## GOVERNMENT DEGREE COLLEGE FOR WOMEN, BEGUMPET (AUTONOMOUS)

# CHOICE BASED CREDIT SYSTEM (CBCS)



SYLLABUS For B.Sc.(Data Science) II Year

**Under Graduate Programme** 

DEPARTMENT OF COMPUTERS (w.e.f. 2021 - 22 Session)

## GOVERNMENT DEGREE COLLEGE FOR WOMEN (AUTONOMOUS) BEGUMPET, HYDERABAD DEPARTMENT OF COMPUTERS ALLOCATION OF CREDITS FOR B.Sc.(Data Science)

Course Title	Course	Hours per	Credits
	Туре	Week	
SEMESTI	ER – I		
Fundamentals of Information Technology	DSC-A	4T+2P	4+1=5
SEMESTE	R – II		
Problem solving and Python Programming	DSC-B	4T+2P	4+1=5
AECO		and the second s	
Fundamentals of Computers	AECC	2Т	2
SEMESTE	R – III		
Communication Skills(or) Professional Skills–I)	SEC-1	2Т	2
Operating Systems – 1	SEC-2	2T	2
Data Engineering with Python	DSC-C	4T+2P	4+1=5
SEMESTE	R – IV	· made and the state of the sta	
Leadership & Management Skill (or)Universal	SEC - 3	2T	2
Human Values			
Operating Systems – 2	SEC-4	2T	2
Machine Learning	DSC-D	4T+2P	4+1=5
SEMESTE	R – V	it in the	
Data Structures and Algorithms	GE	4T	4
Natural Language Processing	DSE- A	4T+2P	4+1=5
No SQL Data Bases	DSE- A	4T+2P	4+1=5
SEMESTEI	R – VI	a way a safe fine	
. D.4-	DSE-B	4T+2P	4+1=5
ig Data	DSE-B	4T+2P	4+1=5
eep Learning Projec	t		
AND THE RESERVE OF THE PARTY OF	Project	4	4
Project	Total Nun	nber of Credits	48

Asst. Professor of Computer Appl.
Government Degree College Chanchalguda, Hyderabad - 24

Associate Professor Dept of Maths O.

## GOVERNMENT DEGREE COLLEGE FOR WOMEN (AUTONOMOUS) BEGUMPET, HYDERABAD

## DEPARTMENT OF COMPUTER SCIENCE

## **Programme Outcomes**

PO 1 Domain Expertise:

Acquire comprehensive knowledge and skills.

Make use of the knowledge in an innovative manner.

Effectively apply the knowledge and skills to address various issues.

## PO 2 Modern equipment Usage

- Use ICT effectively.
- Access, retrieve and use authenticated information.
- Access, retrieve and use authenticated information. Have knowledge of software applications to analyze data.

### PO 3 Computing Skills and Ethics

Develop rationale and scientific thinking process.

Use technology intelligently for communication, entertainment and for the benefit of mankind.

Ensure ethical practices throughout ones endeavors for the wellbeing of human race.

## PO 4 Complex problem Investigation & Solving

Predict and analyze problems.

Frame hypotheses.

Investigate and interpret empirical data.

Plan and execute action.

### PO 5 Perform effectively as Individuals and in Teams

Work efficiently as an individual

\sst. Professor of Computer Appl. Cooperate, coordinate and perform effectively in diverse teams/groups.

Prioritize common interest to individual interest.

## PO 6 Efficient Communication & Life Skills

Express thoughts in an effective manner

Listen, understand and project views in a convincing manner.

Decide appropriate media to share information

Develop skills to present significant information clearly and concisely to interested groups.

## PO 7 Environmental Sustainability

Understand sensibly the Environmental challenges.

- Think critically on environment sustainability measures.
- Propagate and follow environment friendly practices.

## PO 8 Societal contribution

Render service for the general good of the society.

Involve voluntarily in social development activities at Regional, National, global levels.

Have own pride in volunteering to address societal issues viz: calamities, disasters, poverty, epidemics.

Be a patriotic citizen to uphold the values of the nation

## PO 9 Effective Project Management

Identify the goals, objectives and components of a project and decide the appropriate time of completion.

Plan, organize and direct the endeavors of teams to achieve the set targets in time.

