



University School of Information, Communication & Technology
Guru Gobind Singh Indraprastha University
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F.No. GGSIPU/USIC&T/2022-23/18962

Dated 26.09.2022

Advertisement for the Guest Faculty (Assistant Professor)

USICT invites adequately qualified and motivated candidates at the Assistant Professor level to appear in upcoming walk-in-interview to be scheduled on **03rd October 2022 (Monday)** 01:30 PM till 04:30 PM in the **Committee Room EFC-315 E -Block** of USICT Guru Gobind Singh Indraprastha University Dwarka Campus. The details of the fields of studies and tentative positions are as below :

Sr. No.	Fields of Studies
1	IT-715 /MECS-705 Cloud Computing
2	ICT-204/ICT-217 Computational Methods
3	IT-309 Object Oriented Software Engineering
4	IT-317 Operating System
5	IT-315 Linux & Win32 Programming

Number of Positions :03

*** The detailed Syllabus is enclosed with advertisement .**

Eligibility Conditions / Qualifications : As per University Norms (AICTE/UGC Regulations as applicable according to the course)

Age Limit : As per AICTE/ UGC regulations.

Mode: Walk-in Interviews in offline mode (Committee Room EFC-315 E-Block of USICT Guru Gobind Singh Indraprastha University New Delhi-110078

Date & Time: 03rd October 2022 (Monday) 01:30 PM till 04:30 PM

General Instructions and Guidelines :

1. No TA/DA Shall be paid for attending the interview.
2. The candidate shall bring all relevant document documents in original and one set of photocopies. The candidature of the applicant shall be subjected to the verification of testimonials.
3. The numbers of vacancies may vary at the discretion of the University. The University reserves the right not to fill some or all the vacancies advertised if the circumstances so warrant. The University reserves the right withdraw advertised posts at any time without assigning any reason. Any Consequential vacancies arising at the time of the interview may also be filled up by the available candidates.
4. Guest/ Visiting employment in the University shall be governed by the rules and regulations as notified by the University .
5. Canvassing in any form shall be treated as disqualification.
6. Any dispute, if any will be subject to the Courts /Tribunals having jurisdiction over Delhi.


(Pravin Chandra)

Professor & Dean, USIC&T

1. In-charge (UITS), with the request to upload the same on University's Web site

Paper ID: 44715

Code: IT715

Paper: Cloud Computing

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<p>INSTRUCTIONS TO PAPER SETTERS: Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.</p>	<p>Maximum Marks: 75</p>
<p>Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks</p>	

Employability, Entrepreneurship & Skill Development

Course Outcomes:

CO 1	Ability of students to understand the concepts of SAAS, PAAS, IAAS
CO 2	Ability of students to analyze basics of SOAP, REST and Multi-Tenancy Approach
CO 3	Ability of students to understand the concepts of MICEF Computing
CO 4	Ability of students to understand concept of Privacy and Security in cloud.

Course Outcomes -Program Outcomes Matrix

Filled on a scale of 1 to 3 (3=High; 2=Moderate; 1=Low; '-' for no correlation)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	2	3	3	3	3	3	2	2	3	2	1
CO 2	3	2	3	3	3	2	3	2	3	2	2	1
CO 3	3	3	3	2	2	3	3	2	3	3	2	1
CO 4	3	3	3	2	3	3	3	2	3	4	2	1

UNIT 1

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, Comparison among SAAS, PAAS, IAAS, Cloud computing platforms: Infrastructure as service: Amazon EC2, Platform as Service: Google App Engine, Microsoft Azure.

UNIT 2

Introduction to Cloud Technologies, Study of Hypervisors, SOAP, REST, Comparison of SOAP and REST, Webservices, mashups-Web services Mashups: user interface services, Virtual machine technology, virtualization applications in enterprises, Pitfalls of virtualization, Multi-entity support, Multi-schema approach, Multi-tenance using cloud data stores.

