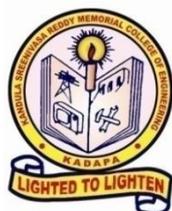


**Regulations for
UG Programs in Engineering (R18UG)
Curriculum and Syllabus for
VII Sem B.Tech
Department of Computer Science and Engineering**



**Kandula Srinivasa Reddy Memorial College of
Engineering (Autonomous)
Kadapa 516004, A.P**
(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)
(An ISO 9001-2008 Certified Institution)

Semester 7

SL.No	Subject Code	Subject	L	T	P	CR
<u>Theory</u>						
1	1805701	Machine Learning	3	0	0	3
2	1805702	Big Data Technologies	3	0	0	3
3	1805703 1805704 1805705	Professional Elective-3 1. Computer Graphics 2. Design Pattern 3. Cloud Computing	3	0	0	3
4		Open Elective-2	3	0	0	3
5		Open Elective -3	3	0	0	3
<u>Labs</u>						
1	1805710	Big Data Technologies Lab	0	0	2	1
2	1805711	ML Lab	0	0	2	1
3	1805712	Technical Seminar	0	0	2	1
4	1805713	Project - I	0	0	8	4
Total			15	0	14	22

Course Title	MACHINE LEARNING				B.Tech CSE VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1805701	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	0	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> To introduce students to the basic concepts and techniques of Machine Learning. To have a thorough understanding of the Supervised and Unsupervised learning techniques. To study the various probability-based and generalized learning techniques. To understand ensemble models of machine learning algorithms. 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Understand the machine learning concepts that are suitable for developing real time applications							
CO 2	Understand the concept of decision tree classifier and develop a model for a given problem.							
CO 3	Apply instant based learning to solve a real time problem.							
CO 4	Understand the concepts of probability and Bayes's machine learning algorithms.							
CO 5	Evaluate different clustering algorithms.							

UNIT-I:

Introduction: Introduction to Machine Learning: Introduction, Different types of learning, Applications of Machine Learning, Parametric and Nonparametric Machine Learning Algorithms, Training and test sets, cross validation. Linear Regression: Introduction, Linear Models for Regression.

UNIT-II:

Decision Tree Learning: Introduction, Decision tree representation, appropriate problems for decision tree learning, the basic decision tree algorithm, hypothesis space search in decision tree learning, inductive bias in decision tree learning, issues in decision tree learning, Avoiding Over fitting the Data.

UNIT-III:

Instance Based Learning: K nearest neighbor, the Curse of Dimensionality, Over fitting and Under fitting, Feature Selection: forward search, backward search, univariate, multivariate feature selection approach, Dimensionality Reduction, Linear Discriminant Analysis, Principal Component Analysis.

UNIT-IV:

Probability and Bayes Learning: Brute-Force Bayes Concept Learning, Maximum Likelihood Hypothesis, Naïve Bayes Classifier, Logistic Regression, Support Vector Machine: Introduction, the Dual formulation, Maximum margin with noise, nonlinear SVM and Kernel function, Beyond Binary Classification.

UNIT- V:

Evaluating Machine Learning algorithms and Model Selection, Ensemble Learning: Introduction, Bagging and boosting, Random forest. Clustering: Introduction, K-mean clustering, K-medoids clustering, Hierarchical clustering - Agglomerative clustering -Divisive clustering- Choosing the number of clusters.

TEXTBOOKS:

1. Machine Learning, Tom M.Mitchell, McGraw-Hill
2. Machine Learning: A Probabilistic Perspective, Kevin Murphy, MIT Press, 2012
3. Pattern Recognition and Machine Learning, Christopher Bishop, Springer, 2007

REFERENCES:

1. Machine Learning: An Algorithmic Perspective, Stephen Marshland, Taylor & Francis
2. Machine Learning: The Art and Science of Algorithms That Make Sense of Data, Peter Flach, Cambridge, University Press
3. The Elements of Statistical Learning, Trevor Hastie, Robert Tibshirani, Jerome Friedman, Springer, 2009.

