Academic Course Description

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BHARATH UNIVERSITY
Faculty of Engineering and Technology
Department of Electrical and Electronics Engineering
BEE029& CLOUD COMPUTING
Eighth Semester, (Even Semester)

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Course (catalog) description

This course gives an introduction to cloud computing and its techniques, issues, and its services that will lead to design and development of a simple cloud service.

Compulsory/Elective course: Elective for EEE students

Credit & Contact hours   :   3 and 45 hours

Course Coordinator   :   Ms.Kavitha

Instructors   :   Ms.Kavitha

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@ bharathuniv.ac.in	Consultation
Ms.Kavitha	Final year EEE	KS 304	-	Varshinikavitha@gmail.com	9.00–9.50 AM

Relationship to other courses:

Pre –requisites   **:**   BCS101-Fundamental of Computing

Assumed knowledge   :   Cloud computing with its unique paradigms brings in new opportunities and challenges for developers and administrators worldwide

Syllabus Contents

UNIT I   CLOUD INTRODUCTION   9
Cloud Computing Fundamentals: Cloud Computing definition, Types of cloud, Cloud services: Benefits and challenges of cloud computing, Evolution of Cloud Computing , usage scenarios and Applications , Business models around Cloud –Major Players in Cloud Computing – Issues in Cloud – Eucalyptus – Nimbus – OpenNebula, CloudSim.

UNIT II   CLOUD SERVICES AND FILE SYSTEM   9
Types of Cloud services: Software as a Service – Platform as a Service –Infrastructure as a Service – Database as a Service – Monitoring as a Service –Communication as services. Service providers- Google App Engine, Amazon EC2,Microsoft Azure, Sales force. Introduction to Map Reduce, GFS, HDFS, Hadoop Framework.

UNIT III   COLLABORATING WITH CLOUD   9

Collaborating on Calendars, Schedules and Task Management – Collaborating on Event Management, Contact Management, Project Management – Collaborating on Word Processing, Databases – Storing and Sharing Files- Collaborating via Web-Based Communication Tools – Evaluating Web Mail Services – Collaborating via Social Networks – Collaborating via Blogs and Wikis.

UNIT IV   VIRTUALIZATION FOR CLOUD   9

Need for Virtualization – Pros and cons of Virtualization – Types of Virtualization –System Vm, Process VM, Virtual Machine monitor – Virtual machine properties –Interpretation and binary translation, HLL VM – Hypervisors – Xen, KVM ,VMWare, Virtual Box, Hyper-V.

UNIT V   SECURITY, STANDARDS, AND APPLICATIONS   9

Security in Clouds: Cloud security challenges – Software as a Service Security, Common Standards: The Open Cloud Consortium – The Distributed management Task Force – Standards for application Developers – Standards for Messaging –Standards for Security,

Text book(s) and/or required materials

T1. Bloor R., Kanfman M., Halper F. Judith Hurwitz "Cloud Computing for Dummies" (Wiley India Edition),2010

T2. John Rittinghouse& James Ransome, "Cloud Computing Implementation Management and Strategy", CRC Press, 2010.

T3. Antohy T Velte ,Cloud Computing : "A Practical Approach", McGraw Hill,2009.

T4. Michael Miller, Cloud Computing: "Web-Based Applications That Change the Way You Work and Collaborate Online", Que Publishing, August 2008.

T5. James E Smith, Ravi Nair, "Virtual Machines", Morgan Kaufmann Publishers, 2006.

T6. http://cloud-standards.org/wiki/index.php?title=Main_Page

Reference Books:

R1.Haley Beard, "Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing", Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008

R2.Webpages.iust.ac.ir/hsalimi/.../89.../Cloud%20Common%20standards.pptopennebula.org,

R3.www.cloudbus.org/cloudsim/, http://www.eucalyptus.com/

R4.http://hadoop.apache.org/docs/stable/hdfs_design.html

R5.http://static.googleusercontent.com/external_content/untrusted_dlcp/research. Google.com/ en//archive/mapreduce-osdi04.pdf

Professional component

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	0%
Professional subject	-	0%
Open elective	-	100%

Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	FEBRUARY 2ND WEEK	Session 1 to 18	2 Periods
2	Cycle Test-2	MARCH 2ND WEEK	Session 19 to 36	2 Periods
3	Model Test	APRIL 3RD WEEK	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

This course gives an introduction to cloud computing and its techniques, issues, and its services that will lead to design and development of a simple cloud service.	Correlates to program outcome		
	H	**M**	**L**
1. To analyze the components of cloud computing and its business perspective..	a,b,e	f,g	c,d,h,j,k,l
2.To evaluate the various cloud development tools	a,b,e	e,f,g	c,d,h,j,k,
3. To collaborate with real time cloud services.	a,b,e	f,g	c,d,h,j,k,
4.To analyze the case studies to derive the best practice model to apply when developing and deploying cloud based applications.	a,b,e	f,g	c,d,h,j,k

