

E.M.G. YADAVA WOMEN'S COLLEGE , MADURAI – 625 014.

(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

Re-accredited (**3rd Cycle**) with Grade **A+ & CGPA 3.51** by NAAC

DEPARTMENT OF COMPUTER SCIENCE



CBCS SYLLABUS

BACHELOR OF SCIENCE

PROGRAMME CODE - S

COURSE STRUCTURE

(w.e.f. 2021 – 2022 Batch onwards)



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CRITERION - I

1.1.3 Details of courses offered by the institution that focus on employability / entrepreneurship / skill development during the year.

Syllabus copies with highlights of contents focusing on
Employability / Entrepreneurship / Skill Development



To be Noted:

HIGHLIGHTED COLORS	COURSES
	Employability
	Skill Development
	Entrepreneurship
	Skilled & Employability

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(w.e.f. 2021 – 2022 Batch onwards)

COURSE STRUCTURE - SEMESTER WISE

Sem	Part	Sub Code	Title of the paper	Teaching hrs (per week)	Exam Duration (hrs)	Marks Allotted			Credits
						CIA	SE	Total	
V	III	21S51	Core : Operating Systems	5	3	25	75	100	4
	III	21S52	Core : Software Engineering	5	3	25	75	100	4
	III	21S53	Core : Programming in Python	5	3	25	75	100	4
	III	21S5P	Core : Programming in Python Lab	6	3	40	60	100	3
	III		Elective I	5	3	25	75	100	5
	IV	21SES5P	SBE: Computer Graphics Lab	2	3	40	60	100	2
	IV	214EV5	Environmental Studies	2	3	25	75	100	2
VI	III	21S61	Core : Data Communication and Networking	5	3	25	75	100	4
	III	21S62	Core : Web Programming	5	3	25	75	100	4
	III	21S6P	Core : Web Programming Lab	6	3	40	60	100	3
	III		Elective II	5	3	25	75	100	5
	III	21SEPR6	Elective III (Project)	5	3	20	80	100	5
	IV	21SES6P	SBE: Linux Lab	2	3	40	60	100	2
	IV	214VE6	Value Education	2	3	25	75	100	2
	PART V	215NS4/ 215PE4	Extension Activities NSS / Physical Education	-	3	25	75	100	1

Electives:**Semester - V****Elective - I - (Choose any one)**

1. Computer Graphics - 21SE5A
2. Internet of Things - 21SE5B

Semester - VI**Elective – II - (Choose any one)**

1. Data Mining and Big Data Analysis - 21SE6A
2. Artificial Intelligence - 21SE6B

Elective III

1. Project - 21SEPR6

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(w.e.f. 2021 – 2022 Batch onwards)

Title of the Paper	: Operating Systems	
Semester	: V	Contact Hours: 5
Sub Code	: 21S51	Credits : 4

Objectives:

To learn the concept of Operating System and its functions.

Unit – I

Introduction: What Operating Systems Do-Computer System Organization-Computer System Architecture-Operating System Structure-Operating System Operations-Process Management- Memory Management - Open Source Operating Systems. **System Structures:** Operating System Services- User and Operating System Interface-System Calls-Types of System Calls-System Programs-Operating – System Debugging.

Unit- II

Process Management: Process Concept-Process scheduling -Operation on process- Interprocess communication- Examples of IPC Systems-Communication in Client Server Systems. **Multithreaded Programming:** Overview-Multithreading Models-Thread Libraries-Implicit Threading-Threading Issues.

Unit- III

Process Scheduling: Basic concepts- Scheduling criteria-Scheduling algorithms. Thread Scheduling - Multiple Processor Scheduling. **Synchronization:** Background - The Critical Section Problem-Peterson's Solution-Synchronization Hardware - Semaphores- Deadlocks: Deadlock Characterization-Methods for Handling Deadlock-Deadlock Prevention- Deadlock Avoidance- Deadlock Detection-Recovery from Deadlock.

Unit- IV

Memory Management Strategies: Background-swapping-Contiguous Memory allocation-Segmentation-Paging-Structure of the Page Table. **Virtual memory**

Management: Background-Demand Paging-Copy on Write-Page Replacement- Allocation of Frames-Thrashing

Unit- V

File System: File concepts-Access methods- **Implementing File System:** File System Structure-Allocation Methods-Free Space Management. Mass-Storage Structure: Overview of Mass Storage Structure-Disk structure- Disk Scheduling-Disk Management

Text Books:

Silberschatz Galvin, *Operating System Concepts*, John Wiley & Sons, New Delhi, 9th Edition, 2011.

Chapters:

Unit- I : 1.1 to 1.7, 1.12, 2.1 to 2.5, 2.8.

Unit- II : 3.1 to 3.6, 4.1,4.3-4.6.

Unit- III : 5.1 to 5.5, 6.1 to 6.4,6.6,7.2-7.7.