Course Title	BIG DATA TECHNOLOGIES				B.Tech CSE VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505702	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	0	3	30	70	100
Mid Exam Duration: 2 Hrs					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> To study the big data characteristics and its history To provide students with knowledge in HDFS concepts and interfaces To acquire conceptual understanding of MapReduce Framework and its classes To make learners aware about MapReduce job runs To provide overview of Hadoop Database applications 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Analyze the Bigdata characteristics.							
CO 2	Make use of HDFS interfaces to read and write files.							
CO 3	Analyze the data with MapReduce classes.							
CO 4	Build the development environment of Hadoop to run the job on local job runner and on a cluster.							
CO 5	Summarize the database applications of Hadoop and Pig.							

UNIT - I

Introduction to Big Data, Why is Big Data, Why Big Data is important, Meet Hadoop, Data, Data Storage and Analysis, Comparison with other systems, Grid Computing, A brief history of Hadoop, Apache Hadoop and the Hadoop EchoSystem, Linux refresher; VMWare Installation of Hadoop.

UNIT - II

The Design of HDFS, HDFS Concepts, Command Line interface to HDFS, Hadoop File Systems, Interfaces, Java Interface to Hadoop, Anatomy of a file read, Anatomy of a file write, Replica placement and Coherency Model, Parallel copying with distcp, Keeping an HDFS cluster balanced.

UNIT - III

Introduction, Analyzing data with unix tools, Analyzing data with Hadoop, Java MapReduce classes(new API), Data flow, combiner functions, Running a distributed MapReduce job, Configuration API, Setting up the developing environment, Managing configuration, Writing a unit test with MRUnit, Running a job in local job runner, Running on a cluster, Launching a job, The MapReduce WebUI.

UNIT - IV

Classic MapReduce, Job submission, Job initialization, Task Assignment, Taskexecution, Progress and status updates, Job Completion, Shuffle and sort on Map and Reducer side, Configuration tuning, Map Reduce types, Input formats, Sorting, Map side and Reduce side joins.

UNIT - V

Hive: The Hive Shell, Hive services, Hive clients, The meta store, comparison with traditional databases, Hive QL, Hbasics, Concepts, implementation, Java and Map reduce clients, Loading Data, Web queries.

Pig: Introduction to Pig, Pig Latin.

Text Books:

1. Tom White, Hadoop, "The Definitive Guide" , 3rd Edition, O'Reilly Publications, 2012.
2. Dirk deRoos, Chris Eaton, George Lapis, Paul Zikopoulos, Tom Deutsch, "Undetstanding Big Data Analytics for Enterprise class Hadoop and Streaming Data", 1st Edition, TMH, 2012.

Reference Books:

1. Bart Baesens, Analytics in a Big Data World: The Essential Guide to Data Science and its Applications, Wiley Publications, 2014.

Course Title	COMPUTER GRAPHICS (PE-3)				B.Tech CSE VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1805703	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	0	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> To apply the rules and algorithms in generating graphical outputs. To develop multi-dimensional objects using suitable transformations. To Develop real-time rendering graphics. 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Classify CRT, Color CRT, DVST, Flat Panel display devices and Graphical Input Devices.							
CO 2	Understand DDA, Bresenhams line drawing algorithms and Midpoint circle generating algorithms, clipping of polygons.							
CO 3	Exemplify 2D & 3Dtranslation, rotation, reflection, scaling and shearing.							
CO 4	Compare RGB, CMY,YIQ, CMYK Color models.							
CO 5	Summarize types of animation, Animation sequence and morphing technique.							

UNIT-I

Introduction: Usage of Graphics and their applications, Presentation Graphics- Computer Aided Design- Computer Art- Entertainment- Education and Training- Visualization- Image Processing Graphical User Interfaces.

