NAAC: B+(III Cycle - CGPA 2.60) Estd: 1937

SRR & CVR GOVT. DEGREE COLLEGE (Autonomous)

VIJAYAWADA – 520 004 :: KRISHNA DISTRICT:: ANDHRA PRADESH

Phone No: 0866-2430060 Website: www.srrcvr.org

Fax No: 0866-2441092 Email: srrandcvr@gmail.com

Date: 06-03 -2019

Department of Computer Science

Up gradation Of Syllabus for **Vth Semester** Minutes of the meeting of Board of Studies in Computer Science held on 06/03/2019 at 1.00 pm in Computer Science Department.

Members Present

DEPARTMENT OF COMPUTER SCIENCE

1.	T.Jaya Krishna	Chairman, Dept of Computer Science
2.	Dr. R. Kiran Kumar	University Nominee, Krishna University
3.	Dr. K.B.S Sastry	Subject Expert, Andhra Loyola College, Vijayawada Krishna Dist
4.	Sri K.Sridhar	Subject Expert, P.B.Siddartha College of Arts&Science ,Vijayawada
5.	Sri. KVLN Prasad	Member
6.	Sri. Ch. Raja Sekhar	Member
7.	Sri. G.Sridhar	Member
8.	Sri MVS Sharma	Member
9.	Sri. M. Srihari Krishna	Industry Member
10.	Sri. B. Nani	Alumni Member

Resolutions

1. It was unanimously resolved to Upgrade and Adopt Syllabus for the students of III B.Sc.(Computer Science) (MECS, MSCS, MPCS,MCCS) courses w.e.f. 2019 – 2020 academic year. The Upgraded Syllabus for V Semester only are furnished in Appendix – I.
2. It was unanimously resolved ito Upgrade and Adopt Syllabus for the students of III B.Sc.(MULTIMEDIA) course w.e.f. 2019 – 2020 academic year. The Upgraded syllabus for V Semester only are furnished in Appendix-II.
3. It was unanimously resolved to Upgrade and Adopt Syllabus for III B.Com(Computer Applications) and III BBA courses w.e.f 2019-2020 and the Upgraded Syllabus for V Semesters only are furnished in Appendix - III. .
4. It was unanimously resolved to follow and Adopt Krishna University pattern and guidelines time to time for conducting practical classes and examinations for B.Com(Computer Applications) and BBA. Courses for all semesters and for Vth Semester also .

5. It was unanimously resolved to conduct examinations **Internal 40 marks** and **External 60 marks** in both B.Sc (Computer Science) ,B.Sc(MPM) and B.Com (Computer applications) and BBA subject to as per instructions given by academic council of SRR & CVR Govt. Degree College.

6. 60 marks in **External assessment** is divided as

   a. **20 marks** in **Section A** and

   b. **40 marks** in **Section B**

   40 marks in **Internal Assessment** is divided as

   c. 10 marks for Assignment,

   d. 5 marks for Viva/Assessment,

   e. 5 marks for Seminars,

   f. 10 marks for Project work and

   g. 10 marks for the Best of the two mid exams

7. The HOD has to prepare the list of Examiners and Paper Setters and will be submitted to the Academic Council

8. The committee has approved the syllabus with **5 Units for each Semester** i.e., Semester-V

9. The committee has approved the Model Question Paper for external exams - 60 marks and is divided as follows.

   a. In Section A, answer **any 5** out of 10 Questions. Each one **carries 4 marks**, totaling to **20 marks**. 2 questions have to be selected From each of the five units

   b. In Section B. answer **all** 5 questions. Each question has internal choice. Each question **carries 8 marks** totaling to **40 marks**. Each question has to be selected from each unit/Module.

10. The committee has approved the Blue Print of the question paper. Question paper has to be designed in such a way that **12 marks have to be obtained from each unit/Module.**

11. Modifications, if need be in the above resolutions, will be done by the HOD and the faculty members of the department.

12. Further the committee resolved to give empowerment for any small changes to the Chairman of BOS.

13. For practical's V Semesters is max. 50 mark per sem. Exam duration 3 hrs. 2 credits, work load 3hrs per batch per week each batch consists of max. 15 students spill over batch is minimum of 8 students.