Unit- IV : 8.1 to 8.6,9.1-9.6

Unit- V : 10.1, 10.2, 11.1, 11.4 ,11.5 ,12.1-12.2,12.4 – 12.5

Reference Books:

1. Achyut Godbole S , *Operating Systems*, Tata McGraw Hill Education, India, 2nd Edition, 2005.
2. Dhamdhare D M , *Operating systems (A concept- based approach)*, Tata McGraw Hill Education, India, 2nd Edition, 2006.
3. Milan MilenKovic, *Operating System-Concepts and Design*, Tata McGraw Hill Education, India, 2nd Edition, 2001.
4. Pramod Chandra Bhatt, *An Introduction to Operating Systems*, Concepts and Practice, PHI Learning Pvt. Ltd., Delhi, 3rd Edition, 2003.
5. William Stallings, *Operating Systems: Internals and Design Principles*, Pearson Education, India, 6th Edition, 2010.

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Title of the Paper	: Software Engineering	
Semester	: V	Contact Hours: 5
Sub Code	: 21S52	Credits : 4

Objective:

To be aware of different life cycle Models, Analysis, Design, Implementation, Testing, SCM and Quality Assurance.

Unit – I

The Nature of Software: The Nature of Software. **Software Engineering:** Defining the Discipline – The Software Process. **Software Process Structure:** A Generic Process Model – Defining a Framework Activity – Identifying a Task Set – Process Patterns – Process Assessment and Improvement. **Process Models:** Prescriptive Process Models – Specialized Process Models – The Unified Process – Personal and Team Process Models. **Agile Development:** What is Agility? – What is an Agile Process?. **Human Aspects of Software Engineering:** Characteristics of a Software Engineer – The Software Team – Team Structures.

Unit – II

Principles that Guide Practice: Principles that Guide each Framework Activity. **Understanding Requirements:** Establishing the Groundwork – Eliciting Requirements – Building the Analysis Model. **Requirements Modeling: Scenarios-Based Methods:** Requirement Analysis – Scenario-Based Modeling – UML Models That Supplement the Use Case – **Requirements Modeling: Class-Based Methods:** Identifying Analysis Classes – Specifying attributes – Defining operations – Class-Responsibility-Collaborator Modeling.

Unit – III

Design Concepts: Design Concepts – The Design Model. **Architectural Design:** Software Architecture – Architectural Design. **Component-Level Design:** What Is a Component? – Designing Class-Based Components. **User Interface Design:** User Interface Analysis and Design – Interface Design Steps.

Unit – IV

Software Quality Assurance: Elements of Software Quality Assurance – SQA Tasks, Goals, and Metrics – Software Reliability. **Software Testing Strategies:** A Strategies Approach to Software Testing – Test Strategies for Conventional Software – Validation Testing – System Testing – The Art of Debugging. **Testing Conventional Applications:** Software Testing Fundamentals – White-Box Testing – Basis Path Testing – Control Structure Testing – Black-Box Testing.

Unit – V

Software Configuration Management: Software Configuration Management – The SCM Repository – The SCM Process. **Project Scheduling:** Project Scheduling – Scheduling. **Risk Management:** Risk Identification – Risk Projection – Risk Refinement. **Maintenance and Reengineering:** Software Maintenance – Business Process Reengineering – Software Reengineering – Restructuring.

Text Book:

Roger S. Pressman and Bruce R. Maxim, *Software Engineering A Practitioner's Approach*, McGraw-Hill Edition, 8th Edition, 2015.

Chapters:

Unit I : 1.1, 2.1, 2.2, 3.1 to 3.5, 4.1 to 4.4, 5.1, 5.3, 6.1, 6.3, 6.4

Unit II : 7.3, 8.2, 8.3, 8.5, 9.1 to 9.3, 10.1 to 10.4

Unit III : 12.3, 12.4, 13.1, 13.6, 14.1, 14.2, 15.2, 15.4

Unit IV : 21.2, 21.4, 21.7, 22.1, 22.3, 22.7 to 22.9, 23.1, 23.3 to 23.6

Unit V : 29.1 to 29.3, 34.2, 34.5, 35.3 to 35.5, 36.1, 36.4, 36.5, 36.7

Reference Books:

1. Dhanalakshmi R, *Software Engineering*, Charulatha Publications, Chennai, 2nd Edition, 2008.
2. Frank Tsui, *Essentials of Software Engineering*, Jones and Bartlett India Private Limited, New Delhi, 2nd Edition, 2010.
3. James Peters F & Witold Pedryez, *Software Engineering – An Engineering Approach*, John Wiley and Sons, New Delhi, 2nd Edition, 2000.
4. Pankaj Jalote, *An Integrated Approach to Software Engineering*, Springer Verlag, India, 3rd Edition, 2001.
5. Richard Fairley E, *Software Engineering Concepts*, Tata McGraw Hill, New Delhi, Reprint 2011.