UNIT 3

Data in the cloud: Relational databases, Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo, Map-Reduce and extensions: Parallel computing, The map-Reduce model. MICEF Computing (Mist, IOT, Cloud, Edge and FOG Computing): Concept and Application

UNIT 4

Cloud security fundamentals, Vulnerability assessment tool for cloud, Privacy and Security in cloud, Cloud computing security architecture, Issues in cloud computing, Issues in Intercloud environments, QoS issues in Cloud, Streaming in Cloud. Quality of Service (QoS) monitoring in a Cloud computing environment, Inter Cloud issues, load balancing, resource optimization.

Text Books:

- Sosinsky Barrie "Cloud Computing Bible", Wiley India, 2011
- Buyya, Rajkumar, James Broberg, and Andrzej M. Goscinski, eds., "Cloud computing: Principles and paradigms". Vol. 87. John Wiley & Sons, 2010.
- Jayaswal, Kailash. "Cloud Computing Black Book". John Wiley & Sons, 2014.

References Books:

- Velte, Anthony T., Toby J. Velte, and Robert Elsenpeter. "Cloud Computing: A Practical Approach." McGraw-Hill, Inc. 2019 /
- Gerardus Blokdijk, "Cloud Computing : A Complete Guide", 5 Starcooks, 2019.

Paper Code: MECS – 705
Subject: Cloud Computing

L	T	C
4	0	4

INSTRUCTIONS TO PAPER SETTERS:

Maximum Marks : 60

Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.

Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

SKILL DEVELOPMENT & EMPLOYABILITY

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 cloud, Comparison among SAAS, PAAS, IAAS, Cloud computing platforms: Infrastructure as service: Amazon EC2, Platform as Service: Google App Engine, Microsoft Azure.

UNIT II

Introduction to Cloud Technologies, Study of Hypervisors, SOAP, REST, Compare SOAP and REST, Webservices, AJAX and mashups-Web services, Mashups: user interface services, Virtual machine technology, virtualization applications in enterprises, Pitfalls of virtualization, Multi-entity support. Multi-schema approach, Multi-tenance using cloud data stores, Data access control for enterprise applications.

UNIT III

Data in the cloud: Relational databases, 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, Relational operations using Map-Reduce, Introduction to cloud development, Monitoring in Cloud, A grid of clouds, Mobile Cloud Computing, Sky computing, Utility Computing, Elastic Computing.

UNIT IV

Cloud security fundamentals, Vulnerability assessment tool for cloud, Privacy and Security in cloud, Cloud computing security architecture, Cloud computing security challenges, Issues in cloud computing, Implementing real time application over cloud platform, Issues in Intercloud environments, QoS Issues in Cloud, Dependability, data migration, streaming in Cloud. Quality of Service (QoS) monitoring in a Cloud computing environment, , Inter Cloud issues, load balancing, resource optimization.

Text Books:

1. Cloud Computing : A Practical Approach, Antohy T Velte, et.al McGraw Hill,
2. Cloud Computing for Dummies by Judith Hurwitz, R.Bloor, M.Kanfman, F.Halper (Wiley India Edition)
3. Cloud Security & Privacy by Tim Malhar, S.Kumaraswamy, S.Latif (SPD,O'REILLY)

Reference Books:

1. Cloud Computing Bible by Barrie Sosinsky, Wiley India
2. Cloud Applications by George Reese, O'REILLY Publication
3. Cloud Security by Ronald Krutz and Russell Dean Vines, Wiley-India

