

Krishna University :: Machilipatnam

Cloud Computing Minor

w.e.f. A.Y. 2025 - 2026

Course Structure

Year	Semester	Course	Title of the Course	No. of Hrs / Week	No. of Credits
II	III	1	Cloud Computing	3	3
			Cloud Computing - Practical	2	1
	IV	2	Web Programming	3	3
			Web Programming - Practical	2	1
III	V	3	AWS for Cloud Computing	3	3
			AWS for Cloud Computing - Practical	2	1
		4	Data Mining and Data Warehousing	3	3
			Data Mining and Data Warehousing - Practical	2	1
	VI	5	Software Project Management	3	3
			Software Project Management - Practical	2	1
		6	Data Analytics Methods	3	3
			Data Analytics Methods - Practical	2	1

12/1/25
Chiranjeev N.S. Jyoti
Vasana S. Yagnesh D. Rohith Kumar.

SEMESTER - III
COURSE 1 : Cloud Computing

Theory

Credits: 3

3 hrs/week

I. Learning Outcomes:

1. Compare the strengths and limitations of cloud computing
2. Identify the architecture, infrastructure and delivery models of cloud computing
3. Apply suitable virtualization concept.
4. Choose the appropriate cloud player, Programming Models and approach.
5. Address the core issues of cloud computing such as security, privacy and interoperability

II. Syllabus

UNIT- I

Introduction to Cloud Computing: Evolution and History of Cloud Computing, Introduction to Cloud Computing, Why Cloud Computing is Becoming Highly Important, Features of Cloud Computing, Cloud Computing for various users, Advantages of Cloud Computing, Limitations of Cloud Computing.

UNIT- II

Cloud Models and Types: The NIST Model, Cloud Cube Model, Deployment Models, Service Models. Layers and Types of Cloud, Components of Cloud Computing, Cloud Computing Service Providers **Software as a Service (SaaS):** Software as a Service , Evolution of SaaS ,Brief Introductory part of Software as a Service , SaaS Unification Technologies , SaaS Integration Products and Technologies, SaaS Product Selection Criteria, SaaS Integration Services, Advantages of SaaS.

UNIT- III

Platform as a Service (PaaS): Introduction to PaaS, Evolution of PaaS, PaaS Service Providers- Acquia Cloud, Amazon AWS, Amazon Elastic Beanstalk, Google App Engine, Force.com, PaaS Application Framework, PaaS Operator Verbs, PaaS Developer Verbs, Advantages and Challenges of PaaS .

UNIT- IV

Infrastructure as a Service (IaaS): Evolution, IaaS Architecture- Advantages and Disadvantages of Infrastructure as a Service, SAN model, IaaS Providers, IaaS Architecture, Advantages and Disadvantages of Infrastructure as a Service.

Data in Cloud : Evolution of Network Storage in Cloud, Data as a Service, Database as a Service, Cloud Based Data Storage, Advantages and Limitations of Cloud Based Storage Solution, Cloud Based Data Storage Service Providers

UNIT-V

Virtualization: Introduction to Virtualization and its Technical Evolution, History of Virtualization, Types of Virtual Machines, Advantages of Virtualization, Components of Virtualization, Types of Virtualization

Text Books:

1. Handbook of Cloud Computing By Dr.Anand Nayyar (Editor), First Edition 2019, BPB Publication, India
2. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi – 2010

3. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008
4. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
5. Cloud Computing, A Hands on approach, ArshadeepBahga, Vijay Madiseti, University Press
6. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christenvecctiola, S Tammaraiselvi, TMH.

12 ——— Vijayadeep N.S. Jyothi
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SEMESTER - III
COURSE 1 : Cloud Computing

Practical

Credits: 1

2 hrs/week

List of Experiments:

Practical Syllabus: Introduction to Cloud Computing

III. Skill Outcomes:

1. Installing and using identity management feature of OpenStack.
2. Installing and using security feature of own Cloud.
3. Installing and using Administrative features of own Cloud.
4. Design Cloud Services and Set a private cloud
5. Installing and using JOSSO.

IV. Practical Syllabus:

1. Create a word document of your class time table and store locally and on cloud with doc and pdf format.
2. Prepare a PowerPoint on cloud on topic of your choice.
3. Create your resume in a neat format using Google and Zoho cloud
4. Install OpenStack and use it as Infrastructure as a Service and use technology ownCloud.
5. Installing and using identity management feature of OpenStack.
6. Write a program for web feed using PHP, HTML.
7. Installing and using JOSSO.
8. Installing and using security feature of own Cloud.
9. Installing and using Administrative features of own Cloud.
10. Case study on Amazon EC2.
11. Case study on Microsoft azure.