Overview of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems Graphics monitors and workstations-Input devices-hard copy devices- Graphics software.

UNIT-II

Scan Converting Lines – Basic Incremental algorithm, Midpoint algorithm and additional issues; Scan converting Circles, Scan Converting Ellipses, Solid Filling, Pattern Filling, Thick Primitives, Cohen – Sutherland line clipping algorithm, Parametric line clipping algorithms, Sutherland – Hodgeman polygon clipping algorithm, Generating characters.

UNIT-III

Geometrical transformations – 2D transformations, Homogeneous coordinates, Matrix representation of 2D transformations, Composition of 2D transformations, Window to view-port transformation, Matrix representation of 3D transformations, Composition of 3D transformations.

Representing Curves and Surfaces – Polygon meshes, Parametric cubic curves, Parametric bicubic surfaces and Quadratic surfaces.

UNIT-IV

Viewing in 3D – Projections, Specifying an arbitrary 3D view.

Solid Modeling – Representing Solids, Regularized Boolean set operations, Primitive instancing, Sweep Representation, Boundary Representations, Spatial-Partitioning Representations.

Achromatic and Colored Light – Achromatic light, Chromatic color, Color models for raster graphics, Reproducing color, Using color in computer graphics.

UNIT-V

Illumination Models – Ambient light, Diffuse reflection, Atmospheric attenuation.

Shading Models – Constant shading, Interpolated shading, Polygon mesh shading, Gouraud shading, Phong shading.

Animation – Conventional and Computer-Assisted animation, Animation languages, Methods of controlling animation, Basic rules of animation, Problems peculiar to animation.

TEXT BOOKS:

1. Foley, Van Dam, Feiner and Hughes, Computer Graphics – Principles and Practice, 2nd Edition in C, Pearson Education, 2004
2. Donald Hearn and M. Pauline Baker, Computer graphics, C version, Prentice – Hall, 1997.

REFERENCE BOOKS:

1. William M. Newman, Robert F. Sproull, Principles of interactive computer graphics, 12th Edition, McGraw – Hill, 1986.
2. David F. Rogers, Rae A. Earnshaw, Computer Graphics Techniques : Theory and Practice, Springer-Verlag, 1990.
3. Computer Graphics using Open GL by Francisc S Hill Jr Pearson Education, 2004.

Course Title	DESIGN PATTERNS (PE-3)				B.Tech CSE VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1805704	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	0	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> To understand design patterns and their underlying object oriented concepts To understand implementation of design patterns and providing solutions to real world software design problems. To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Know the underlying object oriented principles of design patterns.							
CO 2	Understand the context in which the pattern can be applied.							
CO 3	Understand how the application of a pattern affects the system quality and its tradeoffs.							

UNIT-I

Introduction to Design Patterns: Design Pattern Definition, Design Patterns in Small Talk MVC, Describing Design Patterns, Catalog of Design Patterns, Organizing the Catalog, Solving of Design Problems using Design Patterns, Selection of a Design Pattern, Use of Design Patterns.

UNIT-II

Designing A Document Editor: A Case Study: Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look and Feel Standards, Supporting Multiple Window Systems, User Operations, Spelling Checking and Hyphenation. Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

UNIT-III

Structural Patterns-1: Adapter, Bridge, Composite. Structural Patterns-2: Decorator, Façade, Flyweight, Proxy, Discuss of Structural Patterns.

UNIT-IV

Behavioral Patterns-1: Chain of Responsibility, Command, Interpreter, Iterator. Behavioral Patterns-2: Mediator, Memento, Observer.

UNIT-V

Behavioral Patterns-2(cont'd): State, Strategy, Template Method, Visitor, and Discussion of Behavioral Patterns. What to Expect from Design Patterns, A Brief History, The Pattern Community, An Invitation, A Parting Thought.