Paper Code: ICT 204 / ICT 217	Paper: Computational Methods	L	T/P	C								
Paper ID:		4	0	4								
Prerequisite Paper: ICT												
Marking Scheme :												
1. Teacher's Continuous Evaluation : 25 marks												
2. Term and Theory Examinations : 75 marks												
Instructions for paper setter												
1. There should be 9 questions in the term end examinations question paper.												
2. The first (1st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type questions of total 15 marks.												
3. Apart from question one which is compulsory, rest of the paper shall consists of four units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain up to 5 sub-parts/sub-questions. Each unit shall have a marks weightage of 15.												
4. The questions are to be framed keeping in view the learning objectives of course/paper. The standard /level of the questions to be asked should be at the level of the prescribed text box.												
5. The requirement of (scientific) calculators/log tables/data-tables may be specified if required.												
Course Objectives :												
1.	To understand numerical methods to find roots of functions and first order unconstrained minimization of functions.											
2.	To introduce concept of interpolation methods and numerical integration.											
3.	To understand numerical methods to solve systems of algebraic equations and curve fitting by splines.											
4.	To understand numerical methods for the solution of Ordinary and partial differential equations.											
Course Outcomes (CO)												
CO 1	Ability to develop mathematical models of low level engineering problems											
CO 2	Ability to apply interpolation methods and numerical integration.											
CO 3	Ability to solve simultaneous linear equations and curve fitting by splines											
CO 4	Ability to numerically solve ordinary differential equations that are initial value or boundary value problems											
Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)												
	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	3	2	2	2	2	-	-	-	2	2	2	3
CO 2	3	2	2	2	2	-	-	-	2	2	2	3
CO 3	3	3	3	3	2	-	-	-	2	2	2	3
CO 4	3	3	3	3	2	-	-	-	2	2	2	3
UNIT-I												
Review of Taylor Series, Rolle's Theorem and Mean Value Theorem, Approximations and Errors in numerical computations, Data representation and computer arithmetic, Loss of significance in computation Location of roots of equation: Bisection method (convergence analysis and implementation), Newton Method (convergence analysis and implementation), Secant Method (convergence analysis and implementation). Unconstrained one variable function minimization by Fibonacci search, Golden Section Search and Newton's method. Multivariate function minimization by the method of steepest descent, Nelder- Mead Algorithm.												
UNIT-II												
Interpolation: Assumptions for interpolation, errors in polynomial interpolation, Finite differences, Gregory-Newton's Forward Interpolation, Gregory-Newton's backward Interpolation, Lagrange's Interpolation, Newton's divided difference interpolation Numerical Integration: Definite Integral, Newton-Cote's Quadrature formula, Trapezoidal Rule, Simpson's one-third rule, Simpson's three-eighth rule, Errors in quadrature formulae, Romberg's Algorithm, Gaussian Quadrature formula.												
UNIT-III												
System of Linear Algebraic Equations: Existence of solution, Gauss elimination method and its computational effort, concept of Pivoting, Gauss Jordan method and its computational effort, Triangular												

Matrix factorization methods: Dolittle algorithm, Crout's Algorithm, Cholesky method, Eigen value problem: Power method
Approximation by Spline Function: First-Degree and second degree Splines, Natural Cubic Splines, B Splines, Interpolation and Approximation

UNIT - IV

Numerical solution of ordinary Differential Equations: Picard's method, Taylor series method, Euler's and Runge-Kutta's methods, Predictor-corrector methods: Euler's method, Adams-Bashforth method, Milne's method.

Numerical Solution of Partial Differential equations: Parabolic, Hyperbolic, and elliptic equations
Implementation to be done in C/C++

Textbook(s):

1. E. Ward Cheney & David R. Kincaid, "Numerical Mathematics and Computing" Cengage; 7th ed (2013).

References:

1. R. L. Burden and J. D. Faires, "Numerical Analysis", CENGAGE Learning Custom Publishing; 10th Edition (2015).
2. S. D. Conte and C. de Boor, "Elementary Numerical Analysis: An Algorithmic Approach", McGraw Hill, 3rd ed. (2005).
3. H. M. Antia, "Numerical Methods for Scientists & Engineers", Hindustan Book Agency, (2002).
4. E. Balagurusamy "Numerical Methods" McGraw Hill Education (2017).

Unit I

Introduction to Software Engineering: Software Engineering Development, Software Life Cycle Models, Standards for developing life cycle models.