V. References:

1. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008
2. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
3. Cloud Computing, A Hands on approach, ArshadeepBahga, Vijay Madiseti, University Press
4. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christenvecctiola, S Tammaraiselvi, TMH

VI. Co-Curricular Activities:

a) Suggested Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))

4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

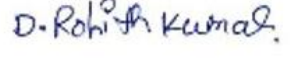
B. General

1. Group Discussion
2. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted:

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports.
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

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 S. Yagnesh 

SEMESTER - IV
COURSE 2: Web Programming

Theory
hrs/week

Credits: 3

3

Course Objectives:

- Understand the fundamentals of the World Wide Web and web technologies.
- Learn the structure and design of web pages using HTML5.
- Develop skills in creating forms, tables, multimedia, and hyperlinks.
- Understand the principles of responsive web design.
- Design attractive and interactive web pages using CSS3.

Course Outcomes (COs)

After successful completion of this course, students will be able to:

CO1: Explain the fundamentals of web technologies and Internet architecture.

CO2: Create structured web pages using HTML5 elements.

CO3: Develop web pages with tables, forms, multimedia, and semantic HTML.

CO4: Apply CSS3 to design visually appealing and user-friendly web pages.

CO5: Build responsive web pages using modern CSS techniques such as Flexbox, Grid, and Media Queries.

UNIT – I: Introduction to Web Programming

Introduction to Internet and World Wide Web, Web Browsers and Web Servers, Client-Server Architecture, Static Websites vs Dynamic Websites, URL, Domain Name, Hosting, HTTP and HTTPS Protocols, Introduction to HTML, Structure of an HTML Document, Basic HTML Tags: Headings, Paragraphs, Line Breaks, Horizontal Rule.

UNIT – II: HTML Fundamentals

Text Formatting Tags, Lists: Ordered List, Unordered List, Description List, Hyperlinks: Internal Links, External Links, Email Links, Images: Image Attributes, Image Mapping, HTML Colors

UNIT –III: HTML Advanced Features

HTML Tables: Table Formatting, HTML Forms: Input Types, Labels, Buttons, Select, Text area, HTML5 Semantic Elements: Header, Footer, Section Article, Multimedia: Audio, Video, IFrames

UNIT – IV: Introduction to CSS

Introduction to CSS, Advantages of CSS, Types of CSS, Inline, Internal, External
CSS Syntax: Selectors: Element, Class, ID, Universal, Grouping, Colors and Backgrounds: Borders, Margins, Padding, Width and Height

UNIT – V: CSS3 and Responsive Web Design

Fonts and Text Properties: CSS Box Model, Display Property, Positioning, Float and Clear, Flexbox Basics, Introduction to CSS Grid: Responsive Web Design, Media Queries, Simple Website Layout using HTML5 and CSS3

Recommended Text Books

1. Jon Duckett, **HTML and CSS: Design and Build Websites**, Wiley.
2. Thomas A. Powell, **HTML & CSS: The Complete Reference**, McGraw-Hill.
3. Laura Lemay, **Teach Yourself HTML, CSS & Web Publishing**, Sams Publishing.

Reference Books

1. Jennifer Robbins, **Learning Web Design**, O'Reilly Media.
2. Elisabeth Robson & Eric Freeman, **Head First HTML and CSS**, O'Reilly Media.
3. David Flanagan, **JavaScript: The Definitive Guide** (for future web programming topics).

12/11/2020
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SEMESTER - IV
COURSE 2: Web Programming

Practical

Credits: 1

2 hrs/week

Lab Course Outcomes (COs)

After successful completion of the laboratory course, students will be able to:

CO1: Create basic web pages using HTML5 elements.

CO2: Design web pages using hyperlinks, images, tables, forms, and multimedia.

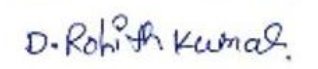
CO3: Apply HTML5 semantic elements to create well-structured web pages.

CO4: Use CSS3 to enhance the appearance and layout of web pages.

CO5: Develop responsive web pages using Flexbox, Grid, and Media Queries following modern web design principles.

List of Practical Experiments

1. Create a basic HTML webpage using headings, paragraphs, line breaks, and comments.
2. Design a webpage using text formatting tags and lists (ordered, unordered, and description lists).
3. Create a webpage with hyperlinks and images using internal, external, and email links.
4. Design a student marks table using HTML table elements.
5. Create a student registration form using various HTML form controls.
6. Develop a webpage using HTML5 semantic tags and embed audio, video, and iframe.
7. Apply Inline, Internal, and External CSS to style an HTML webpage.
8. Design a webpage using CSS selectors and apply colors, borders, margins, and padding.
9. Create a webpage layout using CSS with fonts, positioning, float, and the box model.
10. Develop a responsive website using HTML5, CSS3, Flexbox, Grid, and Media Queries.

