Detailed Syllabus of **Master of Science Research Cloud Computing (Level 7)**
Faculty of Computer Science
Ballsbridge University

Topics in Syllabus	Recommended Books
Unit I **Introduction to Cloud Computing:** • **Definition, Characteristics, Components, Cloud provider, SAAS, PAAS, IAAS and Others, Organizational scenarios of clouds** • **Administering & Monitoring cloud services, benefits and limitations, Deploy application over the cloud** • **Comparison among SAAS, PAAS, IAAS Cloud computing platforms** • **Infrastructure as service: Amazon EC2** • **Platform as Service: Google App Engine, Microsoft Azure, Utility Computing, Elastic Computing** **Unit II** **Basics of virtualization and implementation challenges.** • **System virtualization technologies-architectures and internals. KVM, Xen, VMware.** • **Memory virtualization-virtualization techniques, ballooning, deduplication and sharing.** • **Network and storage virtualization** • **Virtual machine migration and replication techniques-pre-copy and post-copy techniques, applicability to system availability.** **Unit II** **Data in the cloud:** • **NoSQL** • **Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo.Map-Reduce and extensions** • **Parallel computing, The map-Reduce model, Parallel efficiency of Map-Reduce** • **Enterprise batch processing using Map-Reduce, Introduction to cloud development, Example/Application of MapReduce** • **Features and comparisons among GFS, HDFS etc.** **Unit III** **Cloud security fundamentals, Vulnerability assessment tool for cloud** • **Privacy and Security in cloud** • **Trusted Cloud computing, Secure Execution Environments and Communications** • **Identity Management and Access control, Biometric security for cloud** • **Cloud security challenges: Virtualization security management- virtual threats, VM Security Recommendations** • **VM-Specific Security techniques** • **Secure Execution Environments and Communications in cloud.**	1) **Anothony T Velte, Toby J Velte, Robert Elsenpeter, Cloud Computing: A Practical Approach, MGH, 2010.** 2) **Gautam Shroff, Enterprise Cloud Computing, Cambridge, 2010** 3) **Ronald Krutz and Russell Dean Vines, Cloud Security, 1/e, Wiley, 2010** 4) **Judith Hurwitz, R Bloor, M Kanfman, F Halper, Cloud Computing for Dummies, 1/e, Wiley Publishers, 2009.** 5) **Handbook of Research on Cloud Infrastructures for Big Data Analytics, Pethuru Raj & Ganesh Chandra Deka, IGI Global, 701 E. Chocolate Ave. Hershey, PA 17033, USA** 6) **Securing Cloud-Based Databases with Biometric Applications, Ganesh Chandra Deka, Ministry of Labour & Employment, India & Sambit Bakshi, IGI Global, 701 E. Chocolate Ave. Hershey, PA 17033, USA** **Note:** • **For Masters Degree dissertation preparation, extensive study of research papers published in reputed Journals in IEEE, Elsevier ACM is must** • **Publication of the research paper is an essential component of the course** • **1 International Conference publication and 2 publications in reputed International Journal are a mandatory** • **All the manuscript will be checked thoroughly for plagiarism issues**