Be competent in identifying opportunities and develop strategies for contingencies.

D. Sarada demi

ociale Professor Dept of Maths O.U

A. Inna Reddy

Government Degree College

Chanchalguda, Hyderabad - 24

## DEPARTMENT OF COMPUTERS BOARD OF STUDIES MEETING FOR THE YEAR 2021-2022

The 11<sup>nth</sup> meeting of the Board of studies of the Department of Computers Government Degree College for Women, Begumpet, Hyderabad was held on 5/10/2021 in the Department of Mathematics,Osmania University, Hyderabad

The following members were present:

SL.No	owing members were present:  NAME	ADDRESS
1.	University Nominee Dr.C. Goverdhan M.Sc, Ph.D.	Chairman, Board of Studies, Department of Mathematics, Osmania University, Hyderabad. Mobile No:9440130036  Associate Profession Dept of Maths O
2.	Subject Expert Mr.A.Inna Reddy MCA,UGC NET,(Ph.D)	Associate Professor Department of Computer Applicationa Reddy GDC Chanchalguda Mobile no:9949197884t. Professor of Computer A innareddyallam@gmailcomernment Degree Colleg Chanchalguda, Hyderabad
3.	Subject Expert Dr. T.R.Srinivas B.E,M.Tech,M.B.A,PhD	Associate Professor Department of Computer Science and Engineering ARR Mahaveer Engineering College T.R. B.E. Department Mobile no:8142241367 cshod@aarm.ac.in  Company Name: Pantach a Learning
1.	Industralist Mr.C.Chinna Swamy Team Leader	Company Name:Pantech e Learning Mobile: 8925533482
	In charge of the Department – Chairman, BOS – Computers Dr.D.Sarada Devi	Associate Professor in Mathematics Department of Mathematics, Government Degree college for women, Begumpet, Hyderabad. Mobile:9848190810 D. Sauda deui
	<u>Faculty – Member</u> Smt.P.Kalpana M.Sc (Computer Science)	Lecturer in Computer Applications, Government Degree College for Women, Begumpet, Hyderabad. Mobile: 9030122738
	<u>Faculty – Member</u> Ms.G.T.Jayalaxmi M.C.A	Lecturer in Computer Applications, Government Degree College for Women, Begumpet, Hyderabad. Mobile: 7396923294
	Faculty – Member Ms.A.Laxmi Prasanna M.Tech(CSE)	Lecturer in Computer Science, Government Degree College for Women, Begumpet, Hyderabad. Mobile: 9160848766

10.	Faculty – Member K.Ankitha M.Tech(CSE)	Lecturer in Computer Science, Government Degree College for Women, Begumpet, Hyderabad. Mobile: 9381453216	A+
11.	Faculty – Member Ms.M.Sandhya M.Tech(CSE)	Lecturer in Computer Science, Government Degree College for Women, Begumpet, Hyderabad. Mobile: 8712180180	Boult,
12.	Faculty-Members Ms.R.Swapna M.Sc (Computer Science)	Lecturer in Computer Science, Government Degree College for Women, Begumpet, Hyderabad. Mobile:9985509476	\$
13.	Faculty – Member Ms.P.Vamshi priyadarshini M.Tech(CS)	Lecturer in Computer Science, Government Degree College for Women, Begumpet, Hyderabad. Mobile: 9391812746	Vanni

## **SYLLABUS**

B.Sc. (Data Science) II YEAR

(With effect from batch of students admitted from the academic year 2021 -2022 onwards under semester system)



GOVERNMENTDEGREECOLLEGE FOR WOMEN, BEGUMPET, HYDERABAD

> (Autonomous) Affiliated to OsmaniaUniversity

## Government College for Women Begumpet, Hyderabad-500016 (An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade B.Sc. (Data Science) II Year Semester-III

Subject: Data Science Paper-Ill:Data Engineering with Python

Theory Practical

4 Hours/Week 2 Hours/Week

4 credits 1 credit

Course Objectives: The main objective of this course is to teach how to extract raw data, clean the data, perform transformations on data, load data and visualize the data. Course Outcome:

At the end of the course the student will be able to:

- Handle different typesof files and work with text data
- Use regular expressionoperations
- Use relational databases via SQL
- Usetabular numeric data
- Use the datastructures:data series and frames
- Use PyPlot for visualization

inna Reddy

\sst. Professor of Computer Appl.