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SEMESTER - V
COURSE 3 : AWS For Cloud Computing

Theory

Credits: 3

3 hrs/week

I. Learning Outcomes:

After completing this course, the student will be able to

1. Configure various virtualization tools such as Virtual Box, VMware workstation. Design and deploy a web application in a PaaS environment.
2. Learn how to simulate a cloud environment to implement new schedulers.
3. Install and use a generic cloud environment that can be used as a private cloud.
4. Manipulate large data sets in a parallel environment.

II. Syllabus

UNIT- I

Introduction: Definition of Cloud – Evolution of Cloud Computing – Benefits of Cloud Computing - Underlying Principles of Parallel and Distributed Computing – Cloud Characteristics – Elasticity in Cloud – On-demand Provisioning.

UNIT- II

Cloud Enabling Technologies: Service Oriented Architecture – REST and Systems of Systems – Web Services – Publish Subscribe Model – Basics of Virtualization – Types of Virtualization – Implementation Levels of Virtualization – Virtualization Structures-Tools and mechanisms.

UNIT- III

Virtualization of CPU – Memory – I/O Devices –Virtualization Support and Disaster Recovery. Cloud Architecture & Services: Layered Cloud Architecture Design –Public, Private and Hybrid Clouds - Cloud computing models: IaaS – PaaS – SaaS, cloud delivery models, cloud deployment models.

UNIT- IV

AWS & Networking: Introduction to AWS, AWS Global infrastructure, Google cloud platform, network switches & virtual private cloud (VPC) , VPC and Subnets , IP addressing in AWS, AWS security groups, EC2 instance types. EC2 pricing models

UNIT-V

Cloud storage: Cloud Storage –Advantages of Cloud Storage – Cloud Storage Providers – S3 (Simple Storage Service) - S3 Features.

Security in cloud: Software-as-a-Service Security – Security Governance – Virtual Machine Security- Security types: network level, host level, application level.

Text Books:

1. Kai Hwang, Geoffrey C. Fox, Jack G. Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
2. Overview of AWS : AWS whitepaper , copyright@aws,inc, and/or its affiliates. BY AWS.

3. Rittinghouse, John W., and James F. Ransome, —Cloud Computing: Implementation, Management and Security, CRC Press, 2017.
4. Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi, —Mastering Cloud Computing, Tata Mcgraw Hill, 2013.
5. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing - A Practical Approach, Tata Mcgraw Hill, 2009.
6. George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud: Transactional Systems for EC2 and Beyond (Theory in Practice), O'Reilly, 2009.

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SEMESTER - V
COURSE 3 : AWS For Cloud Computing

Practical

Credits: 1

2 hrs/week

List of Experiments:

Practical Syllabus: AWS FOR CLOUD COMPUTING

III. Skill Outcomes:

After completing this course, the student will be able to

1. Configure various virtualization tools such as Virtual Box, VMware workstation. Design and deploy a web application in a PaaS environment.
2. 2.Able to Install Virtualbox/VMware Workstation with different flavours of linux or windows OS on top of windows7 or Windows 8.
3. Able to Install a C compiler in the virtual machine created using virtual box and execute Simple Programs
4. Able to Install Google App Engine. Create hello world app and other simple web applications using python/java.
5. Able to Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim

IV. Practical Syllabus:

1. Install Virtualbox/VMware Workstation with different flavours of linux or windows OS on top of windows7 or Windows 8.
2. Install a C compiler in the virtual machine created using virtual box and execute Simple Programs
3. Install Google App Engine. Create hello world app and other simple web applications using python/java.
4. Use GAE launcher to launch the web applications.
5. Simulate a cloud scenario using CloudSim and run a scheduling algorithm that is not present in CloudSim.
6. Find a procedure to transfer the files from one virtual machine to another virtual machine.
7. Find a procedure to launch virtual machine using trystack (Online Openstack Demo Version)
8. Install Hadoop single node cluster and run simple applications like word count

V. References:

1. Rajkumar Buyya, Christian Vecchiola, S. ThamaraiSelvi, —Mastering Cloud Computing, Tata Mcgraw Hill, 2013.
2. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing - A Practical Approach, Tata Mcgraw Hill, 2009.
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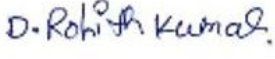
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5. Observation of practical skills,
6. Individual and group project reports.
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.









SEMESTER - V
COURSE 4 : Data Mining and Data Warehousing

Theory
hrs/week

Credits: 3

3

I. Learning Outcomes:

Course Objectives:

- Understand the concepts, architecture, and applications of Data Warehousing and its role in business intelligence.
- Gain knowledge of data preprocessing techniques used in preparing data for analysis.
- Learn various data mining techniques including association rule mining, clustering, and classification using decision trees.
- Explore advanced algorithms for pattern discovery and knowledge extraction.
- Apply web mining and text mining techniques for extracting meaningful patterns from unstructured data sources.