14. The committee has approved that all the above resolutions will be effective for **three years** i.e., 2019-20,2020-21,2021-22 ,academic years

Signatures of the members of the BOS :

Name	Position	Signature
1. T.Jaya Krishna	Chairman	
2. Dr. R. Kiran Kumar	University Nominee	
3. Dr. K.B.S Sastry	Subject Expert	
4. Sri K.Sridhar	Subject Expert	
5. Sri. KVLN Prasad	Member	
6. Sri Ch. Raja Sekhar	Member	
7. Sri. G.Sridhar	Member	
8. Sri MVS Sharma	Member	
9. Sri. M. Srihari Krishna	Industry Member	
10. Sri. B. Nani	Alumni Member	

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Phone No: 0866-2430060 Website: www.srrcvr.org

Fax No: 0866-2441092 Email: srrandcvr@gmail.com

Date: 11-09-2019

Department of Computer Science

radation Of Syllabus for VIth Semester Minutes of the meeting of Board of Studies in Computer Science on 11 /09/2019 at 1.00 pm in Computer Science Department.

rs Present

ARTMENT OF COMPUTER SCIENCE

. T.Jaya Krishna	Chairman, Dept of Computer Science
. Dr. R. Kiran Kumar	University Nominee, Krishna University
. Dr. K.B.S Sastry	Subject Expert, Andhra Loyola College, Vijayawada Krishna Dist
Sri K.Sridhar	Subject Expert, P.B.Siddartha College of Arts&Science ,Vijayawada
. Sri. KVLN Prasad	Member
Sri. Ch. Raja Sekhar	Member
. Sri. G.Sridhar	Member
. Sri MVS Sharma	Member
Sri. M. Srihari Krishna	Industry Member
0. Sri. B. Nani	Alumni Member

olutions

t was unanimously resolved to introduce new curriculum for Computer Science students of B.Sc. (MECS, MBCS, MPCS ,MCCS, MPM) w.e.f. 2019– 2020 academic year. The new curriculum and syllabus for VI SEMESTER are furnished in Appendix – I.

as unanimously resolved to introduce new curriculum for B.Com(Computer Applications) w.e.f 2019-2020 and the syllabus for VI SEMESTER only are furnished in Appendix - II.

It was unanimously resolved to follow and Adopt Krishna University pattern and guidelines time to time for conducting practical classes and Project Works and examinations for B.Com(Computer Applications) and BBA Courses for all semesters and for VI th Semester also .

t was unanimously resolved to give option for students of III B.Sc(computer science and multimedia) VI mester to select ONE ELECTIVE(paper-VII) theory paper and ONE CLUSTER (Paper-VIII two ory papers). And a Project Work can be done in their choosen technology.

t was unanimously resolved to conduct examinations **Internal 40 marks** and **External 60 marks** in both B.Sc (Computer Science) ,B.Sc(MPM) and B.Com (Computer applications) subject as per instructions iven by academic council of SRR & CVR Govt. Degree College.

t was unanimously resolved that the maximum marks assigned for Project Work is 150 as per Krishna iversity Norms . And out of 150 (60 marks are internal and 90 marks for external)

0 marks in **External assessment** is divided as

a. **20 marks** in **Section A** and
b. **40 marks** in **Section B**

0 marks in **Internal Assessment** is divided as

c. 10 marks for Assignment,
d. 5 marks for Viva/Assessment,
e. 5 marks for Seminars,
f. 10 marks for Project work and
g. 10 marks for the Best of the two mid exams

e HOD has to prepare the list of Examiners and Paper Setters and will be submitted to the Academic ncil

committee has approved the syllabus with **5 Units for each Semester** i.e., Semester-V1

e committee has approved the Model Question Paper for external exams - 60 marks and is divided as lows,

a. In Section A, answer **any 5** out of 10 Questions. Each one **carries 4 marks**, totaling to **20 marks**. 2 questions have to be selected From each of the five units
b. In Section B, answer **all 5** questions. Each question has internal choice. Each question **carries 8 marks** totaling to **40 marks**. Each question has to be selected from each unit/Module.

e committee has approved the Blue Print of the question paper. Question paper has to be designed in such ay that **12 marks have to be obtained from each unit/Module**.

odifications, if need be in the above resolutions, will be done by the HOD and the faculty members of the artment.

The committee has approved that all the above resolutions will be effective for **three years** i.e., 2019-0, 2020 -21, 2021-22 academic years

dation of IIIB.Sc(Computer Science/Multimedia) VI Semester Syllabus

1. **In Elective-B(Paper-VII) Webtechnology a new topic " INTRODUCTION TO XSL" is added in UNIT-V .**
2. **In Elective-A(Paper-VII) Operating System the topic "CASE STUDY-LINUX" is removed in UNIT-II**
3. **In Cluster-2(Paper-VIII) Cloud Computing the topics "STORAGE VIRTUALIZATION "AND "NETWORK VIRTUALIZATION" are removed in UNIT-V**
4. **In Cluster-2(Paper-VIII) Distributed Systems the topics "FILE MODELS AND FILE ACCESS METHODS" are removed in UNIT-V**

adation of IIIB.Com(Computer Applications) VI Semester Syllabus

1. **In Elective DSC 2 6.6 E-Commerce paper a new topic E-Marketing, Internet Marketing Techniques is added in UNIT-III**
2. **In Elective DSC 3 6.7 PHP and MYSQL paper a new topic Joins: Cross Joins, Outer Joins, Self Joins is added in UNIT-V**

tures of the members of the BOS :

