DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.ACAD/SU/Engg./B.E./Elective/56/2014

It is hereby notified for information of all concerned that, on the recommendations of the Faculty of Engineering & Technology, the **Academic Council at its meeting held on 29-11-2013 has accepted the One Elective for B.E. Final Year of Computer Science Engineering / I.T. i.e. "Cloud Computing" and B.E. Final Year of E.C.T./E & C i.e. "Advance Industrial Automation" under the Faculty of Engineering and Technology.**

This is effective from the **Academic Year 2013-2014** and onwards.

All concerned are requested to note the contents of this circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO. ACAD/ SU/ ENGG./
ELECT./2014/50754-87

A.C.S.A.I.No.80[09]

Date:- 05-03-2014.

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Director,
Board of College and University Development.

Copy forwarded with compliments to :-

1] The Principals, affiliated concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.
2] The Director, University Network & Information Centre, UNIC, with **a request to upload this Circular on University Website.**

Copy to :-
1] The Controller of Examinations,
2] The Superintendent, [Engineering Unit] Examination Branch,
3] The Superintendent, [Eligibility Unit],
4] The Programmer [Computer Unit-1] Examinations,
5] The Programmer [Computer Unit-2] Examinations,
6] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter, Dr. Babasaheb Ambedkar Marathwada University,
7] The Public Relation Officer,
8] The Record Keeper,
Dr. Babasaheb Ambedkar Marathwada University.

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DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Syllabus of

'CLOUD COMPUTING'

B.E.[CSE & IT]

PART SECOND

[ELECTIVE]

Effective from the Academic Year 2013-14 & onwards]

CSE/ IT: Elective II – (VIII) Cloud Computing

Teaching Scheme:

Lectures: 4hrs/week
Practical: 2 hrs/week

Examination Scheme:

Theory Paper: 100 Marks (03 hrs)
Practical: 50 Marks

Objectives:

- **To learn and understand Cloud Technologies**
- **To design, develop and deploy Cloud applications**

Chapter 1: Evolution & Introduction of Cloud Computing: Definition of cloud, Emergence, Grid Computing, Cloud Computing, Cloud-Based Services, Types of cloud, Key Characteristics, Benefits, Introduction to Mainframe architecture, Client-server architecture, Parallel Processing, Symmetric Multiprocessing systems, Distributed Processing **[06 Hrs]**

Chapter 2: Services Delivered from the Cloud: Overview, Model architecture, Key Characteristics, Benefits, Implementation Issues of: Communication-as-a-Service (CaaS), Infrastructure-as-a-Service (IaaS), Monitoring-as-a-Service (MaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS) **[08 Hrs]**

Chapter 3: Cloud Technologies: Web services: SOAP and REST, SOAP versus REST, Virtualization: Virtual machine technology, Types, Virtualization applications in enterprises, Pitfalls of virtualization, Traditional storage versus storage cloud , Challenges of traditional storage , Advantages & Benefits of a storage cloud, Storage classes for cloud **[10 Hrs]**

Chapter 4: Cloud Development Technologies: Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo, Cloud data stores: Datastore and SimpleDB, MapReduce and extensions Parallel computing, The MapReduce model: Parallel efficiency of MapReduce Relational operations using MapReduce, Enterprise batch processing using MapReduce, Defination, Architecture, installation, API, HDFS of: OpenStack, Hadoop **[10 Hrs]**

Chapter 5: Security in the Cloud: Cloud Security Challenges, Software-as-a-Service Security: Security Management (People), Policies, Standards and Guidelines, Security Monitoring and Incident Response, Security Architecture Design, Vulnerability Assessment, Data Privacy, Data Governance, Data Security, Application Security, Physical Security, Business Continuity and Disaster Recovery **[06 Hrs]**

Text / Reference Books:

1. Cloud Computing Implementation, Management, and Security By John W. Rittinghouse , James F. Ransome , CRC Press.
2. Enterprise Cloud Computing: Technology, Architecture, Applications by Gautam Shroff, Cambridge University Press.
3. Cloud computing Bible by Barrie Sosinsky Publisher Wiley India Pvt Ltd (2011)
4. IBM smart storage cloud Red paper by Larry Coyne Mark Bagley Gaurav Chhaunker
5. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online by Michael Miller

Practical Examination:

The term work shall consist of at least **10** experiments/ assignments based on the syllabus above. The Practical Examination shall consist of writing and performing an experiment / assignment and oral based on the syllabus as per the journal record. Duration of examination is three hours. Assessment of term work should be done at the time of practical examination which will consider the points below and the marks should be awarded accordingly.

* Continuous lab assessment.
* Actually performing practical's in the laboratory during the semester.

The Practical should be carried out using Hadoop, Open Stack.

Suggestive List of Practical's

1. Introduction to cloud computing.
2. Implementation of Web services in SOAP/REST for VB.NET/JAVA Applications.
3. Implementation of Virtual Box for Virtualization of any server OS.
4. Creating a Warehouse Application in SalesForce.com.
5. Installation and Configuration of Hadoop.
6. Create any Application (Ex: Word Count) Using Hadoop Map/Reduce.
7. Installation and Configuration of Open Stack.
8. To study Cloud security challenges.
9. Case Study: PAAS (Face book, Google App Engine)
10. Case Study : SAAS(Desktop Apps)