**Velammal College of Engineering and Technology, Madurai – 625 009**

**Department of Computer Science and Engineering**

**Syllabus**

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| **Course Code-Title** | | **CS6712 /GRID AND CLOUD COMPUTING LABORATORY** | | | | |
| **Course Component** | | Practical | | | | |
| **Contact Hours** | | Lecture | Tutorial | Practical | Total Hours | Credit |
| 0 | 0 | 3 | 45 | 2 |
| **Course Assessment methods** | | **Continuous** | | | **Semester-end assessment** | |
| **Lab Experiments**  **Model Test** | | | **Student Exit Survey** | |
| **Prerequisite Courses:** | | * Knowledge in Computer Networks, Distributed Systems | | | | |
| **Course Objective** | | The student should be made to:   * Be exposed to tool kits for grid and cloud environment. * Be familiar with developing web services/Applications in grid framework * Learn to run virtual machines of different configuration. * Learn to use Hadoop | | | | |
| **List of Experiments/Syllabus**  **Grid Computing Lab**  1. Develop a new Web Service for Calculator.  2. Develop new OGSA-compliant Web Service.  3. Using Apache Axis develop a Grid Service.  4. Develop applications using Java or C/C++ Grid APIs  5. Develop secured applications using basic security mechanisms available in Globus Toolkit.  6. Develop a Grid portal, where user can submit a job and get the result. Implement it with and without GRAM concept.  **Cloud Computing Lab**  1. Find procedure to run the virtual machine of different configuration. Check how many virtual machines can be utilized at particular time.  2. Find procedure to attach virtual block to the virtual machine and check whether it holds the data even after the release of the virtual machine.  3. Install a C compiler in the virtual machine and execute a sample program.  4. Show the virtual machine migration based on the certain condition from one node to the other.  5. Find procedure to install storage controller and interact with it.  6. Find procedure to set up the one node Hadoop cluster.  7. Mount the one node Hadoop cluster using FUSE.  8. Write a program to use the API's of Hadoop to interact with it.  9. Write a word count program to demonstrate the use of Map and Reduce tasks  **Total : 45** | | | | | | |
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| **Course Outcomes** | **Upon completion of the course the student will**  **CO1:** Develop web services and portlet application [K3]  **CO2:** Build applications using REST API [K3]  **CO3:** Develop application with security mechanisms [K3]  **CO4:** Demonstrate the virtualization concepts in cloud environment [K3]  **CO5:** Implement a single node cluster environment and map reduce concept in Hadoop framework [K3] | | | | | |
| **TEXT BOOK(S):**  T1. Kai Hwang, Geoffery C. Fox and Jack J. Dongarra, “Distributed and Cloud Computing: Clusters, Grids, Clouds and the Future of Internet”, First Edition, Morgan Kaufman Publisher, an Imprint of Elsevier, 2012 | | | | | | |
| **REFERENCES:**  R1. Jason Venner, “Pro Hadoop- Build Scalable, Distributed Applications in the Cloud”, A Press, 2009  R2. Tom White, “Hadoop The Definitive Guide”, First Edition. O‟Reilly, 2009.  R3. Bart Jacob (Editor), “Introduction to Grid Computing”, IBM Red Books, Vervante, 2005  R4. Ian Foster, Carl Kesselman, “The Grid: Blueprint for a New Computing Infrastructure”, 2nd Edition, Morgan Kaufmann.  R5. Frederic Magoules and Jie Pan, “Introduction to Grid Computing” CRC Press, 2009.  R6. Daniel Minoli, “A Networking Approach to Grid Computing”, John Wiley Publication, 2005.  R7. Barry Wilkinson, “Grid Computing: Techniques and Applications”, Chapman and Hall, CRC, Taylor and Francis Group, 2010. | | | | | | |
| **WEB MATERIALS:**  W1. <http://toolkit.globus.org/alliance/publications/papers/IFIP-2005.pdf>  W2. <https://www.cs.umd.edu/class/spring2004/cmsc818s/Lectures/Chapter17-Grid2.pdf>  W3. <http://flylib.com/books/en/1.414.1.53/1/>  W4. <http://www.tutorialspoint.com/hadoop/hadoop_introduction.htm>  W5. <https://opensource.com/life/14/8/intro-apache-hadoop-big-data> | | | | | | |

Course Instructor Course Co-ordinator Module Co-ordinator HoD / CSE