

ANNEXURE 18D04

V.V. VANNIAPERUMAL COLLEGE FOR WOMEN



(Belonging to Virudhunagar Hindu Nadars)

An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai

Re-accredited with 'A' Grade (3rd Cycle) by NAAC

VIRUDHUNAGAR - 626 001

**CHOICE BASED CREDIT SYSTEM
REGULATIONS AND SYLLABUS
(with effect from Academic Year 2018 - 2019)**

V.V. Vanniaperumal College for Women, Virudhunagar, established in 1962, offers 19 UG Programmes, 14 PG Programmes, 6 M.Phil. Programmes and 3 Ph.D. Programmes. All these programmes, except Ph.D. Programmes, have been framed as per the guidelines given by UGC under Choice Based Credit System (CBCS).

The Departments of Commerce, English and History upgraded as Research Centres offer Ph.D. Programmes as per the norms and regulations of Madurai Kamaraj University, Madurai and do not come under the purview of CBCS.

CHOICE BASED CREDIT SYSTEM (CBCS)

The CBCS provides an opportunity for the students to choose courses from the prescribed Courses. The CBCS is followed as per the guidelines formulated by the UGC. The students' performance will be evaluated based on the uniform grading system. Computation of the Cumulative Grade Point Average (CGPA) is made to ensure uniformity in evaluation system.

List of Programmes in which CBCS/Elective Course System is implemented

UG PROGRAMMES

- | | | |
|--------------------------|---|--|
| Arts & Humanities | : | History (E.M. & T.M.), English and Tamil |
| Physical & Life Sciences | : | Mathematics, Zoology, Chemistry, Physics, Biochemistry, Home Science - Nutrition and Dietetics, Costume Design and Fashion, Microbiology, Biotechnology, Computer Science, Information Technology and Computer Applications. |
| Commerce & Management | : | Commerce, Commerce with Computer Applications, Commerce with Professional Accounting Business Administration. |

PG PROGRAMMES

Arts & Humanities	:	History, English, Tamil
Physical & Life Sciences	:	Mathematics, Physics, Biochemistry, Food Processing & Quality Control, Chemistry, Zoology, Computer Science, Information Technology, Computer Applications (MCA*)
Commerce & Management	:	Commerce, Business Administration (MBA*) * AICTE approved Programmes

PRE-DOCTORAL PROGRAMMES (M.Phil.)

Arts & Humanities	:	History, English, Tamil
Physical & Life Sciences	:	Mathematics, Biochemistry
Commerce & Management	:	Commerce

OUTLINE OF CHOICE BASED CREDIT SYSTEM (PG)

1. Core Courses
2. Discipline Specific Elective Courses (DSEC)
3. Non Major Elective Course (NMEC)

List of Non Major Elective Courses (NMEC) Offered**PG PROGRAMMES**

Name of the Course	Semester	Department
History of Freedom Movement in India (A.D. 1885 – 1947)	III	History
English for Job Aspirants	III	English
தமிழும் பிறகுறைகளும்	III	Tamil
Taxation Concepts and Assessment	III	Commerce
Entrepreneurship	III	Business Administration
Mathematics For Competitive Examinations	III	Mathematics
Digital Electronics	III	Physics
Industrial Chemistry	III	Chemistry
Apiculture	III	Zoology
Nutrition and Health	III	Home Science – Nutrition and Dietetics
Clinical Biochemistry (Basics)	III	Biochemistry
Web Programming	III	Computer Science
Fundamentals of Information Technology	III	Information Technology
Principles of Information Technology	III	Computer Applications

ELIGIBILITY FOR ADMISSION

The Candidate should have studied B.Sc. (Information Technology), B.Sc. (Computer Science) and BCA courses of Madurai Kamaraj University or any other University recognized by the syndicate of Madurai Kamaraj University as equivalent thereto.

Candidate should have passed the Degree with a minimum of 55% marks in Part III subjects. In case of SC/ST candidates, they should have passed the degree with a minimum of 50% marks in Part-III subjects.