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Title of the Paper	: Programming in Python	
Semester	: V	Contact Hours: 5
Sub Code	: 21S53	Credits : 4

Objectives:

Python Programming allows us to develop applications using an Object-Oriented approach. In Python, we can easily create and use classes and objects.

Unit –I:

Introduction to Python: Python– Features of Python– Execution of Python Program– Viewing the Byte Code – Comparisons between Java and Python. **Writing Our First Python Program:** Installing Python for Windows – Verifying the Path to Python – Writing Our First Python Program – Executing a Python Program. **Datatypes in Python:** Comments in Python– Docstrings – How Python sees Variables – Datatypes in Python – Built-in datatypes – bool Datatype– Sequences in Python – Sets– Literals in Python– Determining the Datatype of a variable – What about Characters User- defined Datatypes – Constants in Python – Identifiers and Reserved words – Naming Conventions in Python.

Unit – II:

Operators in Python: Operator– Arithmetic Operators– Using Python Interpreter as Calculator– Assignment Operators – Unary Minus Operator – Relational Operators– Logical Operators– Boolean Operators– Bitwise Operators – Membership Operators– Identity Operators – Mathematical Functions. **Input and Output:** Output statements– Input Statements – Command Line Arguments. **Control Statements:** Control Statements – The if Statement – The if...else Statement – The if...elif...else Statement– The while statement – The for Loop– Infinite Loops– Nested Loops – The else Suite– The break

Statement – The continue Statement– The pass Statement – The assert Statement– The return Statement.

Unit – III:

Arrays in Python: Arrays – Advantages of Arrays – Creating an Array – Importing the Array Module – Indexing and Slicing on Arrays – Types of Arrays– Aliasing the Arrays. **Strings and Characters:** Creating Strings – Length of a String – Indexing in Strings – Slicing the Strings – Repeating the Strings – Concatenation of Strings – Checking Membership – Comparing Strings – Removing Spaces from a String – Finding Sub Strings – Counting Substrings in a String – Strings are Immutable – Replacing a String with another String – Splitting and Joining Strings – Checking Starting and Ending of a String – Sorting Strings.

Unit – IV:

Functions: Difference between a Function and a Method – Defining a Function – Calling a Function – Returning Results from a Function – Returning Multiple Values from a Function –Pass by Object Reference – The Global Keyword–Passing a Group of Elements to a Function – Recursive Function– Anonymous Functions or Lambdas — Function Decorators –Generators –Creating our Own Modules in Python. **Lists and Tuples:** List – Creating Lists using range () Function – Updating the Elements of a List – Concatenation of Two Lists – Repetition of Lists –Membership in Lists – Aliasing and Cloning Lists – Tuples – Creating Tuples – Accessing the Tuple Elements – Basic Operations on Tuples – Function to Process Tuples– Nested Tuples – Inserting Elements in a Tuple – Modifying Elements of a Tuple – Deleting Elements from a Tuple.

Unit – V:

Dictionaries: Operations on Dictionaries – Dictionary Methods – Using for Loop with Dictionaries – Sorting the Elements of a Dictionary using Lambdas– Converting Lists into Dictionary – Converting Strings into Dictionary – Passing Dictionaries to Functions – Ordered Dictionaries. **Exceptions:** Errors in a Python Program – Exceptions – Exception Handling – Types of Exceptions – The Except Block – The assert Block– User-Defined Exceptions – Logging the Exceptions. **Files in Python:** Files– Types of

Files in Python – Opening a File – Closing a File – Working with Text Files containing Strings – The seek() and tell() Methods – Working with Directories.

Text Books:

Dr.R.Nageswara Rao, *Core Python Programming*, Dreamtech Press, 2nd Edition , 2018.

Chapters:

Unit I	: 1, 2, 3
Unit II	: 4, 5, 6
Unit III	: 7, 8
Unit IV	: 9, 10
Unit V	: 11, 16, 17

Reference Books:

1. Allen Downey,Jeffrey Elkner,Chris Meyers, *How to think like a computer scientists:learning with Python*, 2nd Edition,2015.
2. Mark Lutz, *Learning Python Powerful Object Oriented Programming*, O'reilly Media,5th Edition, 2018.
3. Sheetal Taneja & Naveen Kumar, *Python Programming a Modular approach- A Modular approach with Graphics, Database, Mobile and Web applications*, Pearson Limited,1st Edition,2017.
4. Ch Satyanarayana M Radhika Mani,B N Jagadesh, *Python programming*, Universities Press,2nd Edition, 2018.
5. Timothy A. Budd, *Exploring Python*, Tata MCGraw Hill Education Private Limited, 1st Edition, 2017.

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Title of the Paper	: Programming in Python Lab	
Semester	: V	Contact Hours: 6
Sub Code	: 21S5P	Credits : 3

List of Python Programs:**Simple Program**

1. Add Two Numbers
2. Swap Two Variables
3. Reverse The Digit
4. Biggest Three Numbers
5. Armstrong Number

Array

6. Create an integer type array
7. Create an array with a group of characters.
8. Retrieve the elements of an array using array index.
9. Effects of slicing operations on an array.
10. Various methods of arrays class.