Name	Position	Signature
T.Jaya Krishna	Chairman	
Dr. R. Kiran Kumar	University Nominee	11/9/2019
Dr. K.B.S Sastry	Subject Expert	
Sri K.Sridhar	Subject Expert	11/9/19
Sri. KVLN Prasad	Member	11/9
Sri. Ch. Raja Sekhar	Member	11/09/2019
Sri. G.Sridhar	Member	11/9/19
Sri MVS Sharma	Member	
Sri. M. Srihari Krishna	Industry Member	
Sri. B. Nani	Alumni Member	

APPENDIX-1
SRR&CVR GOVT(A) DEGREE COLLEGE VIJAYAWADA

III BSC (COMPUTER SCIENCE /MULTIMEDIA) VI SEMESTER COURSE STRUCTURE

THIRD YEAR							
		Elective-I	HOURS	CREDITS	IA	EA	TOTAL
SEMESTER VI	VII (A/B)	A. Operating Systems	3	3	40	60	100
		Operating Systems Lab	3	2	25	25	50
		B. Web Technologies	3	3	40	60	100
		Web Technologies Lab	3	2	25	25	50
	VIII Cluster – 1- A1,A2 or Cluster-2- B1,B2	**Elective-II(Cluster 1)**					
		A1.Foundations of Data Science	3	3	40	60	100
		Foundations of Data Science Lab (through R)	3	2	25	25	50
		A2.Big Data Technology	3	3	40	60	100
		Big Data Technology Lab (Hadoop)	3	2			50
		Elective-II(Cluster 2)					
		B1. Distributed Systems	3	3	40	60	100
		Distributed Systems Lab	3	2	25	25	50
		B2. Cloud Computing	3	3	40	60	100
		Cloud Computing Lab	3	2	25	25	50
		Project –Work	5	5	60	90	150

Appendix-III

III B.Com(Computer Applications) – SEMESTER V

ELECTIVE-DSC 2F / Inter - disp

DSC 2F 5.6 - Database Management System SYLLABUS

Unit-I: Overview of Database Management System: Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management Systems, Classification of Database Management System.

Unit-II: File-Based System: File-Based System, Drawbacks of File-Based System , DBMS Approach, Advantages of DBMS, Data Models , Components of Database System, Database Architecture, DBMS Vendors and their Products.

Unit-III: Entity–Relationship Model: Introduction, The Building Blocks of an Entity–Relationship, Classification of Entity Sets , Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, aggregation and composition, CODD'S Rules, Relational Data Model , Concept of ,Relational Integrity.

Unit-IV: Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data types in SQL, Data Definition Language (DDL), Selection Operation Projection Operation, Aggregate Functions, Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.

Unit -V: PL/SQL: Introduction, Structure of PL/SQL, PL/SQL Language Elements ,Data Types, Control Structure,, Steps to Create a PL/SQL Program, Iterative Control ,Cursors , Steps to Create a Cursor , Procedure, Function ,Packages ,Exceptions Handling, Database Triggers, Types of Triggers.

Reference Books:

1. Paneerselvam: Database Management Systems, PHI.
3. David Kruglinski, Osborne, Data Management System McGraw Hill Publication.
4. Shgirley Neal and Kenneth LC Trunik Database Management Systems in Business – PHI.
5. Godeon C. EVEREST, Database Management – McGraw Hill Book Company.
6. MARTIN, Database Management – Prentice Hall of India, New Delhi.
7. Bipin C. Desai, "An Introduction to Database Systems", Galgotia Publications.
8. Korth, Database Management systems.
9. Navathe, Database Management systems.
10. S. Sumathi, S. Esakkirajan, Fundamentals of Relational Database Management Systems

Appendix-III

III B.Com(Computer Applications) – SEMESTER V

ELECTIVE-DSC 2F / Inter - disp

DSC 2F 5.6 - Database Management System SYLLABUS

Unit-I: Overview of Database Management System: Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management Systems, Classification of Database Management System.

Unit-II: File-Based System: File-Based System, Drawbacks of File-Based System , DBMS Approach, Advantages of DBMS, Data Models , Components of Database System, Database Architecture, DBMS Vendors and their Products.

Unit-III: Entity–Relationship Model: Introduction, The Building Blocks of an Entity–Relationship, Classification of Entity Sets , Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, aggregation and composition, CODD'S Rules, Relational Data Model , Concept of ,Relational Integrity.

Unit-IV: Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data types in SQL, Data Definition Language (DDL), Selection Operation Projection Operation, Aggregate Functions, Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.