Government Degree College

Chanchalguda, Hyderabad - 24

### Unit-I

Data Science: Data Analysis Sequence, Data Acquisition Pipeline, Report Structure Files and Working with Text Data: Types of Files, Creating and Reading Text Data, FileMethods to Read and Write Data, Reading and Writing Binary Files, The Pickle Module, Reading and Writing CSV Files, Python os and os.pathModules. Workingwith TextData: JSONandXML in Python

**SYLLABUS** 

## Unit-II

Working with Text Data: Processing HTML Files, Processing Texts in Natural Languages Regular Expression Operations: Using Special Characters, Regular Expression Methods, Named Groups in Python Regular Expressions, Regular Expression with glob Module

### Unit-III

Working with Databases: Setting Up a MySQL Database, Using a MySQL Database: Command Line, Using a MySQL Database, Taming Document Stores: MongoDB Working with Tabular Numeric Data(Numpy with Python): NumPy Arrays Creation Using array() Function, Array Attributes, NumPy Arrays Creation with Initial PlaceholderContent, Integer Indexing, Array Indexing, Boolean ArrayIndexing, Slicing and Iterating in Arrays, Basic Arithmetic Operations on NumPy Arrays, Mathematical Functions in NumPy, Changing the Shape of an Array, Stacking and Splitting of Arrays, Broadcasting in Arrays.

## Unit-IV

WorkingwithDataSeriesandFrames:

Pandas Data Structures, Reshaping Data, Handling Missing Data, Combining Data, Ordering Property Data Taming Pandas File I/O and Describing Data, Transforming Data, TamingPandasFileI/O Plotting: Basic Plotting with PyPlot, Getting to Know Other Plot Typeshare

Mastering Embellishments, Plotting with Pandas

## References:

DetaScienceEssentialsinPython:Collect,Organize,Explore,Predict, Value DinitryZinoriev,

D. Sanada dani

D. San

The Pragmatic Programmers LLC, 2016

2. Introduction to Python Programming. Gowrishankar S., Veena A. CRC Press, Taylor &FrancisGroup,2019

## SuggestedReading

3. PythonforEverybody:ExploringDataUsing Python3. Charles R Severance, 2016

4. Python Data Analytics - Data Analysis and Science using Pandas, matplotlib and the Python Programming Language. Fabio Nelli, Apress, 2015

5. Website Scraping with Python. Using BeautifulSoup and Scrapy.

GáborLászlóHajba, Apress, 2018

6. Machine Learning with Python Cookbook: Practical Solutions from Preprocessing toDeepLearning. Chris Albon, O'Reilly 2018

D. Sarada devi

Dept of Maths O.U

A. Inna Reddy

Asst. Professor of Computer Appl. Government Degree College Chanchalguda, Hyderabad - 24

## Government College for Women Begumpet, Hyderabad-500016 (An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade B.Sc. (Data Science) II Year Semester-III Subject: Data Science Paper-Ill: Data Engineering with Python

## MODEL PAPER

Time: 2 1/2hrs

Max Marks: 60

## **SECTION-A**

I. Answer any 5 questions.

- 1) Question from Unit-I.
- 2) Question from Unit-I.
- 3) Question from Unit-II.
- 4) Question from Unit-II.
- 5) Question from Unit-III.
- 6) Question from Unit-III.
- 7) Question from Unit-IV
- 8) Question from Unit-IV.

5X4 = 20

## **SECTION-B**

II. Answer all the questions.

1. a) Question from Unit-I. (OR)

b) Question from Unit-1.

2. a) Question from Unit-II.

(OR)

b) Question from Unit-II.

3. a) Question from Unit-III.

(OR)

b) Question from Unit-I

4. a) Question from Unit-IV

(OR)

b) Question from Unit-IV.

. Sarada deni

4X10=40

A. Inna Reddy

Asst. Professor of Computer Appl. Government Degree College

Chanchalguda, Hyderabad - 24

Associate Profession pept of Maths O.V Government College for Women Begumpet, Hyderabad-500016 (An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade B.Sc. (Data Science) II Year Semester-III

Subject: Data Science Paper: DataEngineeringwithPython(Lab)

Practical

2 Hours/Week

1 credit

Course Objective:

The main objective of this laboratory is to put into practice the ETL (extract, transform, load)pipeline which will extract raw data, clean the data, perform transformations on data, loaddataand visualizethedata. This requires mentoring by TCS.