Strings and Characters

11. Access each element of a string in forward and reverse orders using while loop.
12. Whether a sub string exists in main string or not.
13. Accept and display a group of numbers.
14. Type of Character entered by the user.
15. Find the number of words in a string

Functions

16. To understand how a function returns two values
17. How to assign a function to a variable
18. How to define a function inside another function

19. How a function can return another function

20. To access global variable inside a function and modify it.

Lists and Tuples

21. To create lists with different types of elements.

22. To create lists using range() function.

23. To sort the list elements using bubble sort technique.

24. To find the first occurrence of an element in a tuple.

25. To modify or replace an existing element of a tuple with a new element.

Dictionaries

26. To create a dictionary with employee details and reverse the values upon giving the keys.

27. To retrieve keys, values and key-value pairs from a dictionary.

28. To create a dictionary from keyboard and display the elements.

29. To show the usage of for loop to retrieve elements of dictionaries.

30. To accept a dictionary and display its elements.

Exceptions

31. To demonstrate runtime error.

32. To understand the effect of an exception.

33. To handle the ZeroDivisionError exception.

34. To handle IOError produced by open() function.

35. To handle multiple exceptions.

Files in Python

36. To append data to an existing file and then displaying the entire file.

37. To know whether a file exists or not.

38. To count number of lines, words and characters in a text file.

39. To copy an image file into another file.

40. To use 'with' to open a file and write some strings into the file.

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Title of the Paper	: Computer Graphics	
Semester	: V	Contact Hours: 5
Sub Code	: 21SE5A	Credits : 5

Objectives:

To imbibe the knowledge in graphics in order to enable them to draw desired figures

Unit – I

A Survey of Computer Graphics: Computer-Aided Design – Presentation Graphics – Computer Art- Entertainment- Education and Training – Visualization – Image Processing – Graphical User Interface. **Overview of Graphics Systems:** Video Display Devices- Raster-Scan Systems-Random-Scan Systems-Input Devices-Graphics software.

Unit – II

Output Primitives: Point and Lines. **Line-Drawing Algorithms:-DDA** Algorithm- Bresenham's Line algorithm – Circle-Generating Algorithm – Character Generation. **Attributes of Output Primitives:** Line Attributes – Curve Attributes – Area-Fill Attributes – Character Attributes – Bundled Attributes.

Unit - III

Two-Dimensional Geometric transformations: Basic Transformations - Matrix Representations – Composite Transformations. **Two-Dimensional Viewing:** Two Dimensional Viewing Functions – Clipping Operations – Point Clipping - Line Clipping- Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

Unit –IV

Graphical User Interfaces and Interactive Input Methods: Input of Graphical Data–**Three-Dimensional Concepts:** Three- Dimensional Display Methods – Three-

Dimensional Graphics Packages. **Three-Dimensional Object Representations:** Polygon Surfaces – Curved Lines and Surfaces – Quadric Surfaces – Super quadrics.

Unit - V

Color Models: Properties of Light – RGB Color Model – YIQ Color Models – CMY Color Model – HSB Color Model – Color Selection and Applications. **Computer Animation:** Design of Animation Sequences – General Computer Animation – Raster animations – Computer Animation languages – Key-Frame System.

Text Books:

Donald Hearn & Pauline Baker M, *Computer Graphics C Version*, Pearson Education, India, 2nd Edition, 2009.

Chapters:

Unit I : 1, 2.1, 2.2, 2.3, 2.5, 2.7

Unit II : 3.1, 3.2, 3.5, 3.14, 4.1 to 4.6

Unit III : 5.1 to 5.4, 6.4 to 6.11

Unit IV : 8.2, 9.1, 9.2, 10.1 to 10.4

Unit V : 15.1, 15.4 to 15.7, 15.10, 16.1 to 16.5

Reference Books:

1. Dr. Jeffrey & McConnell J, *Computer Graphics Theory into practice*, Jones & Bartlett publishers, Sudbury, 1st Edition, 2006.
2. Parslow R D & Prowse R W, *Computer Graphics: Techniques and Applications*, Richard Elliot Green, USA, 7th Edition, 2001.
3. Peter Shirley, *Fundamentals of Computer graphics*, A.k.Peters Ltd, Wellesley, United States, 2nd Edition, 2002.
4. Steven Harrington, *Computer Graphics: A programming Approach*, Tata McGraw-Hill, India 4th Edition, 2005.
5. William Newman M & Robert Sproull F, *Principles of Interactive Computer Graphics*, Tata McGraw-Hill Education, India, 4th Edition, 2000.

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Title of the Paper	: Internet of Things	
Semester	: V	Contact Hours: 5
Sub Code	: 21SE5B	Credits : 5

Objectives:

To acquire knowledge about electronic circuits and number systems used in computers.