Unit -V: PL/SQL: Introduction, Structure of PL/SQL, PL/SQL Language Elements ,Data Types, Control Structure,, Steps to Create a PL/SQL Program, Iterative Control ,Cursors , Steps to Create a Cursor , Procedure, Function ,Packages ,Exceptions Handling, Database Triggers, Types of Triggers.

Reference Books:

1. Paneerselvam: Database Management Systems, PHI.
3. David Kruglinski, Osborne, Data Management System McGraw Hill Publication.
4. Shgirley Neal and Kenneth LC Trunik Database Management Systems in Business – PHI.
5. Godeon C. EVEREST, Database Management – McGraw Hill Book Company.
6. MARTIN, Database Management – Prentice Hall of India, New Delhi.
7. Bipin C. Desai, "An Introduction to Database Systems", Galgotia Publications.
8. Korth, Database Management systems.
9. Navathe, Database Management systems.
10. S. Sumathi, S. Esakkirajan, Fundamentals of Relational Database Management Systems

Appendix – III

Department of Commerce

III B.COM(COMPUTER APPLICATIONS) **SEMESTER -V**

TITLE : DSC 3F 5.7 - Web Technology

SYLLABUS

Semester – V **Group: III B.Com(CA)**

Unit-I: Introduction: HTML, XML, and WWW, Topologies, Bus, Star, Ring, Hybrid, Tree, Lan,Wan, Man. **HTML**: Basic HTML, Document body, Text, Hyper links, Adding more formatting, Lists, Tables using colors and images. **More HTML**: Multimedia objects, Frames, Forms towards interactive, HTML document heading.

Unit-II: Cascading Style Sheets: Introduction, using Styles, simple examples, your own styles, properties and values in styles, style sheet, formatting blocks of information, layers.

Unit-III: Introduction to JavaScript: What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions.

Unit-IV: Objects in JavaScript: Data and objects in JavaScript, regular expressions, exception handling, built-in objects, events.

Unit-V: DHTML with JavaScript: Data validation, opening a new window, messages and confirmations. the status bar, different frames, rollover buttons, moving images, multiple pages in single download. text only menu system.

References:

1. Uttam Kumar Roy, Web Technologies, Oxford University Press.

2. Black Book HTML 5.0

3. Complete reference HTML 5.0

4. Web Technology, PHI Publications.

Appendix-III

III B.B.A – SEMESTER V

DSC 1E **TITLE : e-Commerce**

SYLLABUS

Unit-I: Electronic Commerce: Definition, types, advantages and disadvantages, E-Commerce transaction on World Wide Web. Electronic Market-Online shopping, Three models of Electronic Market - E-Business.

Unit-II: Supply Chain Management: Definition, Benefits, goals, functions, characteristics, Strategies of SCM, Electronic Logistics and its implementation in business houses Electronic Data Interchange (EDI): Definition, benefits of EDI, applications, advantages and limitations, EDI Model.

Unit-III: Electronic Payment Systems: Types of EPS- traditional payment system and modern payment system, electronic cash, steps for electronic payment, payment security - E-Security- cryptography, hacker, secure electronic transaction, secure-socket layer.

Unit-IV: Customer Relationship Management: Definition, Components of CRM, CRM Architecture, architectural components of a CRM solution, Electronic CRM, Need for Electronic CRM, E-CRM applications

Unit-V: HTML- Navigating the World Wide Web, Preparing to Publish on the Web, HTML and XHTML, Learning the Basics of HTML, structure of HTML, Creating simple web pages, formatting text with HTML, adding images, color and background, table creation, designing forms.

References:

1. CSV Murthy, E-Commerce: Concepts, Models, Strategies, Himalaya Publishing House.
2. Laura Lemay; Rafe Colburn, Teach Yourself Web with HTML in 24 Hours,Sams Publishing
3. Steven Holzner, HTML Black Book, Dream Tech Press.

Appendix-III

III B.B.A – SEMESTER V

DSC 1E TITLE : e-Commerce

SYLLABUS

Unit-I: Electronic Commerce: Definition, types, advantages and disadvantages, E-Commerce transaction on World Wide Web. Electronic Market-Online shopping, Three models of Electronic Market - E-Business.

Unit-II: Supply Chain Management: Definition, Benefits, goals, functions, characteristics, Strategies of SCM, Electronic Logistics and its implementation in business houses Electronic Data Interchange (EDI): Definition, benefits of EDI, applications, advantages and limitations, EDI Model.

Unit-III: Electronic Payment Systems: Types of EPS- traditional payment system and modern payment system, electronic cash, steps for electronic payment, payment security - E-Security-cryptography, hacker, secure electronic transaction, secure-socket layer.

Unit-IV: Customer Relationship Management: Definition, Components of CRM, CRM Architecture, architectural components of a CRM solution, Electronic CRM, Need for Electronic CRM, E-CRM applications

Unit-V: HTML- Navigating the World Wide Web, Preparing to Publish on the Web, HTML and XHTML, Learning the Basics of HTML, structure of HTML, Creating simple web pages, formatting text with HTML, adding images, color and background, table creation, designing forms.