## DataEngineeringwithPython(Lab)

Libraries

In this course students are expected to extract, transform and load input data that can be textfiles, CSV files, XML files, JSON, HTML files, SQL databases, NoSQL databases etc.,. Fordoingthis, they should learnthe following Pythonlibraries/modules:

pandas,numpy, BeautifulSoup, pymysql, pymongo, nltk, matplotlib

**Datasets** 

For this laboratory, appropriate publicly available datasets, can be studied and Inna Reddy used Example: Asst. Professor of Computer Appl. used.Example:

MNIST(http://yann.lecun.com/exdb/mnist/),

Government Degree College Repository(https://archive.ics.uci.edu/ml/datasets.html), Kaggle(https://Ghanchalguda, Hyderabad - 24 ggle.com/datasets)TwitterData

## **Exercises**

- 1. Write programs to parse text files, CSV, HTML, XML and JSON documents and extractrelevantdata. After retrievingdatacheck anyanomalies in the data, missing values etc.
- 2. Writeprogramsforreading andwritingbinaryfiles
- 3. Write programs for searching, splitting, and replacing strings based on pattern matchingusingregularexpressions
- 4. Design a relational database for a small application and populate the database. Using SQLdothe CRUD(create, read, update and delete)operations.
- 5. Create aPython MongoDB client using the Python module pymongo. Using a collectionobject practice functions for inserting, searching, removing, updating, replacing, andaggregatingdocuments, as well as forcreating indexes
- 6. Write programs to create numpy arrays of different shapes and from different sources, reshape and slice arrays, add array indexes, and apply arithmetic, logic, and aggregationfunctionsto someor all array elements

7. Write programs to use the pandas datastructures: Frames and series as storage containers and for a variety of data-wrangling operations, such as:

· Single-levelandhierarchicalindexing

Handlingmissingdata

• ArithmeticandBoolean operationsonentirecolumnsandtables

• Database-typeoperations(suchasmerging and aggregation)

• Plottingindividualcolumnsandwholetables

• Readingdatafromfilesandwritingdatato files

D. Sarada demi

Associate Profession

(An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade B.SC II (Data Science) Year Examination Semester - III Subject: Data Science Paper- Operating Systems – 1 (SEC-2) **Syllabus** 

Theory

2Hours/Week

2 credits

**Course Objectives:** 

A successful student will be able to understand the basic components of a computer operating system, and the interactions among the various components. The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.

### **Course Outcome:**

- Understands the use of different process scheduling algorithm and synchronization techniques to avoid deadlock.
- They will learn different memory management techniques like paging, segmentation and demand paging etc.

Unit - I

Introduction: Computer-System Architecture, Computing Environments.

Operating-System Structures: Operating-System Services, User Interface for Operating-System,

System Calls, Types of System Calls, Operating System Structure.

Process Management: Process Concept, Process Scheduling, Operations on Processes, Inter process

Communication, Examples-Producer-Consumer Problem.

Process Synchronization: Critical-Section Problem, Peterson's Solution, Synchronization,

Semaphores, Monitors.

Unit - II

CPU Scheduling: Concepts, Scheduling Criteria, Scheduling Algorithms.

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock

Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

AbrahamSilberschatz, PeterBaerGalvin, GregGagne, Operating System Concepts (9e) Text

Reference s

NareshChauhan, Principles of Operating Systems Thomas W. Doeppner, Operating Systems in Depth

Andrew S. Tanenbaum, Modern Operating Systems

William Stallings, Operating Systems - Internals and Design Principles

Dhananjay M. Dhandhere, Operating Systems - A Concept Based Approach

D · Sarada duri A. Inna Reddy

Asst. Professor of Computer App

Government Degree College Chanchalguda, Hyderabad - 24 Associate Professor Prof. T.R. B.E. The Are Manay Professor Are Manay Professor Dept of Maths Are Manay Professor Dept of Maths Are Manay Professor Dept of Maths 1970 E.B.