TEXT BOOK:

1. Design Patterns by Erich Gamma, Pearson Education.

REFERENCE BOOKS:

1. Pattern's in JAVA Vol-I By Mark Grand, Wiley DreamTech.
2. Pattern's in JAVA Vol-II By Mark Grand, Wiley DreamTech.
3. JAVA Enterprise Design Patterns Vol-III By Mark Grand, Wiley DreamTech.
4. Head First Design Patterns By Eric Freeman-Oreilly-spd
5. Design Patterns Explained By Alan Shalloway, Pearson Education.
6. Pattern Oriented Software Architecture, F.Buschmann & others, John Wiley & Sons.

Course Title	CLOUD COMPUTING (PE-3)				B.Tech CSE VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1805705	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	0	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> To explain the cloud paradigms. To introduce the various levels of services that can be achieved by cloud. To know about service providers of cloud. 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Recall different computing paradigms.							
CO 2	Understand the evolution of cloud computing paradigm and its architecture.							
CO 3	Explain and characterize different cloud deployment models and service models.							
CO 4	Understand programming models and API's in Cloud Computing.							
CO 5	Identify the Data Center environment and service providers in cloud computing.							

UNIT-I:

Computing Paradigms:

High-Performance Computing, Parallel Computing, Distributed Computing, Cluster Computing, Grid Computing, Cloud Computing, Bio computing, Mobile Computing, Quantum Computing, Optical Computing, Nano computing, Network Computing.

Cloud Computing Fundamentals:

Motivation for Cloud Computing: The Need for Cloud Computing. Defining Cloud Computing: NIST Definition of Cloud Computing, Computing Is a Service, Cloud Computing Is a Platform. Principles of Cloud computing: Five Essential Characteristics, Four Cloud Deployment Models, Three Service Offering Models, Cloud Ecosystem, Requirements for Cloud Services, Cloud Application, Benefits and Drawbacks.

UNIT-II:

Cloud Computing Architecture and Management: Cloud Architecture, Anatomy of the Cloud, Network Connectivity in Cloud Computing, Applications on the Cloud, Managing the Cloud, Migrating Application to Cloud.

UNIT-III:

Cloud Deployment Models: Private Cloud, Public Cloud, Community Cloud, Hybrid Cloud.

Cloud Service Models: Infrastructure as a Service, Platform as a Service, Software as a Service, Other Cloud Service Models.

Virtualization: introduction, Virtualization opportunities, Approaches to virtualization, Hypervisors, From virtualization to cloud computing.

UNIT-IV:

Programming Models in Cloud: Cloud Application Development Platforms: Windows Azure, Google App Engine, Force.com, Manjrasoft Aneka.

Software Development in Cloud : Introduction, Different perspectives on SaaS development, New challenges, Cloud aware software development using PaaS technology.

UNIT-V:

Networking for Cloud Computing: Introduction, Overview of Data Center Environment, Networking Issues in Data Centers.

Cloud Service Providers: Introduction, EMC, Google, Amazon Web Services, Microsoft, IBM, Salesforce, Rackspace.

Text books:

1. K. Chandrasekaran, Essentials of Cloud Computing, CRC Press, 2015

Reference books:

1. Barrie Sosinsky, Cloud Computing Bible, Wiley-India, 2010
2. RajkumarBuyya, James Broberg, Andrzej M. Goscinski, Cloud Computing: Principles and Paradigms, Wiley, 2011

Nikos Antonopoulos, Lee Gillam, Cloud Computing: Principles, Systems and Applications, Springer, 2012.

Course Title	BIG DATA TECHNOLOGIES LAB				B.Tech CSE VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1805710	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		0	0	2	1	50	50	100
					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> • Optimize business decisions and create competitive advantage with Bigdata analytics. • Practice java concepts required for developing mapreduce programs. • Impart the architectural concepts of Hadoop and introducing mapreduce paradigm. • Practice programming tools PIG and HIVE in Hadoop ecosystem. • Implement best practices for Hadoop development. 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Understand the installation of VMWare and PIG.							
CO 2	Understand and apply the setting up and Installing Hadoop in its three operating modes.							
CO 3	Implement the file management tasks in Hadoop.							
CO 4	Understand MapReduce Paradigm.							
CO 5	Understand Pig Latin scripts sort, group, join, project, and filter your data.							