References:

1. CSV Murthy, E-Commerce: Concepts, Models, Strategies, Himalaya Publishing House.
2. Laura Lemay; Rafe Colburn, Teach Yourself Web with HTML in 24 Hours,Sams Publishing
3. Steven Holzner, HTML Black Book, Dream Tech Press.

III YEAR VI SEMESTER

Paper-VII: Elective-A

Operating Systems

Course Objectives

1. To understand the services provided by and the design of an operating system.
2. To understand the structure and organization of the file system.
3. To understand what a process is and how processes are synchronized and scheduled.
4. To understand different approaches to memory management.
5. Students should be able to use system calls for managing processes, memory and the file system.

Course Outcomes

1. Analyze the concepts of processes in operating system and illustration of the scheduling of processor for a given problem instance.
2. Identify the dead lock situation and provide appropriate solution so that protection and security of the operating system is also maintained.
3. Analyze memory management techniques, concepts of virtual memory and disk scheduling.
4. Understand the implementation of file systems and directories along with the interfacing of IO devices with the operating system.

UNIT - I

Operating System Introduction: Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.

UNIT - II

Process and CPU Scheduling - Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms, Case studies: Linux, Windows.

Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors, Case Studies: Windows.

ANNEXURE -1

III B.Sc.(Computer Science/Multimedia) VI SEMESTER

w.e.f.2019-2020

Paper-VII: Elective-A

Operating Systems

UNIT - III

Memory Management and Virtual Memory - Logical & physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table. Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

UNIT - IV

File System Interface - The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure,

Mass Storage Structure - Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.

UNIT - V

Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

.

REFERENCES BOOKS:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.
2. Principles of Operating Systems by Naresh Chauhan, OXFORD University Press
3. Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson.
4. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
5. Operating Systems A concept - based Approach, 2nd Edition, D. M. Dhamdhere, TMH.
6. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
7. Operating Systems, A. S. Godbole, 2nd Edition, TMH

Student Activity:

1. Load any new operating system into your computer.

III YEAR VI SEMESTER
Paper-VII : Elective-B
Web Technologies

Course Objective

To provide knowledge on web architecture, web services, client side and server side scripting technologies to focus on the development of web-based information systems and web services.

To provide skills to design interactive and dynamic web sites.

Course Outcome

1. To understand the web architecture and web services.
2. To practice latest web technologies and tools by conducting experiments.
3. To design interactive web pages using HTML and Style sheets.
4. To study the framework and building blocks of .NET Integrated Development Environment.
5. To provide solutions by identifying and formulating IT related problems.

UNIT – I

HTML: Basic HTML, Document body, Text, Hyper links, adding more formatting, Lists, Tables using images. More HTML: Multimedia objects, Frames, Forms towards interactive, HTML document heading detail

UNIT – II

Cascading Style Sheets: Introduction, using Styles, simple examples, your own styles, properties and values in styles, style sheet, formatting blocks of information, layers.

UNIT – III

Introduction to JavaScript: What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions. Objects in JavaScript: Data and objects in JavaScript, regular expressions, exception handling

UNIT – IV

DHTML with JavaScript: Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images,

UNIT – V

XML: defining data for web applications, basic XML, document type definition, presenting XML, document object model. Web Services, **INTRODUCTION TO XSL**

III YEAR VI SEMESTER
(Cluster 1) Paper-VIII: Elective –A-1
Foundations of Data Science

Course Objectives

Modern scientific, engineering, and business applications are increasingly dependent on data, existing traditional data analysis technologies were not designed for the complexity of the modern world. Data Science has emerged as a new, exciting, and fast-paced discipline that explores novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

Course Outcomes

1. Able to apply fundamental algorithmic ideas to process data.
2. Learn to apply hypotheses and data into actionable predictions.
3. Document and transfer the results and effectively communicate the findings using visualization techniques.

UNIT I

INTRODUCTION TO DATA SCIENCE : Data science process – roles, stages in data science project – working with data from files – working with relational databases – exploring data – managing data – cleaning and sampling for modelling and validation – introduction to NoSQL.

UNIT II

MODELING METHODS : Choosing and evaluating models – mapping problems to machine learning, evaluating clustering models, validating models – cluster analysis – K-means algorithm, Naïve Bayes – Memorization Methods – Linear and logistic regression – unsupervised methods.

UNIT III

INTRODUCTION TO R Language: Reading and getting data into R – ordered and unordered factors – arrays and matrices – lists and data frames – reading data from files.

(Cluster 1) Paper-VIII: Elective –A-1
Foundations of Data Science

UNIT IV

PROBABILITY DISTRIBUTIONS in R - Binomial, Poisson, Normal distributions. - Manipulating objects - data distribution.