Object Methodology & Requirement Elicitation: Introduction to object Oriented Methodology, Overview of Requirements Elicitation, Requirements Model-Action & Use cases, Requirements Elicitation Activities, Managing Requirements Elicitation.

Unit II

Architecture: Model Architecture, Requirements Model, Analysis Model, Design Model, Implementation Model, Test Model

Unit III

Modeling with UMLZ: Basic Building Blocks of UML, A conceptual Model of UML, Basic Structural Modeling , UML Diagram

System Design: Design concepts & activities, Design Models, Block design, Testing

Unit IV

Testing Object Oriented Systems: Introduction, Testing Activities & Techniques, The Testing Process, Managing Testing

Case Studies

Text Books:

1. I. Jacobson, "Object-Oriented Software Engineering: A Use Case Driven Approach", Pearson, 1992
2. B. Breugge and A. H. Dutoit, "Object Oriented Software Engineering: Using UML, Patterns, and Java", Prentice Hall, 2004
3. G. Booch, J. Rumbaugh and I. Jacobson, "The Unified Modeling Language User Guide" Addison-Wesley, 2005

Unit I

Introduction to the Operating System

Types of OS: Batch System, Time Sharing System, Real Time System, Multiuser/Single User System

Functions of Operating System: Process Management, Memory Management, File Management, I/O Devices Management, Information Management.

Process Management : Process concepts, Process State, Process Control Block, Process Scheduling, Context Switch, CPU Scheduling, Scheduling Criteria, Scheduling Algorithms, Pre Emptive/ Non Preemptive Scheduling, Threads, Thread Structure.

Unit II

Process Synchronisation: Critical Section Problem, Race Condition, Synchronisation Hardware, Semaphores, Classical Problems of Synchronisation.

Dead Locks: Characterisation, Methods for Handling Deadlocks Avoidance, Recovery and Detection.

Unit III

Memory Management: Contiguous Allocation, External Internal Fragmentation, Paging, Segmentation, Segmentation with Paging.

Unit IV

Virtual Memory: Virtual Memory Concepts, Access Methods, Directory Structure, allocation Methods; Contiguous Allocation, Linked Allocation, Indexed Allocation Free Space Management.

Device Management: dist Structure, Disk Scheduling Algorithms, Disk Management, Case study on DOS, Windows 2000, Windows XP, Linux.

Text:

1. Silbershatz and Galvin, "Operating Systems Concepts", Addison Wesley, 2002
2. Flynn, Mchocs, "Understanding Operating System", Thomson Press, Third Edition, 2003
3. Godbole Ahyut, "Operating System", PHI, 2003

References:

1. Charles Crowley, "Operating Systems, Tata Mcgraw-Hill Edition.
2. A.S. Tannenbaum, "Operating System Concepts", Addison Wesley, 2002

Code: IT 315
Paper ID: 15315

L:3 T/P:1 C: 4

Paper: Linux & Win32 Programming

SKILL DEVELOPMENT & EMPLOYABILITY

Linux:

Unit I

Linux overview, Compiler options, libraries, make, file system objects, error handling, I/O, file locking, managing files, directory management, temporary files and cleanup, command line processing.

Unit II

UserID, password and group management; signals, and signal handling, process management, fork and exec, regular expression, IPC, message queues, semaphores, shared memory, memory mapped files, Introduction to X-Windows.

Win32:

Unit III

Windows environment, Windows programming options, Windows and messages, text, controls, keyboard management, Mouse management, Timer, Child window controls, Menus and other resources, Dialog boxes, Clipboard management

Unit IV

GDI, Printer management, Bitmaps and Bitblts, Device Independent Bitmaps, Palette manager, Metafiles, Multiple Document Interface, Introduction to MFC.

Text:

1. K. Wall, M. Watson, and M. Whitis, "Linux Programming Unleashed", SAMS, 1999.
2. C. Petzold, "Programming Windows: The definitive guide to Win32 API", Microsoft Press, 5th Eds., 1998.