(An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade **B.SC II(Data Science) Year Examination** 

Semester - III Subject: Data Science

Paper- Operating Systems – 1 (SEC-2)

**MODEL PAPER** 

Time: 1 hr

Max Marks: 40

4X4=16

## **SECTION-A**

## I Answer Any 4 Questions.

- 1) Question from Unit-I.
- 2) Question from Unit-1.
- 3) Question from Unit-I.
- 4) Question from Unit-II.
- 5) Question from Unit-II.
- 6) Question from Unit-II.

## II. Answer All Questions.

- 7. a) Question from Unit-I. (OR)
  - b) Question from Unit-I.
- 8. a) Question from Unit-II. (OR)
  - b) Question from Unit-II.

D. Saradaderi

A. Inna Reddy Asst. Professor of Computer Appl. Government Degree College Chanchalguda, Hyderabad - 24

## Government College for Women Begumpet, Hyderabad-500016 (An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade

B.Sc. (Data Science) II Year

**Semester-IV** Subject: Computer Science Paper-IV: Machine Learning

Theory Practical

4 Hours/Week 3 Hours/Week

4 credits 1 credit

CourseObjectives: The main objective of this course is to teach the principles and foundations of machine learning algorithms.

CourseOutcome:

Atthe end ofthecoursethestudentwillbeable tounderstand

A. Inna Reddy BasicsofMachine Learningand its limitations Asst. Professor of Computer Appl.

MachineLearningAlgorithms:supervised,unsupervised,bio-in@iredrnment Degree College

**SYLLABUS** 

ProbabilisticModelingandAssociationRuleMining

Chanchalguda, Hyderabad - 24

### Unit-I

Introduction: What does it mean to learn, Some canonical Learning Problems, The DecisionTree Model of Learning, Formalizing the Learning Problem, ID3 Algorithm Limits of Learning: Data Generating Distributions, Inductive Bias, Not Everything islearnable, Underfitting and Overfitting, Separation of training and test Data, Models, parameters and Hyperparameters, Real World Applications of Machine Learning Geometry and Nearest Neighbors: From Data to Feature Vectors, k-Nearest Neighbors, Decision Boundaries, k-means Clustering, High Dimensions

## Unit-II

Perceptron Algorithm, Learning, The Bio-inspired The Perceptron: GeometricInterpretation, Interpreting Perceptron Weights, Perceptron Convergence and LinearSeparability,Improved Generalization,Limitations of the Perceptron

Practical Issues: Importance of Good Features, Irrelevant and Redundant Features, FeaturePruning and Normalization, Combinatorial Feature Explosion, Evaluating  ${\bf Model Performance, Cross Validation, Hypothesis Testing and Statistical Significance, Debuggin Statisticance, Debuggin Statisticance, Debuggin Statisticance,$ gLearningAlgorithms, Bias Variancetradeoff

Linear Models: The Optimization Framework for Linear Models, Convex Surrogate Weight Regularization, Optimization and Gradient Descent, Support LossFunctions, VectorMachines

**Unit-III** Estimation, prstatis Density Classification by Back - Prophagation Modeling: Probabilistic Estimation, Naïve Bayes Models, Prediction The Networks, Multi-Layer Algorithm, Initialization and Convergence of Neural Networks, Beyondtwo layers, Breadth vs Bio-inspired Depth, Basis Functions

Similarity and Unsupervised Learning: Clustering Introduction, Unsupervised Learning. Oldstoning Minmum Spanning Procedures, Agglomerative Algorithms, Divisive Clustering, Minmum Spanning Procedures, Agglomerative Algorithms, Minmum Spanning Procedures, Minmum Minmum Spanning Procedures, Minmum Minmum Spanning Procedures, Minmum M

D. Sarada devi

## AssociationRules:Introduction,large Itemsets,AprioriAlgorithm

## References:

1. A Course in Machine Learning (CIML). Hal Daume III, 2017 (freely available online)http://ciml.info/

2. DataMining:IntroductoryandAdvancedTopics.MargaretHDunham,PearsonEducation,2003

## SuggestedReading:

3. Hands on Machine Learning with SciKit-Learn, Keras and Tensor Flow. AurélienGéron.O'Reily,2019

4. MachineLearningwithPythonCookbook. ChrisAlbo,O'Reily,2018

LearningwithPython:Aguide.AndreasCMiller, 5. IntroductiontoMachine SarahGuido.O'Reily,2017