Unit – I

Introduction to Internet of Things: Introduction – Physical Design of IoT – Logical Design of IoT – IoT Enabling Technologies.

Unit – II

Domain Specific IoTs : Introduction – Home Automation – Cities –Environment – Energy – Retail – Logistic – Agriculture – Industry – Health & Lifestyle.

Unit –III

IoT and M2M: Introduction – M2M – Difference between IoT and M2M – SDN and NFV for IoT. **IoT System Management with NETCONF-YANG:** Need for IoT Systems Management – NETCONF – YANG.

Unit –IV

IoT Platforms Design Methodology: Introduction – IoT Design Methodology – Motivation for Using Python.

Unit–V

IoT Physical Devices & Endpoints: What is an IoT Device – Exemplary Device: Raspberry Pi – Raspberry Pi Interfaces – Other IoT Devices.

Text Books:

1.VijayMadiseti, ArshdeepBahga, *Internet of Things: A Hands - On Approach*, Universities Press (INDIA) Private Limited, 1st Edition, 2014.

Chapters:

- Unit – I** : 1.1 to 1.4
Unit – II : 2.1 to 2.10
Unit – III : 3.1 to 3.4, 4.1, 4.4, 4.5
Unit – IV : 5.1, 5.2, 5.4
Unit – V : 7.1, 7.2, 7.5, 7.7

Reference Books:

1. Michael Miller, *The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World*, kindle version.
2. Francis daCosta, *Rethinking the Internet of Things: A Scalable Approach to Connecting Everything*, Apress Publications 2013, 1st Edition,
3. Jamil Y.Khan and Mehmet R.Yuce, *The Internet of Things, Systems and Applications*, Jenny Standard Publishing, 1st Edition 2019.
4. Adrian McEwen & Hakim Cassimally, *Designing, The Internet of Things*, Willey Publication, 1st Edition 2014.
5. Sean Smith, *The Internet of Risky Things:Trusting the Devices that Surround us*, O'Reilly Media, 1st Edition 2017.

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1. Implement Brenham's line drawing algorithm for all types of slope.
2. Creating a House Shape.
3. Basic graphics construction like line, circle, arc, ellipse and rectangle.
4. Draw Animation using increasing circles filled with different colors and patterns.
5. To make screen saver in that display different size circles filled with different colors and at random places.
6. To make a moving colored car using inbuilt functions.
7. A program of Translation, Rotation, and Scaling using Composite Transformation.
8. Creating a fish.
9. Illustrating the use of fill ellipse function.
10. Scaleapolygon.
11. Rotate a polygon.
12. Translate a polygon.
13. Rotate a polygon about an arbitrary point.
14. Animating an image.
15. Create a segment.
16. Delete a segment.
17. Scale a segment.
18. Rotate a segment.
19. Translate a segment.
20. Clip a line segment.

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Title of the Paper	: Data Communication and Networking	
Semester	: VI	Contact Hours: 5
Sub Code	: 21S61	Credits : 4

Objective:

To acquire knowledge about transmission media, LAN, ISDN, ATM, Transport Layer concept.

Unit –I:

Introduction – Data Communications – Networks – The Internet – Protocols and Standards. **Network Models:** The OSI Model –Layers in the OSI Model– TCP/IP Protocol Suite –Addressing.

Unit – II:

Transmission media – Guided Media – Unguided Media: Wireless .**Switching:** Circuit -Switched Network – Datagram Networks – Virtual Circuit Networks – Structure of a Switch.

Unit – III:

Error Detection and Correction: Introduction – Block Coding – Linear Block Codes – Cyclic Codes. **Data Link Control:** Framing – Flow and Error Control. **Network Layer: Logical Addressing:** IPv4 Addresses – IPv6 Addresses.

Unit – IV:

Network Layer: Delivery, Forwarding and Routing: Delivery – Forwarding – Unicast Routing Protocols-Multicast Routing Protocols. **Process-to-Process Delivery: UDP, TCP and SCTP:** Process-to-Process Delivery - User Datagram Protocol (UDP) – TCP – SCTP. **Domain Name System:** DNS in the Internet.

Unit – V:

Network Security: Security Services – Message Confidentiality – Message Integrity – Message Authentication – Digital Signature – Entity Authentication – **Security in the Internet : IPSec, SSL/TGS,PGP,VPN and Firewalls.** IPSecurity(IPSec) – Firewalls.

Text Book :

Behrouz Forouzan A, *Data Communications and Networking*, Tata MC Graw Hill, New Delhi, 4th Edition, 2006.