LIST OF EXPERIMENTS:

1. Installation of VMW is to setup the Hadoop environment and its ecosystems.
2. **A.** Perform setting up and Installing Hadoop in its three operating modes.
 - I. Standalone.
 - II. Pseudo distributed.
 - III. Fully distributed.**B.** Use web based tools to monitor your Hadoop setup.
3. Implementing the basic commands of LINUX Operating System File/Directory creation, deletion, and update operations.
4. Implement the following file management tasks in Hadoop:
 - I. Adding files and directories
 - II. Retrieving files
 - III. Deleting files**Hint:** A typical Hadoop work flow creates data files (such as log files) elsewhere and copies them into HDFS using one of the above command line utilities.
5. Run a basic word count MapReduce program to understand MapReduce Paradigm.
6. Write a Map Reduce program that mines weather data. Hint: Weather sensors collecting data every hour at many locations across the globe gather a large volume of log data, which is a good candidate for analysis with MapReduce, since it is semi structured and record-oriented.

7. Implement matrix multiplication with Hadoop MapReduce.
8. Installation of PIG.
9. Write Pig Latin scripts sort, group, join, project, and filter your data.
10. **A.** Run the Pig Latin Scripts to find Word Count.
B. Run the Pig Latin Scripts to find a max temp for each and every year.

Course Title	MACHINE LEARNING LAB				B.Tech CSE VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1805711	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		0	0	2	1	50	50	100
					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> To get an overview of the various machine learning techniques and able to demonstrate them using python. 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Understand complexity of Machine Learning algorithms and their limitations							
CO 2	Understand modern notions in data analysis-oriented computing							
CO 3	Be capable of confidently applying common Machine Learning algorithms in practice and implementing their own							
CO 4	Be capable of performing experiments in Machine Learning using real-world data							

LIST OF EXPERIMENTS:

1. Download, Install Anaconda on Windows and understand environment.
2. Data Preprocessing
 - a. Importing the Data set
 - b. Missing Data
 - c. Splitting the dataset into the Training set and Test set
 - d. Feature Scaling
3. Implement Simple Linear Regression using python.
4. Implement decision tree algorithm using python.
5. Implement k-nearest neighbor's classification using python.
6. Implement Principal Component Analysis (PCA) using python.
7. Implement Naive Bayes using python.
8. Implement Support Vector Machine (SVM) using python.
9. Implement K-Means Clustering using Python.
10. Implement Hierarchical Clustering using Python.

TEXTBOOKS:

1. Machine Learning, Tom M.Mitchell, McGraw-Hill
2. A Complete Introduction to the Python Language, Mark Summer Field, 2nd Edition
3. Python The Complete Reference, Martin C.Brown, Brandon A.Nordin

REFERENCES:

1. Machine Learning: An Algorithmic Perspective, Stephen Marshland, Taylor & Francis.

Open Electives

Course Title	COMPUTER NETWORKS (Open Elective-2)				B.Tech VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
	OE	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	0	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> • Study the evolution of computer networks and future direction. • Study the concepts of computer networks from layered. • Perspective study the issues open for research in computer networks. 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Understand the terminology and concepts of the OSI reference model and TCP-IP.							
CO 2	Describe the functions of Data link layer and its protocols.							
CO 3	Classifying the different routing algorithms and IP addressing with network layer							
CO 4	Understand connection establishment and services provides by TCP and UDP.							
CO 5	Explain the working of DNS and World Wide Web							

UNIT-I

Introduction: Uses of Computer Networks, Network Hardware, Reference Models: OSI, TCP/IP, Comparison of OSI & TCP/IP reference models.