D. Sanada devi

A. Inna Reddy Asst. Professor of Computer Appl.

Government Degree College Chanchalguda, Hyderabad - 24

Government College for Women Begumpet, Hyderabad-500016 (An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade B.Sc. (Data Science) II Year

Semester-IV Subject: Data Science

Paper-IV:MachineLearning

## MODEL PAPER

Time: 2 1/2hrs

Max Marks: 60

5X4 = 20

## SECTION-A

I. Answer any 5 questions.

- 1) Question from Unit-I.
- 2) Question from Unit-I.
- 3) Question from Unit-II.
- 4) Question from Unit-II.
- 5) Question from Unit-III.
- 6) Question from Unit-III.
- 7) Question from Unit-IV
- 8) Question from Unit-IV.

## **SECTION-B**

II. Answer all the questions.

1. a) Question from Unit-I. (OR)

b) Question from Unit-1.

2. a) Question from Unit-II.

(OR)

b) Question from Unit-II.

3. a) Question from Unit-III.

(OR)

b) Question from Unit-I

4. a) Question from Unit-IV

(OR)

b) Question from Unit-IV.

D. Sarada doni

A. Inna Reddy

Asst. Professor of Computer April Government Degree College

Chanchalguda, Hyderabad - 24

4X10=40

Maths O.U

## Government College for Women Begumpet, Hyderabad-500016 (An Autonomous college of Osmania University)

Re-Accredited by NAAC with 'B+' Grade

B.Sc. (Data Science) II Year Semester-IV

Subject: Data Science Paper: Machine Learning (Lab)

**Practical** 

2 Hours/Week

1 credit

CourseObjective:

The main objective of this laboratory is to put into practice the various machine learningalgorithmsfordata analysis using Python and Weka.

## MachineLearning(Lab)

## **MLToolkits**

Studentsareexpectedtolearn

1. Scikit-learn(https://scikit-learn.org/) an open source machine learning Python library thatsupports supervised and unsupervised learning. It also provides various tools for modelfitting, datapreprocessing, models election and evaluation, and many other utilities.

2. Weka(http://www.cs.waikato.ac.nz/ml/weka/)isanotherwidely usedMLtoolkit.

### **Datasets**

1. The sklearn.datasets package embeds small toy datasets. It includes utilities to loadthese datasets. It also includes methods to load and fetch popular reference datasetsand features some artificial data generators. Students are expected; study and makeuseof thesedatasets

2. Weka alsohasprovides variousdatasets.

Asst. Professor of Computer App Government Degree College

### References:

- 1. scikit-learnuserguide. https://scikit-learn.org/stable// downloads/scikit-learnidadspffyderabad 24
- 2. <u>Ian Witten, Eibe Frank</u>, and Mark Hall, Chris Pal. DATA MINING: Practical MachineLearningToolsandTechniques,4<sup>th</sup>Edition.MorganKaufmann.

## **Exercises**

- 8. Write a Python program using Scikit-learn to split the iris dataset into 70% train data and 30% test data. Out of total 150 records, the training set will contain 120 records and thetestset contains 30 of thoserecords. Print both datasets
- 9. Write Python program to use sklearn's Decision Tree Classifier to build a decision tree forthe sklearn's datasets. Implement functions to find the importance of a split (entropy,informationgain, gini measure)
- 10. Write a Python program to implement your own version of the K-means algorithm. Thenapplyit to different datasets and evaluate the performance.
- 11. Design a perceptron classifier to classify handwritten numerical digits (0-9). Implementusingscikit or Weka.
- 12. Write a Python program to classify text as spam or not spam using the Naïve, T.R. Braves Classifier 13. Use WEKA and experiment with the following classifiers: Association Rule Manager Mining (Apriori), Agglomerative and Divisive Clustering

D. Sarada deni

Associate Profession Dept of Maths O.U

(An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade B.Sc II (Data Science) Year Examination Semester - III Subject: Data Science Paper- Operating Systems - 2 (SEC-4) **Syllabus** 

Theory

### 2 Hours/Week

2 credits

## **Course Objectives:**

- Students will learn how Operating System is Important for Computer System.
- To make aware of different types of Operating System and their services
- To learn different process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.
- To know virtual memory concepts.
- To learn secondary memory management.