Course Outcomes:

Upon successful completion of the course, the student will be able to:

1. Understand the architecture and components of Data Warehousing, including multidimensional data models, OLAP operations, and data preprocessing techniques for effective data storage and analysis.
2. Demonstrate knowledge of core data mining concepts, processes, and techniques, and distinguish them from traditional database systems.
3. Apply various association rule mining algorithms (such as Apriori, FP-Growth, and others) to discover hidden patterns and relationships in large datasets.
4. Implement and evaluate clustering and classification techniques (like k-Medoid, DBSCAN, Decision Trees) for data grouping and predictive modelling.
5. Analyze and apply web and text mining methods to extract meaningful insights from semi-structured and unstructured data sources for real-world applications.

Unit-1: Data Warehousing:

Introduction, What is Data Warehouse? Definition, Multidimensional Data Model, OLAP Operations, Warehouse Schema, Data Warehouse Architecture, Warehouse Server, Metadata, OLAP Engine, Data Warehouse Backend Process, Other Features Data Preprocessing, Descriptive Data Summarization, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation

Unit-2: Data Mining:

What is Data Mining? Data Mining: Definitions, KDD vs Data Mining, DBMS vs DM, Other Related Areas, DM Techniques, Other Mining Techniques, Issues and Challenges in DM, DM Applications- Case Studies

Association Rules: What is an Association Rule?, Methods to Discover Association Rules, A Priori Algorithm, Partition Algorithm, Pincer-Search Algorithm, Dynamic Itemset Counting Algorithms, FP-Tree Growth Algorithm, Generalized Association Rule, Association Rules with Item Constraints

Unit-3: Clustering Techniques:

Clustering Paradigms, Partitioning Algorithms, k-Medoid Algorithms, CLARA, CLARANS, Hierarchical Clustering: DBSCAN, BIRCH, CURE, Categorical Clustering Algorithms: STIRR, ROCK, CACTUS

Unit-4: Decision Trees:

What is a Decision Tree?, Tree Construction Principle, Best Split, Splitting Indices, Splitting Criteria, Decision Tree Construction Algorithms: CART, ID3, C4.5, Approximate Methods: CLOUDS, BOAT, Pruning Techniques, Integration of Pruning and Construction, Ideal Algorithm

Unit-5: Web Mining:

Web Mining, Web Content Mining, Web Structure Mining, Web Usage Mining, Text Mining, Unstructured Text, Episode Rule Discovery for Texts, Hierarchy of Categories, Text Clustering

Textbooks:

1. Data Mining Techniques, Arun K Pujari, 3rd Edition, Universities Press
2. Data Mining: Concepts and Techniques, Jiawei Han, Micheline Kamber, Jian Pei, 3rd Edition, Morgan Kaufmann Publishers

Reference Books:

1. K.P. Soman, Shyam Diwakar, V.Ajay, 2006, Insight into Data Mining Theory and Practice, Prentice Hall of India Pvt. Ltd - New Delhi.
2. Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, Anuj Karpatne, Vipin Kumar, 2nd edition,

Activities:**Outcome:**

Understand the architecture and components of Data Warehousing, including multidimensional data models, OLAP operations, and data preprocessing techniques for effective data storage and analysis.

Activity: Students will design a conceptual schema for a data warehouse using a star or snowflake schema for a given business scenario (e.g., retail store or university records). They will also simulate OLAP operations (roll-up, drill-down, slice, dice) using a sample dataset in an OLAP tool or spreadsheet.

Evaluation Method:

The teacher will assess the schema design for completeness, accuracy, and normalization. OLAP operation outputs will be checked for correctness and alignment with expected results. A short viva or quiz will be conducted to assess conceptual clarity.

Outcome:

Demonstrate knowledge of core data mining concepts, processes, and techniques, and distinguish them from traditional database systems.

Activity: Students will prepare a comparative report and presentation highlighting the differences between DBMS and Data Mining, and the steps involved in the Knowledge Discovery in Databases (KDD) process. They will include at least one real-world application or case study.

Evaluation Method:

Evaluation will be based on clarity, depth of understanding, examples used, and presentation skills. Rubrics will include criteria such as originality, relevance, and group participation.

Outcome:

Apply various association rule mining algorithms (such as Apriori, FP-Growth, and others) to discover hidden patterns and relationships in large datasets.

Activity: Students will be given a transaction dataset (e.g., market basket data). Using tools like Python (mlxtend library) or Weka, they will implement the Apriori algorithm to generate frequent itemsets and derive association rules based on given support and confidence thresholds.