DURATION OF THE PROGRAMME

The candidates shall undergo the prescribed course of study for a period of two academic years (Four semesters)

MEDIUM OF INSTRUCTION

English

EVALUATION SCHEME

Components	Internal Assessment Marks	External Examination Marks	Total Marks
Theory	40	60	100
Practical / Project	40	60	100

Core Courses, Discipline Specific Elective Courses and Non Major Elective Course

INTERNAL ASSESSMENT**Distribution of Marks****Theory**

Mode of Evaluation		Marks
Periodic Test	:	25
Seminar	:	10
Assignment	:	5
Total	:	40

Three Periodic Tests - Average of the best two will be considered

Two Assignments - Better of the two will be considered

Practical

Mode of Evaluation		Marks
Periodic Test	:	30
Record	:	5
Performance	:	5
Total	:	40

Three Periodic Tests - Average of the best two will be considered

Question Pattern for Periodic Tests**Duration: 2 Hours**

Section	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Max. Marks
A Q.No.(1 - 5)	Multiple Choice	5	5	1	5
B Q.No.(6 - 10)	Internal Choice Either or Type	5	5	5	25
C Q.No.(11 - 13)	Open Choice	3	2	10	20
Total					50

EXTERNAL EXAMINATION**Question Pattern****Duration: 3 Hours**

Section	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each question	Total Marks
A Q.No.(1 - 5)	Multiple Choice (Atleast one question from each unit)	5	5	1	5
B Q.No.(6 - 10)	Internal Choice Either Or Type	5	5	5	25
C Q.No.(11-15)	Open Choice (one from each unit)	5	3	10	30
Total					60

ON LINE ASSESSMENT (SET/NET Preparation – General Paper)

Online Test with Multiple Choice Question Pattern for 100 marks will be conducted in III Semester.

ELIGIBILITY FOR THE DEGREE

1. The candidate will not be eligible for degree without completing the prescribed Courses of study, lab work etc., and a minimum of 50% Pass marks in all the Courses.
2. Attendance, progress and conduct certification from the Head of the Institution will be required for the students to write the examination.
 - No Pass minimum for Internal Assessment.
 - Pass minimum for External Examination is 27 marks out of 60 for Core Courses, Discipline Specific Elective Courses and Non Major Elective Courses.

M.SC. INFORMATION TECHNOLOGY

Program Code - 7021

PROGRAMME OUTCOMES

- Empower self-disciplined, self-monitored and self-esteemed thinking.
- Practice intellectual conception of information, analytical observation, intelligent perception, systematic evaluation and active execution.
- Enhance virtual and non-virtual communication, technical and technological bondage with the society.
- Spread scientific temperament to the Nation, while dealing with the various issues of the society.
- Volunteer in the civic life with values, morality, responsibility and justice.
- Preserve nature in its original form amidst all the natural and artificial calamities.
- Develop the self-sustained and infinite learning to meet the challenges of the contemporary socio-technological scenario.

PROGRAMME SPECIFIC OUTCOMES

- ✚ Analyze and recommend the appropriate IT infrastructure required for the implementation of a project
- ✚ Design, develop and test software systems for world-wide network of computers to provide solutions to real world problems.
- ✚ Design and develop software projects given their specifications and within performance and cost constraints.
- ✚ Extend the state of art in some of the areas of interest and create new knowledge.



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MASTER OF INFORMATION TECHNOLOGY Programme Structure - Allotment of Hours and Credits For those who join in the Academic Year 2018-2019

Components	Semester				Total Number of Hours/ (Credits)
	I	II	III	IV	
Core Course	5(5)	5(5)	6(5)	-	16(15)
Core Course	5(5)	5(5)	6(5)	-	16(15)
Core Course	5(5)	5(5)	-	-	10(10)
Core Practical	5(3)	5(3)	6(3)	6(3)	22(12)
Core Practical	5(3)	5(3)	6(3)	-	16(9)
Discipline Specific Elective Course	5(5)	5(5)	-	6(5)	16(15)
Non Major Elective Course	-	-	5(4)	-	5(4)
Online Assessment (SET/NET Preparation – General Paper)	-	-	1(1)	-	1(1)
Project	-	-	-	18(9)	18(9)
Total	30(26)	30(26)	30(21)	30(17)	120 (90)

