DEPARTMENT OF COMPUTER APPLICATIONS

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	**Master of Computer Applications**		
Course Title	**Cloud Computing**		
Course Code	**CA733**	**No. of Credits**	**3**
Course Code of Pre-requisite subject(s)	**CA714, CA726, CA727**		
Session	**July 2018**	**Section (if, applicable)**	**S**
Name of Faculty	**Dr. Gangadharan G R**	**Department**	**Computer Applications**
Email	**ganga@nitt.edu**	**Telephone No.**	**0431-2503737**
Name of PAC Chairman	**Dr. B. Janet**		
E-mail	**janet@nitt.edu**	**Telephone No.**	**0431-2503741**
Course Type	**Core course**		

Syllabus (approved in BoS)

1.Distributed Systems Models and Enabling Technologies: Scalable Computing – Technologies for Network-Based Systems – System Models for Distributed and Cloud Computing – Software Environments for Distributed and Clouds – Performance, Security and Energy Efficiency

2.Virtualization concepts: Implementation Levels of Virtualization – Virtualization Structures - Tools and Mechanisms – Virtualization of CPU, Memory and I/O Devices – Virtual Clusters and Resource Management – Virtualization for Data-Center Automation, Introduction to Various Virtualization OS - VMware, KVM, Xen.

3.Service-Oriented Architecture for Distributed Computing: Services and SOA – Message-Oriented Middleware – Portals and Science Gateways – Discovery-Registries-Metadata - Workflow in SOA

4.Cloud Computing and Service Models – Data-center Design and Interconnection Networks – Architectural Design of Compute and Storage Clouds – Public cloud Platforms – Inter-cloud Resource Management – Cloud Security and Trust Management

5.Cloud Programming and Software Environments – Features of Cloud and Grid Platforms – Parallel and Distributed Paradigms – Programming Support of Google App Engine – Amazon AWS and Microsoft Azure - Emerging Cloud Software Environments

REFERENCES:

1.Kai Hwang, Geoffrey C.Fox, and Jack J. Dongarra, "Distributed and Cloud Computing", Elsevier India Private Limited, 2012.
    2.Foster and Kesselman, "The Grid : Blueprint for a New Computing Infrastructure", Morgan Kauffman publishers 2004
    3.Coulouris, Dollimore and Kindber, "Distributed System: Concept and Design", Fifth Edition, Addison Wesley, 2011.
    4.Michael Miller, "Cloud Computing", Dorling Kindersley India, 2009.

COURSE OBJECTIVES

To learn the various concept of Distributed and Cloud computing and to study the Architecture and service models in Cloud computing.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. Acquire knowledge on the features and development of cloud computing	**PO I, II, III, IV, V**
2. Define the principles of virtualization	**PO I, II, III, IV, V**
3. Use various performance criteria to evaluate the quality of the cloud architecture	**PO III, IV, V**
4. Identify the service oriented architecture for distributed computing workflow	**PO I, II, III, IV, V**

COURSE PLAN – PART II

COURSE OVERVIEW

The course foucuses on the underlying infrastrutcures and architectures of Cloud computing, techniques for enabling services and the quality of such services, as well as issues in designing clouds. Specific research issues in performance, security, and management would be addressed. Programming on the cloud would be encouraged but not taught in this course. Students are expected to learn and understand tools and techniques for using, designing, and deploying clouds and services.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Week 1 (3 Classes)	Scalable Computing – Technologies for Network-Based Systems – System Models for Distributed and Cloud Computing	Chalk and Talk, PPT
2	Week 2 (3 Classes)	Software Environments for Distributed and Clouds – Performance, Security and Energy Efficiency	Chalk and Talk, PPT

3	Week 3 (3 Classes)	Implementation Levels of Virtualization – Virtualization Structures - Tools and Mechanisms	Chalk and Talk, PPT
4	Week 4 (3 Classes)	Virtualization of CPU, Memory and I/O Devices – Virtual Clusters and Resource Management	Chalk and Talk, PPT
5	Week 5 (3 Classes)	Virtualization for Data Center Automation, Various Virtualization OS: VMware, KVM, Xen	Chalk and Talk, PPT
6	Week 6 (3 Classes)	Services and SOA – Message-Oriented Middleware	Chalk and Talk, PPT
7	Week 7 (3 Classes)	Portals and Science Gateways – Discovery-Registries-Metadata - Workflow in SOA	Chalk and Talk, PPT
8	Week 8 (3 Classes)	Cloud Computing: Service Delivery and Deployment Models	Chalk and Talk, PPT
9	Week 9 (3 Classes)	Data Center Design and Interconnection Networks	Chalk and Talk, PPT
10	Week 10 (3 Classes)	Architectural Design of Compute and Storage Clouds – Public cloud Platforms	Chalk and Talk, PPT
11	Week 11 (3 Classes)	Inter-cloud Resource Management – Cloud Security and Trust Management	Chalk and Talk, PPT
12	Week 12 (3 Classes)	Cloud Programming and Software Environments – Features of Cloud and Grid Platforms – Parallel and Distributed Paradigms	Chalk and Talk, PPT
13	Week 13 (3 Classes)	Programming Support of Google App Engine – Amazon AWS and Microsoft Azure	Chalk and Talk, PPT
14	Week 14 (3 Classes)	Emerging Cloud Software Environments	Chalk and Talk, PPT

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test 1	6th Week	60 Minutes	20
2	Cycle Test 2	10th Week	60 Minutes	20
3	Assignment	9th week	-	10
CPA	Compensation Assessment			
4	Final Assessment	-	180 Minutes	50

COURSE EXIT SURVEY

- The students through the class representative may give their feedback at any time to the course coordinator which will be duly addressed.
- The students may give their feedback during class committee meetings.

COURSE POLICY

MODE OF CORRESPONDENCE

By Email: ganga@nitt.edu

COMPENSATION ASSESSMENT POLICY

Compensation assessment will be conducted for absentees in cycle test I or cycle test II only after the submission of medical or On-Duty certificates signed by competent authority.

ATTENDANCE POLICY

- ➢ **At least 75% attendance in each course is mandatory.**

- ➢ **A maximum of 10% shall be allowed under On Duty (OD) category.**

- ➢ Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

ACADEMIC DISHONESTY & PLAGIARISM

- ➢ Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.

- ➢ Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.

- ➢ The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
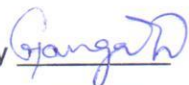
  The above policy against academic dishonesty shall be applicable for all the programmes.
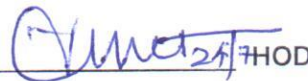
ADDITIONAL INFORMATION

a) The passing minimum shall be as per the regulations.

b) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.

FOR APPROVAL

Course Faculty _Ganga_ CC-Chairperson _____ HOD _S.R.Ba_____