Evaluation Method:

Submissions will be evaluated for correctness of generated rules, code efficiency, parameter tuning, and clarity in result interpretation. Students must submit a brief report discussing the discovered patterns and their significance.

Outcome:

Implement and evaluate clustering and classification techniques (like k-Medoid, DBSCAN, Decision Trees) for data grouping and predictive modeling.

Activity: Students will implement clustering algorithms (e.g., k-Medoid, DBSCAN) and a classification model (e.g., Decision Tree using ID3 or C4.5) on a real-world dataset (e.g., Iris, Titanic, or Student Performance) using Python or R. They will compare the results using appropriate metrics (e.g., Silhouette Score, Accuracy, Confusion Matrix).

Evaluation Method:

Evaluation will be based on model implementation, result analysis, visualization of clusters/trees, and comparative discussion. Accuracy and justification of parameter choices will be considered. A brief oral explanation may be conducted.

Outcome:

Analyze and apply web and text mining methods to extract meaningful insights from semi-structured and unstructured data sources for real-world applications.

Activity: Students will collect web data (e.g., product reviews or blog posts) using scraping tools or provided datasets. They will preprocess text, perform frequency analysis, and apply clustering or classification (e.g., sentiment analysis using TF-IDF + KMeans or Decision Tree).

Evaluation Method:

Evaluation will focus on data preparation, mining technique used, insights derived, and real-world applicability. A report and visualization (e.g., word cloud, dendrogram) are required. Innovation in mining tasks and clarity in reporting will be rewarded.

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SEMESTER - V
COURSE 4 : Data Mining and Data Warehousing

**Practical
hrs/week**

Credits: 1

2

Practical Syllabus:

Recommended datasets: **weather.arff**, **iris.arff**, **supermarket.arff**, **vote.arff**, **contact-lenses.arff**, or custom CSV datasets.

1. Load datasets in WEKA and explore data formats (ARFF/CSV)
2. Perform data cleaning and handle missing values using filters
3. Apply normalization and discretization on numeric attributes
4. Reduce data using attribute selection and PCA
5. Summarize and visualize data using statistical tools and class-wise comparison in WEKA.
6. Generate association rules using the Apriori algorithm
7. Apply multilevel association rule mining using hierarchical attributes
8. Apply K-means clustering and interpret the cluster outputs.
9. Perform hierarchical clustering and visualize results using dendrograms.
10. Apply Expectation-Maximization (EM) clustering and analyze cluster summaries.
11. Build a decision tree classifier using J48 and evaluate its performance.
12. Perform Naive Bayes classification and compare with decision tree results.
13. Apply rule-based classification using PART or JRip algorithms.
14. Compare classifiers using confusion matrix, accuracy, and ROC curves.
15. Perform basic text preprocessing and clustering using TF-IDF and K-means.

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SEMESTER - VI
COURSE 5: Software Project Management

Theory

Credits: 3

3 hrs/week

Course Objectives:

- To understand the fundamental principles of software project management.
- To have a good knowledge of responsibilities of project manager.
- To be familiar with the different methods and techniques used for project management.

UNIT - I

PROJECT EVALUATION AND PROJECT PLANNING

Importance of Software Project Management – Activities Methodologies – Categorization of Software Projects – Setting objectives – Management Principles – Management Control – Project portfolio Management – Cost-benefit evaluation technology – Risk evaluation – Strategic program Management – Stepwise Project Planning.

UNIT - II

PROJECT LIFE CYCLE AND EFFORT ESTIMATION:

Software process and Process Models – Choice of Process models - mental delivery – Rapid Application development – Agile methods – Extreme Programming – SCRUM – Managing interactive processes – Basics of Software estimation – Effort and Cost estimation techniques –COSMIC Full function points - COCOMO II A Parametric Productivity Model - Staffing Pattern.

UNIT - III

ACTIVITY PLANNING AND RISK MANAGEMENT:

Objectives of Activity planning – Project schedules – Activities – Sequencing and scheduling –Network Planning models – Forward Pass & Backward Pass techniques – Critical path (CRM) method– Risk identification – Assessment – Monitoring – PERT technique – Monte Carlo simulation –Resource Allocation – Creation of critical patterns – Cost schedules.

UNIT - IV

PROJECT MANAGEMENT AND CONTROL:

Framework for Management and control – Collection of data Project termination – Visualizing progress – Cost monitoring – Earned Value Analysis- Project tracking – Change control, Software Configuration Management – Managing contracts – Contract Management.