## **Course Outcome:**

- Understands the different services provided by Operating System at different level.
- They learn real life applications of Operating System in every field.

Main Memory: Introduction, Swapping, Contiguous Memory Allocation, Segmentation, Paging. Virtual Memory: Introduction, Demand Paging, Page Replacement, Allocation of Frames,

Mass-Storage Structure: Overview, Disk Scheduling, RAID Structure.

File Systems: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, Protection

Unit - II

File System Implementation, Directory Implementation, Allocation Methods, Free-Space Management. Recovery, Network File System.

Protection and Security: Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix, Access Control, Revocation of Access Rights, The Security Problem, Program Threats, System and Network Threats, Cryptography as a Security Tool, User Authentication, Implementing Security Defenses, Firewalling to Protect Systems and Networks, Computer-Security Classifications.

Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts (9e)Text

Reference s

NareshChauhan, Principles of Operating Systems Thomas W. Doeppner, Operating Systems in Depth Andrew S. Tanenbaum, Modern Operating Systems William Stallings, Operating Systems - Internals and Design Principles Dhananjay M. Dhandhere, Operating Systems - A Concept Based Approach

D. Sarada deni A. Inna Reddy Asst. Professor of Computer Appl Government Degree College Chanchalguda, Hyderabad - 24

(An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade B.Sc II(Data Science) Year Examination Semester - III

Subject: Data Science Paper- Operating Systems - 2 (SEC-4) MODEL PAPER

Time: 1 hr

Max Marks: 40

4X4=16

## SECTION-A

## I Answer Any 4 Questions.

- 1) Question from Unit-I.
- 2) Question from Unit-I.
- 3) Question from Unit-I.
- 4) Question from Unit-II.
- 5) Question from Unit-II.
- 6) Question from Unit-II.

## SECTION-B

## II. Answer All Questions.

2X12=24

- 7. a) Question from Unit-I. (OR)
  - b) Question from Unit-I.
- 8. a) Question from Unit-II. (OR)
  - b) Question from Unit-II.

D. Sarada dem

Asst. Professor of Computer Ass

Government Degree Col Chanchalguda, Hyderabaa

## GOVERNMENT DEGREE COLLEGE FOR WOMEN, BEGUMPET, HYDERABAD - 16 (An Autonomous college of Osmania University) Re-Accredited by NAAC with 'B+' Grade

**DEPARTMENT OF COMPUTERS** Generic Elective (Semester V) Scheme of Evaluation

## MODULE

Theory: Max Marks:100

Split End Semester exam: 60

Internal Assessment:40

GOVERNMENT DEGREE COLLEGE FOR WOMEN, BEGUMPET, HYDERABAD - 16 (An Autonomous collège of Osmania University) Re-Accredited by NAAC with 'B+' Grade

> DEPARTMENT OF COMPUTERS Project (Semester VI) Scheme of Evaluation

MODULE

Max Marks:100 Theory :

End Semester exam : 60 Split

Internal Assessment: 19

A. Inna Reddy Asst. Professor of Computer Appl. Government Degree College Chanchalguda, Hyderabad - 24

## GOVERNMENT DEGREE COLLEGE FOR WOMEN, BEGUMPET, HYDERABAD – 16 (An Autonomous college of Osmania University) **Department of Computers**

Panel of Examiners for B.Sc. (Data Science) II Year

S. No	Name & Details	Teaching Experience	Phone Number
1.	B.SarithaM.Sc, IPGDC(w),Nampally, Hyd.	16Yrs	9985408390
2.	Smt.B.Ramani M.C.A, Andhra Mahila Sabha Arts and Science College, OU road, HYD.	15 Yrs	9441214888
3.	Ch.N Saranya M.Sc(cs),(PhD),(PGDDS) Assistant Professor Email- id:nagasaranya@gmail.com	12Yrs	9849555856

A. Inna Reddy

Asst. Professor of Computer Appl.

Government Degree College

Chanchalguda, Hyderabad - 21

resociate professor Dept of Maths O.U

c. Chi