Introduction to physical layer:Data and Signals, Transmission impairment.

Transmission media:Introduction, Guided Media,Unguided Media

UNIT-II

The Data Link Layer: Data Link Layer design issues, Error Detection and Correction, Elementary Data Link Protocols, Sliding Window Protocols.

The Medium Access Control sublayer : Multiple Access protocols, Ethernet.

UNIT-III

The Network Layer: Network layer design issues, Routing algorithms : The Optimality Principle, Shortest Path Algorithm, Flooding, Distance Vector Routing, Hierarchical Routing, Broadcast Routing, Multicast Routing. Quality of service, IP Addresses, IPv4,IPv6,Tunneling, Fragmentation.

UNIT-IV

The Transport Layer: The Transport Service, Elements of Transport Protocols, Congestion Control, The internet transport protocols: UDP, TCP: Introduction to TCP, Introduction to UDP.

UNIT-V

The Application layer: Domain Name System (DNS), World Wide Web (WWW), E-mail.

TEXT BOOKS:

1. "Computer Networks", Andrew S. Tanenbaum, David J. Wetherall, Pearson, 5th edition, 2010.
2. "Data communications and networking", Behrouz A. Forouzan, TMH, 5th edition, 2012.

REFERENCE BOOKS:

1. "Internetworking with TCP/IP – Principles, protocols, and architecture- Volume 1, Douglas E. Comer, 5 th edition, PHI
2. "Computer Networks", 5E, Peterson, Davie, Elsevier.
3. "Introduction to Computer Networks and Cyber Security", Chawan- Hwa Wu, Irwin, CRC Publications.
4. "Computer Networks and Internets with Internet Applications", Comer.

Course Title	PYTHON PROGRAMMING (Open Elective-2)				B.Tech VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
	OE	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	0	3	30	70	100
Mid Exam Duration: 2Hrs					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> • Understand programming skills using basics of Python language • To introduce the object-oriented programming concepts. • Acquire basics of how to translate problem into object-oriented form • To understand object-oriented programming concepts, and apply them in solving problems. 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Demonstrate and acquire knowledge on usage of Data types, operators, input and output statements in python programming.							
CO 2	Analyze the given problem and develop python program to solve the problem							
CO 3	Able to use proper iterative statements in problem solving							
CO 4	Identify the right sequence to solve the real-world problems							
CO 5	Apply object-oriented features to solve real time applications							

UNIT-I

Features of python, Execution of a python program, comments, identifiers and variables, classification of data types, keywords, constants, Naming conventions in python, Operators and expressions, operator precedence and associativity, input and output statements.

UNIT- II

Control statements: simple if, if..else, nested if, if..elif..else statement. **Loops:** while loop, for loop, nested loops, break , continue , pass and assert statements, Arrays in python, Strings and their operations.

UNIT-III

Functions: define and calling a function, return statement, formal and actual arguments, local and global variables, passing arguments to function, anonymous functions, example programs on functions, recursion.

UNIT-IV

Sequences: Lists, Tuples, Sets, Dictionaries, Operations and methods on Tuples, Lists, Dictionaries. **Files:** Types of files, opening file, closing a file, write data into a file, read data from a file.

UNIT-V

Introduction to OOps: Introduction to class and objects, self variable in python, constructor, types of variables and methods, Inheritance and polymorphism, abstract class.

Textbooks:

1. Core python programming by Dr. R. Nageswara Rao, Dreamtech press, second edition, 2018
2. Core python programming by Wesley J Chun, Prentice Hall, Second edition.

Reference Books:

1. Introduction to Computation and Programming using Python, by John Guttag, PHI Publisher
2. Learning python, Mark Lutz, O'Reilly publications, 5th edition, 2013
3. Python: The complete reference by Martin C Brown, McGraw-Hill Publication, 2018.