H: high correlation, M: medium correlation, L: low correlation

Draft Lecture Schedule

S.NO	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I	**CLOUD INTRODUCTION**		
1.	Cloud Computing definition	NO	T1,T2
2.	Types of cloud	NO	
3.	Cloud services	NO	
4.	Benefits and challenges of cloud computing	YES	
5.	Evolution of Cloud Computing	NO	
6.	usage scenarios and Applications	NO	
7.	Business models around Cloud –Major Players in Cloud Computing	YES	
8.	Issues in Cloud - Eucalyptus - Nimbus	NO	
9.	OpenNebula, CloudSim	NO	
UNIT II	**CLOUD SERVICES AND FILE SYSTEM**		
10.	Software as a Service	NO	T1,T2
11.	Platform as a Service	NO	
12.	Infrastructure as a Service	NO	
13.	Database as a Service	NO	
14.	Monitoring as a Service	NO	
15.	Communication as services	NO	
16.	Service providers- Introduction to Map Reduce, GFS, HDFS, Hadoop Framework.	NO	
17.	Google App Engine		
18.	Amazon EC2,Microsoft Azure, Sales force		
UNIT III	**COLLABORATING WITH CLOUD**		
19.	Collaborating on Calendars	NO	T1,T2
20.	Schedules and Task Management	YES	
21.	Collaborating on Event Management	NO	
22.	Contact Management	NO	
23.	Project Management	NO	
24.	Collaborating on Word Processing	NO	
25.	Databases – Storing and Sharing Files	NO	
26.	Collaborating via Web-Based Communication Tools	NO	
27.	Evaluating Web Mail Services – Collaborating via Social Networks – Collaborating via Blogs and Wikis.	NO	
UNIT IV	**VIRTUALIZATION FOR CLOUD**		
28.	Need for Virtualizatio	YES	
29.	Pros and cons of Virtualization	YES	
30.	Types of Virtualization	NO	

31.	System Vm, Process VM,	NO	
32.	Virtual Machine monitor	NO	T3,T4
33.	Virtual machine properties -Interpretation and binary translation	NO	
34.	HLL VM - Hypervisors	NO	
35.	Xen, KVM	NO	
36.	VMWare, Virtual Box, Hyper-V	NO	
UNIT vSECURITY, STANDARDS, AND APPLICATIONS			
37.	Cloud security challenges	YES	
38.	Software as a Service Security	NO	
39.	Common Standards	NO	
40.	The Open Cloud Consortium	NO	
41.	The Distributed management Task Force	NO	T5,T6
42.	Standards for application Developers	NO	
43.	Standards for Messaging	NO	
44.	Standards for Security	NO	
45.	TEST	NO	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures

- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.

- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.

- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	10%
Assignment	-	5%
Attendance	-	5%
Final exam	-	70%

Prepared by: Ms.Kavitha   **Dated :**

BEE029& CLOUD COMPUTING

Addendum

ABET Outcomes expected of graduates of B.Tech / EEE / program by the time that they graduate:

a) An ability to apply knowledge of mathematics, science, and engineering fundamentals.

b) An ability to identify, formulate, and solve engineering problems.

c) An ability to design a system, component, or process to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

d) An ability to design and conduct experiments, as well as to analyze and interpret data.

e) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

f) An ability to apply reasoning informed by the knowledge of contemporary issues.

g) An ability to broaden the education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

h) An ability to understand professional and ethical responsibility and apply them in engineering practices.

i) An ability to function on multidisciplinary teams.

j) An ability to communicate effectively with the engineering community and with society at large.

k) An ability in understanding of the engineering and management principles and apply them in project and finance management as a leader and a member in a team.

l) An ability to recognize the need for, and an ability to engage in life-long learning.

Program Educational Objectives

PEO1: PREPARATION
Electrical Engineering Graduates are in position with the knowledge of Basic Sciences in general and Electrical Engineering in particular so as to impart the necessary skill to analyze and synthesize electrical circuits, algorithms and complex apparatus.

PEO2: CORE COMPETENCE
Electrical Engineering Graduates have competence to provide technical knowledge, skill and also to identify, comprehend and solve problems in industry, research and academics related to power, information and electronics hardware.

PEO3: PROFESSIONALISM
Electrical Engineering Graduates are successfully work in various Industrial and Government organizations, both at the National and International level, with professional competence and ethical administrative acumen so as to be able to handle critical situations and meet deadlines.

PEO4: SKILL
Electrical Engineering Graduates have better opportunity to become a future researchers/ scientists with good communication skills so that they may be both good team-members and leaders with innovative ideas for a sustainable development.

PEO5: ETHICS
Electrical Engineering Graduates are framed to improve their technical and intellectual capabilities through life-long learning process with ethical feeling so as to become good teachers, either in a class or to juniors in industry.

Course Teacher	Signature
Ms.Kavitha	

Course Coordinator   **HOD/EEE**
(Ms.Kavitha)   (   )