UNIT V

DELIVERING RESULTS : Documentation and deployment – producing effective presentations– Introduction to graphical analysis – plot() function – displaying multivariate data – matrix plots – multiple plots in one window - exporting graph - using graphics parameters in R Language. Case studies.

Reference Books

1.Nina Zumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.
2.Jure Leskovec, Anand Rajaraman, Jeffrey D.Ullman, "Mining of Massive Datasets", Cambridge University Press, 2014.
3.Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley & Sons, Inc., 2012.
4.W. N. Venables, D. M. Smith and the R Core Team, "An Introduction to R", 2013.
5.Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, Abhijit Dasgupta, "Practical Data Science Cookbook", Packt Publishing Ltd., 2014.
6.Nathan Yau, "Visualize This: The FlowingData Guide to Design, Visualization, and Statistics", Wiley, 2011.
7.Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.

Student Activity:

1. **Collect data from any real time system and create clusters using any clustering algorithm**
2. **Read the student exam data in R perform statistical analysis on data and print results.**

UNIT IV

PROBABILITY DISTRIBUTIONS in R - Binomial, Poisson, Normal distributions. - Manipulating objects - data distribution.

UNIT V

DELIVERING RESULTS : Documentation and deployment – producing effective presentations– Introduction to graphical analysis – plot() function – displaying multivariate data – matrix plots – multiple plots in one window - exporting graph - using graphics parameters in R Language. Case studies.

Reference Books

1.Nina Zumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.
2.Jure Leskovec, Anand Rajaraman, Jeffrey D.Ullman, "Mining of Massive Datasets", Cambridge University Press, 2014.
3.Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley & Sons, Inc., 2012.
4. W. N. Venables, D. M. Smith and the R Core Team, "An Introduction to R", 2013.
5.Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, Abhijit Dasgupta, "Practical Data Science Cookbook", Packt Publishing Ltd., 2014.
6.Nathan Yau, "Visualize This: The FlowingData Guide to Design, Visualization, and Statistics", Wiley, 2011.
7.Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.

Student Activity:

1. **Collect data from any real time system and create clusters using any clustering algorithm**
2. **Read the student exam data in R perform statistical analysis on data and print results.**

ANNEXURE-I

III B.Sc(Computer Science /Multimedia) VI SEMESTER

III YEAR VI SEMESTER

(Cluster 1) Paper-VIII : Elective –A-2

BIG DATA TECHNOLOGY

Course Objective

The Objective of this course is to provide practical foundation level training that enables immediate and effective participation in big data projects. The course provides grounding in basic and advanced methods to big data technology and tools, including MapReduce and Hadoop and its ecosystem.

Course Outcome

1. Learn tips and tricks for Big Data use cases and solutions.

2. Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop.

3. Able to apply Hadoop ecosystem components.

UNIT I

INTRODUCTION TO BIG DATA: Introduction – distributed file system – Big Data and its importance, Four V's in bigdata, Drivers for Big data, Big data analytics, Big data applications. Algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce.

UNIT II

INTRODUCTION HADOOP : Big Data – Apache Hadoop & Hadoop EcoSystem – Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization.

UNIT- III

HADOOP ARCHITECTURE: Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job, Tasktrackers - Cluster Setup – SSH & Hadoop Configuration – HDFS Administering – Monitoring & Maintenance.

ANNEXURE-I

III B.Sc(Computer Science/Multimedia) VI SEMESTER

(Cluster 1) Paper-VIII : Elective –A-2

BIG DATA TECHNOLOGY

UNIT-IV

HIVE AND HIVEQL, HBASE:-Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries,

UNIT-V

HBase concepts- Advanced Usage, Schema Design, Advance Indexing - Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

Reference Books

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.
2. Big Data Black Book(Covers Hadoop 2, Map Reduce, Hive, Yarn, Pig & Data Visualization)- Dream Tech Publications
3. Chris Eaton, Dirk deroos et al. , "Understanding Big data ", McGraw Hill, 2012.
4. Tom White, "HADOOP: The definitive Guide" , O Reilly 2012.
5. Vignesh Prajapati, "Big Data Analytics with R and Haoop", Packet Publishing 2013.
6. Tom Plunkett, Brian Macdonald et al, "Oracle Big Data Handbook", Oracle Press, 2014.
7. Jy Liebowitz, "Big Data and Business analytics",CRC press, 2013.

Student Activity:

1. Collect real time data and justify how it has become Big Data
2. Reduce the dimensionality of a big data using your own map reducer

UNIT-IV

HIVE AND HIVEQL, HBASE:-Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries,

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HBase concepts- Advanced Usage, Schema Design, Advance Indexing - Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

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6. Tom Plunkett, Brian Macdonald et al, "Oracle Big Data Handbook", Oracle Press, 2014.
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Student Activity:

1. Collect real time data and justify how it has become Big Data
2. Reduce the dimensionality of a big data using your own map reducer

III YEAR VI SEMESTER
(Cluster 2) Paper-VIII : Elective –B-1

Distributed Systems

Course Objectives

To expose the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.