UNIT - V

STAFFING IN SOFTWARE PROJECTS:

Managing people – Organizational behaviour – Best methods of staff selection – Motivation – The Oldham-Hackman job characteristic model – Ethical and Programmed concerns – Working in teams – Decision making – Team structures – Virtual teams – Communications genres –Communication plans

TEXT BOOK:

1. Bob Hughes, Mike Cotterell and Rajib Mall: Software Project Management – Fifth Edition, Tata McGraw Hill, New Delhi, 2012.

REFERENCES:

1. Robert K. Wysocki “Effective Software Project Management” – Wiley Publication, 2011.
2. Walker Royce: “Software Project Management”- Addison-Wesley, 1998.
3. Gopalaswamy Ramesh, “Managing Global Software Projects” – McGraw Hill Education (India), Fourteenth Reprint 2013.

SEMESTER - VI
COURSE 5: Software Project Management

Practical
hrs/week

Credits: 1

2

List of Experiments

The objective of this course is to enable students to practically implement various methods and techniques for software project management using python.

1. Demonstrate function point analysis.
2. Demonstrate flexi model.
3. Demonstrate SEL model.
4. Demonstrate basic COCOMO.
5. Demonstrate intermediate COCOMO.
6. Demonstrate detailed COCOMO.
7. Demonstrate early design model and calculate effort for development of project.

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SEMESTER – VI
COURSE 6 : Data Analytics Methods

Theory

Credits: 3

3 hrs/week

I. COURSE OUTCOMES:

After successful completion of this course, the student will be able to;

1. Ability to distinguish between discrete and continuous distributions.
2. Knowledge related to concept of curve fitting.
3. Knowledge of important discrete and continuous distributions such as Binomial, Poisson, rectangular, normal, distributions.
4. Acumen to apply standard discrete and continuous probability distributions to different situations.
5. Knowledge related to concept of correlations.
6. Knowledge related to concept of regressions.
7. Knowledge of correlation, regression analysis, regression diagnostics.

UNIT – I

Correlation: Introduction, Meaning of Correlation, Types of correlation, probable error, Karl-pearson's coefficient of correlation for individual series only, Spearman's Rank correlation for individual series only.

UNIT –II

Regression: Introduction, definition, difference between correlation and regression, Simple linear regression, properties of regression coefficients, Regression equation x on y , Regression equation y on x , Simple Problems.

UNIT – III

Estimation Techniques: Forward Differences - Backward differences. Newton's forward interpolation formula - Newton's backward interpolation formula

UNIT – IV

Curve Fitting : method of least squares, fitting of a straight line only. Linear trend and find trend values by the method of straight line trend.

UNIT –V

Applications of Numerical Integration: Trapezoidal rule, Simpson's $1/3^{\text{rd}}$ rule, Simpson's $3/8^{\text{th}}$ rule.

Note: Concentration on numerical problems only. Proofs of theorems and Derivations of expressions are omitted.

Text Books:

1. Mathematical Methods by Dr. T.K.V.Iyengar. - S.Chand Publications.
2. Statistical methods - S.P Gupta.

Reference Books:

1. Fundamentals of Mathematical statistics - S.C. Gupta & V.K.Kapoor.

The block contains several handwritten signatures in blue and red ink. The signatures are arranged in two rows. The top row includes a signature that appears to be 'Vijayadeep', followed by 'N.S. Jyoti', and a red signature. The bottom row includes a signature that appears to be 'Vama', followed by 'S. Yagnesh', and 'D. Rohith Kumar'.

SEMESTER – VI
COURSE 6 : Data Analytics Methods

**Practical
hrs/week**

Credits: 1

2

List of Experiments

DATA ANALYTICS METHODS LAB

1. Trapezoidal rule
2. Simpson's rule
3. Fitting of a Straight Line.
4. Fitting of a Straight Line Trend.
5. Estimation Techniques
6. Interpolation.
7. Rank Correlation.
8. Correlation coefficient.
9. Regression lines X on Y.
10. Regression lines Y on X.

  N. S. Jyoti
 S. Yagnesh  D. Rohith Kumar.

KRISHNA UNIVERSITY

B.SC Examinations Blue Print for Core Subjects

Semester : II / III / IV

Time : 3hrs

Max. Marks:70

Unit No	No. of Short Answer Questions (4 Marks)	No. of Essay Answer Questions (10 Marks)
1	2	2
2	2	2
3	2	2
4	1	2
5	1	2

Note: This blue print has to be followed for all core papers

SEMESTER – III
COURSE – 1: CLOUD COMPUTING
Theory: 3 Credits | 3 Hrs/Week
MODEL QUESTION PAPER

Time: 3 Hours

Max. Marks: 75

SECTION – A

Answer ALL Questions

5× 5 = 25 Marks

1. Define Cloud Computing. Mention any two features of cloud computing.
2. What are the advantages of cloud computing?
3. What is the NIST Cloud Model? Name the four essential characteristics of cloud computing.
4. Define Software as a Service (SaaS). Give two examples.
5. What is Platform as a Service (PaaS)? Mention any two PaaS service providers.
6. Define Infrastructure as a Service (IaaS). Mention any two IaaS providers.
7. What is Data as a Service (DaaS)? How is it different from Database as a Service (DBaaS)?
8. Define Virtualization. Mention any two advantages of virtualization.