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M.Sc. INFORMATION TECHNOLOGY (SEMESTER)
Programme Code - 7021
PROGRAMME CONTENT
SEMESTER I

S.No.	Components	Title of the Course	Course Code	Hours per Week	Credits	Exam. Hours	Marks		
							Int.	Ext.	Total
1	Core Course-1	Data Structures and Algorithms	18PITC11	5	5	3	40	60	100
2	Core Course-2	Advanced Java Programming	18PITC12	5	5	3	40	60	100
3	Core Course-3	Cryptography and Network Security	18PITC13	5	5	3	40	60	100
4	Core Practical-1	Data Structures using C Pointers Lab	18PITC11P	5	3	3	40	60	100
5	Core Practical-2	Advanced Java Programming Lab	18PITC12P	5	3	3	40	60	100
6	DSEC-1	Distributed Operating Systems/ Cloud Computing/ TCP/IP Protocols	18PITE11/ 18PITE12/ 18PITE13	5	5	3	40	60	100
Total				30	26				600

DSEC - Discipline Specific Elective Course

M.Sc. INFORMATION TECHNOLOGY - SEMESTER II

S.No.	Components	Title of the Course	Course Code	Hours per Week	Credits	Exam. Hours	Marks		
							Int.	Ext.	Total
1	Core Course-4	Distributed Database Systems	18PITC21	5	5	3	40	60	100
2	Core Course-5	Artificial Intelligence	18PITC22N	5	5	3	40	60	100
3	Core Course-6	Mobile Applications Development	18PITC23	5	5	3	40	60	100
4	Core Practical-3	Mobile Applications Lab	18PITC21P	5	3	3	40	60	100
5	Core Practical-4	.Net Lab	18PITC22P	5	3	3	40	60	100
6	DSEC-2	Internet Of Things/ Data Mining/ Advanced Software Engineering	18PITE21/ 18PITE22/ 18PITE23	5	5	3	40	60	100
Total				30	26				600

DSEC- Discipline Specific Elective Course

M.Sc. INFORMATION TECHNOLOGY - SEMESTER III

S.No.	Components	Title of the Course	Course Code	Hours per Week	Credits	Exam. Hours	Marks		
							Int.	Ext.	Total
1	Core Course-7	Open Source Technology	18PITC31	6	5	3	40	60	100
2	Core Course-8	Digital Image Processing	18PITC32	6	5	3	40	60	100
3	Core Practical-5	PHP and MYSQL Lab	18PITC31P	6	3	3	40	60	100
4	Core Practical-6	Image Processing Lab	18PITC32P	6	3	3	40	60	100
5	NMEC	Fundamentals of Information Technology	18PITN31	5	4	3	40	60	100
6	Online Course	SET/NET Preparation- General	18POLA31	1	1	-	100	-	100
Total				30	21				600

DSEC: Discipline Specific Elective Course

NMEC : Non Major Elective Course

M.Sc. INFORMATION TECHNOLOGY - SEMESTER IV

S.No.	Components	Title of the Course	Course Code	Hours per Week	Credits	Exam. Hours	Marks		
							Int.	Ext.	Total
1	Core Practical-7	R Programming Lab	18PITE41	6	3	3	40	60	100
2	Project-1	Project Work and Viva Voce	18PITC41PR	18	9	3	40	60	100
3	DSEC-4	Big Data Analytics/ Text Mining/ Wireless Communication and Networks	18PITE41/ 18PITE42/ 18PITE43	6	5	3	40	60	100
Total				30	17				300

DSEC: Discipline Specific Elective Course



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M.Sc. INFORMATION TECHNOLOGY (2018 -19 onwards)

Semester III	OPEN SOURCE TECHNOLOGY	Hours/Week: 6	
Core Course-7		Credits: 5	
Course Code 18PITC31		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, the students will be able to

- become familiar with basic building blocks, Flow Control and Functions in PHP.
- know about PHP Arrays, Objects and Date & Time Functions.
- practice Form Validation using Advanced Validation Methods.
- gain knowledge on working in files and directories.
- earn skill set to develop advanced web applications those are efficient and secure.
- learn to use both PHP and MySQL to Manage Databases.