Course Title	WEB TECHNOLOGIES (Open Elective-3)				B.Tech VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
	OE	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		2	0	0	2	30	70	100
MidExamDuration:2Hrs					EndExamDuration:3Hrs			
Course Objectives:								
<ul style="list-style-type: none"> To learn the basic concepts of HTML. To introduce client side scripting with Java Script. To introduce the concepts of Java Applets, AWT and Swings. To introduce server side programming with Servlets and Database connectivity 								
Course Outcomes: Onsuccessfulcompletionofthiscourse,thestudentswillbeableto								
C01	Understand the basic concepts of HTML scripting language							
C02	Understand the CSS, java Script and create static web pages							
C03	Understand the concepts of AWT and Swings							
C04	Define web server and installation of web server							
C05	Develop server side programs using JSP and accessing database through JSP							

UNIT-I

HTML Common tags- Introduction, HTML Basics: Text, Colors, Links, Images, Forms: Text Area, Check Box, Radio Button, Button, Menus, Frames, List, Tables

UNIT-II

Java Script: Introduction , Basics of Java Script, Control Structures, Pop up Boxes, Functions, Arrays Events, Objects, Dynamic HTML: Introduction, Cascading Style Sheets (CSS).

UNIT-III

Review of Applets, Class, Event Handling, AWT Programming, Introduction to Swings: JApplet Handling Swing Controls like icons, Labels, Buttons, Text Boxes, Combo Boxes

UNIT-IV

Web Servers and Servlets: Tomcat Server Installation &Testing, Introduction to Servlets, Deployment of servlet, Life cycle of a servlet, HTTP-GET and POST Requests, Session Tracking, Cookies.

UNIT-V

JDBC: Database Access, JDBC Architecture, Introduction to JSP: Introduction, Advantages of JSP, The problem with servlet, The anatomy of JSP page, JSP Processing.

TEXT BOOKS:

1. Web Technologies, A.S. Puntambekar, Technical Publications.
2. Java The Complete Reference, Herbert Schildt, TMH.

REFERENCE BOOK:

1. Web Technology, N.P. Gopalan, J. Akilandeswari, PHI

Course Title	OPERATING SYSTEMS (Open Elective-3)				B.Tech VII Sem (R18)			
Course Code	Category	Hours/Week			Credits	Maximum Marks		
	OE	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	0	0	3	30	70	100
Mid Exam Duration: 2 Hours					End Exam Duration: 3 Hrs			
Course Objectives:								
<ul style="list-style-type: none"> • Have an overview of functions of operating systems. • Have a thorough knowledge of process management and memory management. • To have a thorough knowledge of how handle to deadlocks. • Learn the concepts of files, protection and security. 								
Course Outcomes: On successful completion of this course, the students will be able to								
CO1	Understand the basic concepts related to the operating systems.							
CO2	Analyze the various process scheduling algorithms and process synchronization mechanisms.							
CO3	Analyze the various memory management schemes.							
CO4	Understand the ways to deal the deadlocks and the basic concepts related to files in the system.							
CO5	Analyze the protection and security mechanisms							

UNIT-I

Operating Systems Basics: Operating systems functions, Overview of computer operating systems, distributed systems, operating system services and systems calls, system programs, operating system structure.

UNIT-II

Process Management: Process concepts, scheduling-criteria, algorithms, their evaluation.

Concurrency: Process synchronization, the critical-section problem, Peterson's Solution, semaphores, monitors.

UNIT-III

Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation, virtual memory, demand paging, page-replacement algorithms.

UNIT-IV

Deadlocks: system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery from deadlock.

Files: The concept of a file, Access Methods, Directory structure, File system mounting.

UNIT-V

Protection: Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix.

TEXTBOOKS:

1. Abraham Silberchatz, Peter B.Galvin,
GregGagne,“OperatingSystemConcepts”, Eighth edition, John Wiley.

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