SECTION – B

Answer ONE question from each pair

5 × 10 = 50 Marks

9. A. Explain the concept of Cloud Computing and discuss its major features.

OR

B. Discuss the advantages and limitations of Cloud Computing.

10. A. Explain the different models of Cloud Computing.

OR

B. Explain Software as a Service (SaaS) and discuss its major advantages.

11. A. Explain Platform as a Service (PaaS) and discuss its main features.

OR

B. Discuss the advantages and challenges of PaaS.

12. A. Explain Infrastructure as a Service (IaaS) and describe its major features.

OR

B. Explain cloud-based data storage and discuss its advantages and limitations.

13. A. Explain the concept of virtualization and discuss its advantages.

OR

B. Describe the different types of virtualization and their applications.

12 —————
Orijayadeep N. S. Jyothi
Vasana S. Yagnesh D. Rohith Kumar.

SEMESTER – IV
COURSE – 2: WEB PROGRAMMING
Theory: 3 Credits | 3 Hrs/Week
MODEL QUESTION PAPER

Time: 3 Hours

Max. Marks: 60

SECTION – A

Answer ANY FIVE questions out of EIGHT questions. 5 × 2 = 10 Marks

1. Explain the World Wide Web and mention its main features.
2. Explain the difference between static and dynamic websites.
3. What is HTML? Explain the basic structure of an HTML document.
4. What are hyperlinks? Explain the different types of hyperlinks in HTML.
5. What are HTML tables? Explain their basic elements and uses.
6. What is an HTML form? Explain any five form elements.
7. What is CSS? Explain the main advantages of using CSS in web pages.
8. What is responsive web design? Explain the role of media queries

SECTION – B

Answer ONE question from each pair. 5 × 10 = 50 Marks

9. A. Explain the World Wide Web and its basic concepts. Discuss web browsers, web servers and client-server architecture.

OR

- B. Explain HTML and the basic structure of an HTML document. Describe the use of headings, paragraphs, line breaks and horizontal rules.
10. A. Explain the different types of lists in HTML with suitable examples.

OR

- B. Explain hyperlinks and images in HTML. Discuss their different types and important attributes.
11. A. Explain HTML tables and forms. Describe their basic elements and uses.

OR

B. Explain the important features of HTML5. Discuss semantic elements and multimedia elements.

12. A. Explain CSS and its advantages. Describe the different types of CSS with suitable examples.

OR

B. Explain CSS selectors and discuss the use of colors, backgrounds, borders, margins and padding.

13. A. Explain the CSS Box Model and positioning. Discuss the important properties used for designing web pages.

OR

B. Explain responsive web design. Discuss Flexbox, CSS Grid and media queries in responsive web page design.

  N. S. Jyothi 
 S. Yagnesh  D. Rohith Kumar.

SEMESTER – V
COURSE 3: AWS FOR CLOUD COMPUTING
Theory: 3 Credits | 3 Hrs/Week
MODEL QUESTION PAPER

Time: 3 Hours

Max. Marks: 60

SECTION – A

Answer ANY FIVE questions out of EIGHT questions.

5 × 5 = 25 Marks

1. Define Cloud Computing and mention its main benefits.
2. What is Elasticity in Cloud Computing? Explain its importance.
3. Define Virtualization and mention its different types.
4. What is Service-Oriented Architecture (SOA)? State its main features.
5. Define IaaS, PaaS and SaaS.
6. What is Amazon EC2? Mention its main features.
7. What is Amazon S3? State its important features.
8. What is Virtual Machine Security? Mention its importance in cloud computing.

SECTION – B

Answer ONE question from each pair.

5 × 10 = 50 Marks

9. A) Explain the Characteristics of Cloud Computing and discuss the importance of elasticity and on-demand provisioning.

OR

- B) Describe the Evolution of Cloud Computing and explain its major benefits.
10. A) Explain Service-Oriented Architecture (SOA) and describe its role in cloud computing.

OR

- B) Describe Virtualization and explain its different types and implementation levels.
11. A) Explain Public, Private and Hybrid Clouds and discuss their main characteristics.

OR

- B) Describe the IaaS, PaaS and SaaS cloud computing models with suitable examples.
12. A) Explain Amazon Web Services (AWS) Global Infrastructure and describe its major components.