Chapters:

- Unit I : 1.1-1.4, 2.2-2.5
- Unit II : 7.1,7.2,8.1-8.4
- Unit III : 10.1-10.4, 11.1, 11.2, 19.1, 19.2
- Unit IV : 22.1 - 22.4, 23.1 – 23.4, 25.4
- Unit V : 31.1-31.6, 32.1, 32.4

Reference Books:

1. Comer, *Computer Networks & Internet with Internet Applications*, Pearson Education, Pearson Prentice Hall, New Delhi ,4th edition, 2000.
2. Halsai F, *Data communications, Computer Network and Open systems*, Addison Wesley Publications, New Delhi, 5th edition, 2004.
3. Simin Haykins S, *Communication System*, Tata McGraw- Hill, New Delhi, 2nd edition, 2003.
4. Tanenbam S, *Computer Network*, PHI Prentice Hall, New Delhi, 6th edition, 2005.
5. William Stallings, *Data and Computer Communication Network*, Tata McGraw Hill, New Delhi, 2nd edition, 2004.

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Title of the Paper	: Web Programming	
Semester	: VI	Contact Hours: 5
Sub Code	: 21S62	Credits : 4

Objective: To enable to create their own website in internet.**Unit-I:**

Introduction to HTML5: Part1: Introduction-Editing HTML5-First HTML5 Example-Headings-Linking-Images-Special Characters and Horizontal Rules-Lists-Tables-Forms-Internal Linking-Meta Element- **Introduction to HTML5:Part2:** New HTML5 Form Input Types.

Introduction to Cascading Style Sheets™(CSS): Part1: Introduction –Inline Styles-Embedded Style Sheets- Linking External Style Sheets-Backgrounds - **Introduction to Cascading Style Sheets™(CSS):Part 2:** Text Shadows- Rounded Corners – Color - Box Shadows - Linear Gradients -Radial Gradients - Multiple Background Images.

Unit-II:

JavaScript: Introduction to Scripting: Introduction-Your First Script: Displaying a Line of Text with JavaScript in a Web Page. **JavaScript: Function:** Function Definitions-JavaScript Global Functions. **JavaScript: Arrays:** Arrays-Declaring and Allocating Arrays-Passing Arrays to Functions-Multidimensional Arrays. **JavaScript: Objects:** Math Object- String Objects-Date Object-Boolean and Number Objects-Document Object.

Unit-III:

HTML5: Introduction to Canvas: Introduction-canvas Coordinate System-Rectangles-using paths to Draw Line-Drawing Arcs and Circles-Shadows-Quadratics Curves-Bezier Curves. **XML** –Introduction -XMLBasics-Structuring Data-XML

Namespaces-Document Type Definition (DTD)-W3C XML Vocabularies-Extensible
 Stylesheet Language and XSL Transformations-Document Object Model (DOM).

Unit – IV:

Introducing PHP: What is PHP –**Server-Side Scripting Overview:** Static
 HTML – Client-Side Technologies – Server-Side Scripting - **Getting Started with PHP:**
 Installing PHP - **Learning PHP Syntax and Variables:** PHP Syntax's Syntax Is C-Like
 – Comments – Variables – Types in PHP – The Simple Types – Doubles – Booleans –
 NULL – Strings – Output.

Unit-V:

Learning PHP Control Structures and Functions: Boolean Expressions –
 Branching – Looping – Using Functions – Function Documentation – Defining Your
 Own Functions – Functions and Variable Scope – Function Scope –**Learning PHP**
String Handling: Strings in PHP, String Functions.

Text Book:

1. Paul Deitel, Harvey Deitel, Abbey Deitel, *Internet & World Wide Web, How to Program*, Pearson Edition, 5th Edition .

Chapters:

Unit I : 2.1- 2.3, 2.5- 2.13, 3.2, 4.1- 4.3, 4.5- 4.8, 5.2,-5.7, 5.9

Unit II : 6.1,6.2,9.3,9.8,10.2,10.3,10.7,10.10,11.2-11.6,11.8

Unit III : 14.1 – 14.8, 15.1-15.9

2. Steve Suehring, Tim Converse, and Joyce Park , *PHP6 and MySQL* ,
 Wiley Publishers, 3rd Edition , 2014 .

Chapters:

Unit IV : 1, 2, 3, 4

Unit V : 5, 7

Reference Books:

1. Achuyt God bole S & Atul Kahate , *Web Technologies*, TMH Publications,
 New Delhi, 2nd Edition, 2005.
2. Akilandeswari J & Gopalan NP, *TCP/IP to Internet Application Architecture*,
PHI Publications, New Delhi, 2nd Edition, 2007.

3. Ivan Bayross, *Web Technologies part II*, BPB publications, NewDelhi, 2nd Edition, 2007.
4. W. Jason Gilmore, *Beginning PHP and MySQL: From Novice to Professional* Dreamtech Press ,4th Edition, 2010.
5. Vikram Vaswani , *PHP: A BEGINNER'S GUIDE*, Tata McGraw Hill Education, New Delhi, 5th Edition, 2007.