UNIT I

The 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:** Function – Calling Function – Defining a Function – Returning Values from User Defined Functions – Variable Scope – Saving State between Function Calls with the Static Statement – More about Arguments – Testing for the Existence of Functions. (15 Hours)

UNIT II

Working with Arrays: Arrays – Creating Arrays – Array Related Constructs and Functions. **Working With Objects:** Creating an Object – Object Inheritance. **Working with Strings, Dates, and Time:** Formatting Strings with PHP – Investigating Strings in PHP –

Manipulating Strings with PHP – Using Date and Time Functions in PHP – Other String, Date and Time Functions. (20 Hours)

UNIT III

Working with Forms: Creating A Simple Input Form – 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 – Deleting a Cookie with PHP – Session Function Overview – Starting a Session – Working with Session Variables – Destroying Sessions and Unsetting Variables – Using Sessions in an Environment with Registered Users (15 Hours)

UNIT IV

Working with Files and Directories: Including Files – 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 – Opening Pipes to and From Processes Using popen() – Running Commands with exec() – Running Commands with system() or passthru(). **Understanding the Database Design Process:** The Importance of Good Database Design – Types of Table Relationship – Understanding Normalization – Following the Design Process. (20 Hours)

UNIT V

Learning Basic SQL Commands: Learning the MYSQL Data Types – Learning the Table Creation Syntax – Using the ,INSERT Command – Using the SELECT Command – Using where in your Queries – Selecting from Multiple Tables – Using the UPDATE Command to Modify Records – Using the REPLACE Command – Using the DELETE Command – Frequently Used String Functions in MYSQL – Using Date and Time Functions in MYSQL. **Interacting With MYSQL Using PHP:** MYSQL or MYSQL: iFunctions – Connecting to MYSQL with PHP – Working with MYSQL Data. (20 Hours)

TEXTBOOK

Julie C. Meloni, Sam's *Teach Yourself PHP, MySQL and Apache All in One*, Pearson Educations, 5th Edition.

REFERENCE BOOKS

1. Steve Suehring, Tim Converse and Joyce Park, (2003). *PHP 6 and MySQL*, Wiley India Private Ltd.
2. Luke Welling, Laura Thomson, *PHP MySQL Web Development*, Pearson Educations, 5th Edition.
3. Vikram Vaswani, *How to Do everything with PHP and MySQL*, McGraw-Hill/Osborne.



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Semester III	DIGITAL IMAGE PROCESSING	Hours/Week: 6	
Core Course-8		Credits: 5	
Course Code 18PITC32		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, the students will be able to

- study the image fundamentals and mathematical transforms necessary for image processing.
- study the image enhancement techniques.
- study image restoration procedures.
- know about image compression techniques
- analyze images in the frequency domain using various transforms.
- know about image segmentation and representation techniques.

UNIT I

Introduction: Fundamental Steps in Digital Image Processing – Components of an Image Processing System. **Digital Image Fundamentals:** Elements of Visual Perception – Structure of the Human Eye – Image Sampling and Quantization – Basic Concepts in Sampling and Quantization – Representing Digital Images – Basic Relationships between Pixels – An Introduction to the Mathematical Tools used in Digital Image Processing – Arrays versus Matrix Operations – Linear versus Non-Linear Operations – Arithmetic Operations – Set and Logical Operations – Spatial Operations. (20 Hours)

UNIT II

Intensity Transformations and Spatial Filtering: Background –Basic Intensity Transformation Functions – Image Negatives – Log Transformations – Histogram Processing –