OR

B) Explain Virtual Private Cloud (VPC) and describe the role of VPCs and subnets in AWS.

13. A) Explain Amazon S3 (Simple Storage Service) and discuss its important features and advantages.

OR

B) Describe Security in Cloud Computing and explain network-level, host-level and application-level security.

12   N. S. Jyothi 
 S. Yagnesh  D. Rohith Kumar.

SEMESTER – V
COURSE 4: DATA MINING AND DATA WAREHOUSING
Theory: 3 Credits | 3 Hrs/Week
MODEL QUESTION PAPER

SECTION – A

Answer ANY FIVE questions out of EIGHT questions. 5 × 5 = 25 Marks

1. Define a Data Warehouse and state its main features.
2. Explain the difference between KDD and Data Mining.
3. What is an Association Rule? Explain the terms support and confidence.
4. What is Clustering? Mention the main clustering paradigms.
5. Define a Decision Tree and explain its basic components.
6. What is Web Mining? Mention its major types.
7. Explain the purpose of Data Cleaning in data preprocessing.
8. What is Text Mining? State its importance in extracting useful information from text.

SECTION – B

Answer ONE question from each pair. 5 × 10 = 50 Marks

9. A) Explain the Multidimensional Data Model with suitable examples. Discuss its importance in Data Warehousing.

OR

B) Describe Data Warehouse Architecture and explain the role of its major components.

10. A) Explain the Apriori Algorithm and describe how it is used to discover frequent item sets and association rules.

OR

B) Describe the FP-Tree Growth Algorithm and explain its importance in association rule mining.

11. A) Explain the k-Medoid Algorithm and discuss its main features.

OR

B) Explain DBSCAN and describe its important features with a suitable example.

12. A) Explain the Decision Tree Construction Principle and describe the criteria used for selecting the best split.

OR

B) Describe the ID3 Algorithm and explain its basic procedure for constructing a decision tree.

13. A) Explain Web Mining and describe its major types with suitable examples.

OR

B) Explain Text Clustering and discuss its importance in Text Mining with suitable examples.

  N. S. Jyoti
 S. Yagnesh 
D. Rohith Kumar.

SEMESTER – V
COURSE 5: SOFTWARE PROJECT MANAGEMENT
Theory: 3 Credits | 3 Hrs/Week
MODEL QUESTION PAPER

SECTION-A

Answer any *Five* of the following question.

5*4=20M

1. Explain Management control
2. What is Risk evaluation ?
3. Define Staffing delivery
4. What is Mental delivery?
5. Discuss about Project schedules.
6. Explain Resource allocation
7. what is Change control
8. Explain about Motivation

SECTION-B

Answer All the following question.

5*10=50M

9. a) Explain about projects portfolio management?

(OR)

- b) Explain about stepwise project planning?

10. a) Explain the basics of software estimation?

(OR)

- b) Describe about COCOMO 2 A parametric productivity Model?

11. a) Explain about PERT technique?

(OR)

- b) Explain about Network planning model?

12. a) Explain about software configuration management?

(OR)

- b) Describe about visualizing progress?

13. a) Explain about Oldham – Hackman job characteristic Model?

(OR)

b) What are the best methods of staff Selection?



Chiranjeev

N. S. Jyoti.



Vasana

S. Yagnesh

D. Rohith Kumar.

SEMESTER – V
COURSE 6: DATA ANALYTICS METHODS
Theory: 3 Credits | 3 Hrs/Week
MODEL QUESTION PAPER

SECTION-A

Answer any *Five* of the following question.

5*4=20M

1. Explain the meaning and significance of correlation.
2. How to Calculate Karl Pearson's coefficient of correlation
3. Explain the properties of regression coefficients.
4. Explain the difference between correlation and regression.
5. Explain Newton's Forward Interpolation Formula.
6. Define backward differences
7. Explain the method of least squares
8. Explain Simpson's 1/3 Rule.

SECTION-B

Answer ALL Questions. All questions carry equal marks. 5 X 10 = 50M

9. a) Explain types of correlation with suitable example

OR

b) Explain Spearman's Rank Correlation method. Solve a problem using Spearman's rank correlation coefficient.

10. a) Explain linear regression.

OR

b) Find the two regression equations: Regression equation of X on Y and Regression equation of Y on X for a given data.

11. a) Explain Newton's backward interpolation formula.

OR

b). Explain forward differences and backward differences with suitable examples

12. a) Describe about fitting models with neat diagrams.

OR

b). Explain straight line trending.

13. a) Explain Trapezoidal rule

OR

b). Discuss Simpson's $3/8$ th rule with example.



Vijayadeep

N. S. Jyothi



Vasana

S. Yagnesh

D. Rohith Kumar