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14**(An Autonomous Institution – Affiliated to Madurai Kamaraj University)****Re-accredited (3rd Cycle) with Grade A+ & CGPA 3.51 by NAAC****CBCS****DEPARTMENT OF COMPUTER SCIENCE- UG****(w.e.f. 2021 – 2022 onwards)****Title of the Paper : Core-Web Programming Lab****Semester : VI****Sub Code : 21S6P****Contact Hours : 6****Credits : 3****List of Programs:****HTML:**

1. HTML Documents using Basic tags.
2. Menu using Ordered and unordered list.
3. Web page using Table tags and their attributes.
4. Personal profile web page using form.
5. College application form using form and frames.
6. Mark sheet using frame and form.
7. On-line application forms for any one application.
8. Web application that functions as a simple hand calculator.
9. Web page using in-line style sheets.
10. Web page using external style sheets.

CSS:

11. CSS embedded style settings.
12. CSS colors and positioning elements.
13. Document using CSS.

JAVA SCRIPT:

11. Arithmetic Operations
12. Color Palette
13. Preparing class average
14. Window Objects
15. Array objects
16. Usage of cookies

XML:

17. Text string into an XML DOM object

18. XML Schema

19. File Creation-Elements

20. Opacity

PHP:

21. Objects

22. Arrays

23. Functions

24. Session and Cookies.

25. Reading and Writing the files using PHP.

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(Re-accredited (3rd Cycle) with Grade A⁺ and CGPA 3.51 by NAAC)**CBCS****DEPARTMENT OF COMPUTER SCIENCE-UG**

(w.e.f. 2021 – 2022 Batch onwards)

Title of the Paper	: Data Mining and Big Data Analysis	
Semester	: VI	Contact Hours: 5
Sub Code	: 21SE6A	Credits : 5

Objectives:

To acquire knowledge about retrieval of data from voluminous data in a desired manner.

Unit - I

Data warehousing: introduction- data warehouse architecture-dimensional modeling - OLAP operations-ROLAP- data marting - ETL- data cleaning ETL vs. ELT.

Data mining: Introduction — KDD vs. Data mining – DBMS vs. DM- DM techniques – Issues and Challenges in Data Mining – Data mining application areas-other related areas.

Unit - II

Classification Technique: Introduction – what is Decision Trees? - Tree Construction Principle - Decision Tree construction with presorting– CLOUDS-pruning technique. **Clustering techniques:** Clustering paradigms – K Medoid algorithms – CLARA – Hierarchical Clustering - DBSCAN – BIRCH – CURE. **Decision Trees:** Decision Tree Construction Algorithms – CART – ID3.

Unit - III

Association Rules: what is an association rule?- methods to discover association rules - A priori algorithm – Partition algorithm - Dynamic Item set Counting algorithm - FP-tree growth algorithm-Eclat and dEclat – border algorithm - generalized association rule – Association Rules with Item Constraints. **Other techniques:** Introduction- what is neural network? - Learning in NN – Unsupervised Learning – support vector machine.

Unit - IV

Genetic algorithm: Introduction-Basic steps of GA-selection-crossover-mutation-data mining using GA. **Web mining:** Introduction – Web content mining – Web structure mining – Web usage mining. **Temporal and Spatial mining:** Introduction-what is temporal data mining? - temporal association rule - The GSP algorithm – SPADE-SPIRIT-event prediction problem-time series analysis-spatial mining- Spatial mining tasks.

Unit - V

Introduction to big data: characteristics of data-evolution of big data-definition of big data-challenge with big data-what is big data? - What is changing in the realms of big data? **Introduction to hadoop:** hadoop overview-hadoop distributed file system-processing data with hadoop-interacting with hadoop ecosystem. **Introduction to MAPREDUCE programming:** Introduction –mapper-reducer-combiner-partitioner-searching-sorting-compression.

Text Books:

1. Arun k Pujari, *Data Mining Techniques*, Universities Press (India) Pvt Ltd, Hyderabad ,4thEdition, 2017.

Chapters :

- Unit I** : 2.1-2.3, 2.10-22.11, 2.22-2.25, 3.1-3.7, 3.9-3.10.
Unit II : 6.1-6.3, 6.13, 6.16, 6.18, 5.1, 5.2, 5.4, 5.5, 5.7-5.10, 6.7 -6.9.
Unit III : 4.1-4.5, 4.7-4.9, 4.13-4.15, 9.1-9.4, 9.6.
Unit IV : 8.1-8.6, 11.1-11.5, 12.1-12.3, 12.5-12.7, 12.10-12.13
2. Seema Acharya, Subhashini Chellappan, *Big data and analytics*, Wiley India Pvt. Ltd, New Delhi,1st Edition,2015.

Chapters :

- Unit V** : 2.1-2.5, 2.13, 5.7, 5.10, 5.11, 5.13, 8.1-8.8

Reference Books:

1. David J. Hand, Heikki Mannila, Padhraic Smyth, — *Principles of Data Mining*, Massachusetts Institute of Technology, 2001.
2. Gajendra Sharma, *Data Mining & Data Warehouse OLAP*, TMH publications,

New Delhi, 2nd Edition, 2006.

