloud Computing Implementation, Management and Security, John W Rittinghouse, James F Ransome, CRC Press, 2013

Links of materials:

1. https://eclass.uoa.gr/modules/document/file.php/D416/CloudComputingTheoryAndPractice.pdf
2. http://cloud.google.com/docs/

Course Outcomes : At the end of the course the student will be able to:

1. Understand Cloud Infrastructure of different service providers
2. Explain Virtualization, Layering & virtualization and performance of virtual machines
3. Describe the different modes of Cloud Resource Management and Scheduling
4. Understand Google cloud platform and services
5. Implement Google cloud platform and services

Course Articulation Matrix(CAM)														
Course Outcomes (CO's)	**Program Outcomes(PO's)**												**PSO's**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
CO – 1	1	2												2
CO – 2		1	2			1								1
CO – 3	2		2		2									1
CO – 4	2		2			2								2
CO – 5	2		2	2										1