To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.

Course Outcomes

Create models for distributed systems.
Apply different techniques learned in the distributed system.

UNIT I

Introduction to Distributed Computing Systems, System Models, and Issues in Designing a Distributed Operating System, Examples of distributed systems.

UNIT II

Features of Message Passing System, Synchronization and Buffering, Introduction to RPC and its models, Transparency of RPC, Implementation Mechanism, Stub Generation and RPC Messages, Server Management, Call Semantics, Communication Protocols and Client Server Binding.

UNIT III

Introduction, Design and implementation of DSM system, Granularity and Consistency Model, Advantages of DSM, Clock Synchronization, Event Ordering, Mutual exclusion, Deadlock, Election Algorithms.

UNIT IV

Task Assignment Approach, Load Balancing Approach, Load Sharing Approach, Process Migration and Threads.

UNIT V

File Sharing Semantics, File Caching Schemes, File Replication, Atomic Transactions, Cryptography, Authentication, Access control and Digital Signatures.

ANNEXURE-I

III B.Sc(Computer Science/Multimedia) VI SEMESTER
(Cluster 2) Paper-VIII : Elective –B-2

Cloud Computing

Course Objectives:

The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet, cloud concepts capabilities across the various cloud service models including Iaas, Paas, Saas, and developing cloud based software applications on top of cloud platforms.

Course 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
6. Design Cloud Services and Set a private cloud

Unit 1

Cloud Computing Overview – Origins of Cloud computing – Cloud components - Essential characteristics – On-demand self-service , Broad network access , Location independent resource pooling , Rapid elasticity , Measured service

Unit II

Cloud scenarios – Benefits: scalability , simplicity , vendors ,security. Limitations – Sensitive information - Application development – Security concerns - privacy concern with a third party - security level of third party - security benefits Regularity issues: Government policies

Unit III

Cloud architecture: Cloud delivery model – SPI framework , SPI evolution , SPI vs. traditional IT Model

Software as a Service (SaaS): SaaS service providers – Google App Engine, Salesforce.com and google platfrom – Benefits – Operational benefits - Economic benefits – Evaluating SaaS **Platform as a Service** (PaaS): PaaS service providers – Right Scale – Salesforce.com – Rackspace – Force.com – Services and Benefits

ANNEXURE-I

III B.Sc.(Computer Science/Multimedia)

Cloud Computing (Cluster 2)Elective-B-2

Unit IV

Infrastructure as a Service (IaaS): IaaS service providers – Amazon EC2 , GoGrid – Microsoft soft implementation and support – Amazon EC service level agreement – Recent developments – Benefits

Cloud deployment model : Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing

Unit V

Virtualization: Virtualization and cloud computing - Need of virtualization – cost , administration , fast deployment , reduce infrastructure cost - limitations

Types of hardware virtualization: Full virtualization - partial virtualization - para virtualization

Desktop virtualization: Software virtualization – Memory virtualization - Data virtualization –**Microsoft Implementation**: Microsoft Hyper V – Vmware features and infrastructure – Virtual Box - Thin client

Reference Books

1. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi - 2010
2. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008
3. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
4. Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press
5. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christenvecctiola, S Tammarai selvi, TMH

Student Activity:

1. Prepare the list of companies providing cloud services category wise.
2. Create a private cloud using local server

Unit IV

Infrastructure as a Service (IaaS): IaaS service providers – Amazon EC2 , GoGrid – Microsoft soft implementation and support – Amazon EC service level agreement – Recent developments – Benefits

Cloud deployment model : Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing

Unit V

Virtualization: Virtualization and cloud computing - Need of virtualization – cost , administration , fast deployment , reduce infrastructure cost - limitations

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Student Activity:

1. Prepare the list of companies providing cloud services category wise.
2. Create a private cloud using local server

APPENDIX-2

SRR & CVR Govt. Degree College (Autonomous)

Department of Commerce

Elective DSC1 6.5 Tally Syllabus

Group: III B.Com(CA)

Semester – VI

Subject: Tally

Unit-I: Introduction to Tally: Introduction, Software versions of Tally, Terminology related to Accounts credit & Debit, Journal, Ledger, Voucher, Group etc. Difference between Manual Accounting and Accounting Packages. Features and advantages of Tally.

Unit-II: Introduction of Tally Software, Creation of a company, Gateway of Tally, Accounts Information, Groups, pre defined Groups, Creation of New Groups, Creation of sub Group.

Unit-III: Ledgers, Ledger Creation – Single and multiple Ledgers, Displaying & altering Ledgers, configure Ledger, Stock Ledger, Ledgers and their Group Allocation.