3. Jay Liebowitz, “*Big Data and Business Analytics*” Au erbach Publications, CRC press, 2013
4. Jiawei Han & Micheline kamber , *Data mining Concepts & Techniques*, Morgon, Kaufmann Publishers, San Francisco,USA,2nd Edition,2010.
5. Michael Minelli, Michele Chamboss, Ambiga Dhiraj , "*Big Data, Big Analytics*” John Wiley , 2014.

E.M.G.YADAVA WOMEN'S COLLEGE, MADURAI-14.**(An Autonomous Institution – Affiliated to Madurai Kamaraj University)****(Re-accredited (3rd Cycle) with Grade A⁺ and CGPA 3.51 by NAAC)****CBCS****DEPARTMENT OF COMPUTER SCIENCE-UG****(w.e.f. 2021 – 2022 Batch onwards)**

Title of the Paper	: Artificial Intelligence	
Semester	: VI	Contact Hours: 5
Sub Code	: 21SE6B	Credits : 5

Objectives:

To impart knowledge on the various search techniques and the basic functioning of AI.

Unit –I:

Artificial Intelligence: The AI Problems – The Underlying Assumption – AI Technique – The level of the Model – Criteria for Success. Problems, Problem Spaces and Search: Defining the Problem as a State Space Search – Production Systems – Problems Characteristics – Production System Characteristics – Issues in the Design of Search Programs – Additional Problems

Unit – II:

Generate-and-Test – Hill Climbing – Best-First Search – Problem Reduction – Constraint Satisfaction – Means-Ends Analysis.

Unit – III:

Representing Knowledge using Rules: Procedural versus Declarative knowledge – Logic Programming – Forward versus Backward Reasoning –Representation issues: Representations and Mappings – Approaches to Knowledge Representation – Issues in Knowledge representation - The Frame Problem.

Unit – IV:

Using Predicate Logic: Representing Simple Facts in Logic – Representing instance and is a Relationships – Computable Functions and Predicates – Resolution – Natural Deduction.

Unit – V:

Game Playing: Overview – The Minimax Search Procedure. Natural Language Processing: Introduction. Connectionist Models: Introduction - Hopfield Networks – Learning in Neural Networks: Perceptrons.

Text Books:

Elaine Rich, Kevin Knight and Shivashankar B Nair, *Artificial Intelligence*, 3rd Edition, Tata McGraw-Hill publications, 2014 Reprint.

Chapters:

Unit I : 1-3

Unit II : 5,6

Unit III : 12.1, 12.2

Unit IV : 15

Unit V : 18.1, 18.2, 18.2.1

Reference Books:

1. Elaine Rich, *Artificial Intelligence*, Tata McGraw-Hill publications, 2008.
2. V.S.Janakiraman K. Sarukesi, P.Gopalakrishnan, *Foundations of Artificial I* Tata McGraw-Hill publications, 2017.
3. Stuart Russell and Peter Norvig, —*Artificial Intelligence: A Modern Approach*, Pearson Education, 2018.
4. David Pool, Alan Mackworth, —*Artificial Intelligence: Foundations of Computational agents*, Cambridge University, 2015.
5. Nils J. Nilsson, —*The Quest for Artificial Intelligence: A History of Ideas and achievements*, Cambridge University Press, 2010. Intelligence and Expert System Infinity Press, 1st Edition, 2016.

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Title of the Paper : Project
Semester : VI
Sub Code : 21SEPR6

Contact Hours: 5
Credits : 5

The Students are allowed to develop their project within our campus with the help of the internal staff members.

In the first review the students submit their title of the project and synopsis, and also submit the determination of the modules.

In the second review 50% of the project is completed and demonstrate the project.

In the final review the students prepare the powerpoint presentation. The oral is must for the completion of the project.

This report will be evaluated 80 marks for external examiner and 20 mark for internal examiner.

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(w.e.f. 2021 – 2022 Batch onwards)

Title of the Paper : Linux Lab
Semester : VI
Sub Code : 21SES6P

Contact Hours: 2
Credits : 2

LINUX COMMANDS

1. Basic Linux Commands

SIMPLE FUNCTIONS

2. Employee payroll

SHELL PROGRAMS USING BASIC TESTS

3. Display file type

SHELL PROGRAMS USING LOOPS

4. Simple Interest
5. Greatest among three numbers
6. Factorial of a given number
7. Fibonacci Series
8. Arithmetic Operation
9. Armstrong Number
10. Prime Number
11. Multiplication Table
12. Access file using switch case
13. Bubble sort
14. Leap Year

SHELL PROGRAMS USING PATTERNS

15. Display the pattern
16. Generate the combination of 1, 2, 3

SHELL PROGRAMS USING EXPANSIONS

17. Calculate Area and Parameters

18. Sum of five digit numbers

SHELL PROGRAMS USING SUBSTITUTIONS

19. Palindrome

20. Swapping