Unit-IV: Vouchers –types of vouchers – recording of vouchers – entry of payment voucher, Receipt voucher, sales voucher, purchase voucher, Journal Voucher, Contra Voucher, Debit & Credit Note. Creating New Voucher types, customizing the Existing voucher types, Alternation of Voucher, Deletion of Voucher.

Unit-V: Final Accounts: Customizing the final accounts – Profit and Loss Account, Balance Sheet. Key board shortcuts in Tally. Generating the Reports from Tally, Trial Balance, Account Books, Sales, Purchase, Journal Registers, Statement of Accounts, Day Book, List of Accounts.

Reference Books:

1. K. Kiran Kumar, Tally ERP9.

2. Tally 9 In Simple Steps, Kogent solutions Inc., John Wiley & Sons, 2008.

3. Narmata Agarwal, Financial Accounting on Computers Using Tally, Dreamtech Press, 2000.

4. Tally 9.0, Google eBook, Computer World.

5. Vikas Gupta, Comdex Computer and Financial Accounting with Tally 9.0, 2007.

6. Tally ERP 9 Made Simple Basic Financial Accounting, BPB Publisher.

7. Avichi Krishnan, Tally ERP 9 for Real Time Accounting, Book Ganga.

APPENDIX-2

SRR & CVR Govt. DEGREE COLLEGE (AUTONOMOUS) – VIJAYAWADA

III B.Com(Computer APPLICATIONS) SEMESTER - VI

Elective DSC2 6.6

E-Commerce Syllabus

Unit-I: Introduction to E-Commerce: Scope, Definition, e-Commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce, Business Strategy in an Electronic Age: Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains, Competitive Strategy, First Mover Advantage - Sustainable Competitive Advantage, Competitive Advantage using E-Commerce - Business Strategy.

Unit-II: Business-to-Business Electronic Commerce: Characteristics of B2B EC, Models of B2B EC, Procurement Management by using the Buyer's Internal Market place, Just in Time Delivery, Other B2B Models, Auctions and Services from traditional to Internet Based EDI, Integration with Back-end Information System, Role of Software Agents for B2B EC, Electronic marketing in B2B, Solutions of B2B EC, Managerial Issues, Electronic Data Interchange (EDI), EDI: Nuts and Bolts, EDI and Business.

Unit-III: Internet and Extranet : Automotive Network Exchange, Largest Extranet, Architecture of the Internet, Intranet and Extranet, Intranet software, Applications of Intranets, Intranet Application Case Studies, Considerations in Intranet Deployment, Extranets, Structures of Extranets, Extranet products and services, Applications of Extranets, Business Models of Extranet Applications, Managerial Issues. Electronic Payment Systems: Issues and Challenges, **E-Marketing, Internet Marketing Techniques**.

Unit-IV: Public Policy: From Legal Issues to Privacy : Legal Incidents, Ethical and Other Public Policy Issues, Protecting Privacy, Protecting Intellectual Property, Free speech, Internet Indecency and Censorship, Taxation and Encryption Policies, Other Legal Issues: Contracts, Gambling and More, Consumer and Seller Protection in EC,

Unit-V: Infrastructure For EC : Network of Networks, Internet Protocols, Web- Based client/Server, Internet Security, Selling on the Web, Chatting on the Web, Multimedia delivery, Analyzing Web Visits, Managerial Issues, Equipment required for establishing EC Sites – Problems in Operation,

Reference Books

1. David Whiteley, "E-Commerce", Tata McGraw Hill, 2000.
2. E Business by Parag Kulakarni and Sunitha Jahirabadkar from Oxford University Press.
3. E Business by Jonathan Reynolds from Oxford University Press.
4. Eframi Turban, Jae Lee, David King, K. Michael Chung, "Electronic Commerce", Pearson Education, 2000.
5. R. Kalakota and A. B. Whinston, Frontiers of Electronic Commerce, Addison Wesley.
6. David Kosiur, Understanding Electronic Commerce, Microsoft Press.
7. Soka, From EDI to Electronic Commerce, McGraw Hill.

Appendix-2

SRR & CVR Govt. DEGREE COLLEGE (AUTONOMOUS) – VIJAYAWADA

III B.Com(CA) SEMESTER – VI

Elective DCS 3 6.7

PHP and My SQL Syllabus

Unit-I: Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output. Working with Functions: Defining Functions, Calling functions, returning the values from User-Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments,

Unit-II: Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance. Working with Strings, Dates and Time: Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, , Using Date and Time Functions in PHP.

Unit-III: Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users.

Unit-IV: Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or passthru ( ). Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input,

Unit-V: Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record, **Joins: Cross Joins, Outer Joins, Self Joins** .

References:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).
2. Xue Bai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson (2006).