Histogram Equalization – Histogram Matching – Fundamental of Spatial Filtering – The Mechanics of Spatial Filtering – Spatial Correlation and Convolution – Vector Representation of Linear Filtering – Generating Spatial Filter Masks – Smoothing Spatial Filters. **Filtering in the Frequency Domain:** Preliminary Concepts – Sampling and the Fourier Transform of Sampled Function – Sampling – The Fourier Transform of Sampled Functions – The Discrete Fourier Transform (DFT) of One Variable – Image Smoothing Using Frequency Domain Filters – Ideal Lowpass Filters – Butterworth Lowpass Filters – Gaussian Lowpass Filters. (20 Hours)

UNIT III

Image Restoration and Reconstruction: A Model of the Image Degradation/Restoration Process – Noise Models – Restoration in the Presence of Noise Only – Spatial Filtering – Periodic Noise Reduction by Frequency Domain Filtering – Inverse Filtering – Minimum Mean Square Error (wiener) Filtering – Constrained Least Square Filtering – Geometric Mean Filter. (20 Hours)

UNIT IV

Color Image Processing: Color Fundamentals – Color Models. **Image Segmentation:** Fundamentals – Point, Line, and Edge Detection – Background – Detection of Isolated Points – Line Detection – Edge Models – Basic Edge Detection. (15 Hours)

UNIT V

Morphological Image Processing: Erosion and Dilation – Erosion – Dilation – Duality – Opening and Closing – The Hit-or-Miss Transformation – Some Basic Morphological Algorithms – Boundary Extraction – Hole Filling – Extraction of Connected Components – Convex Hull – Thinning – Thickening – Skeletons. **Image Segmentation:** Thresholding – Foundation – Basic Global Thresholding – Optimum Global Thresholding using Otsu's Method – Using Image Smoothing to improve Global Thresholding – Using Edges to Improve Global Thresholding – Region-Based Segmentation. (15 Hours)

TEXT BOOK

Rafeal C. Gonzalez, Richard E.Woods, (2008). *Digital Image Processing*, Pearson Education, 3rd edition.

REFERENCE BOOKS

1. Anil K.Jain, (2012). *Fundamentals of Digital Image Processing*, PHI Learning Private Ltd.,.
2. Madhuri Joshi, (2013). *Digital Image Processing An Algorithmic Approach*, PHI Learning Private Ltd.,.
3. Annadurai, S. & Shanmugalakshmi, R. *Fundamentals of Digital Image Processing*, Pearson Education.



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M.Sc. INFORMATION TECHNOLOGY (2018 -19 onwards)

Semester III	PHP AND MYSQL LAB	Hours/Week: 6	
Core Practical-5		Credits: 3	
Course Code 18PITC31P		Internal 40	External 60

1. Write a program to display three marks of five students in a table.
2. Write a program to design a client page to get two numbers and add, subtract, multiply and divide then in server and display.
3. Write a program to design a page to get age of a person and display he is eligible for vote or not in server page.
4. Write a program to design a client page to get five marks of a student and display total, Average, Grade in server page.
5. Design a web page to perform different arithmetic operations using PHP.
6. Design a web page to perform different Array Functions using PHP.
7. Design a web page to perform EB-Bill using PHP.
8. Design a web page to perform String, Mathematical and Date Functions using PHP.
9. Design a web page to perform PHP Tutorial.
10. Design a web page to perform Exception Handling in PHP.
11. Design a web page to perform the Student Mark list using PHP & MYSQL.
12. Design a web page to perform Employee Pay Bill Calculation using PHP & MYSQL.
13. Registration Form.
14. File uploading.
15. Write a program to Copy one file from another file.
16. Multiples of 7 using REQUIRE method.
17. SELECT commands in MYSQL.

18. DML/TCL commands in MYSQL.
19. Retrieve table from PHP.
20. Retrieve and process Employee Details from PHP.
21. Retrieve the values corresponding to the Given Values.
22. Online Application Form and Validation.
23. Inventory shop.



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M.Sc. INFORMATION TECHNOLOGY (2018 -19 onwards)

Semester III	IMAGE PROCESSING LAB	Hours/Week: 6	
Core Practical-6		Credits: 3	
Course Code 18PITC32P		Internal 40	External 60

MATLAB Program

1. Write a MATLAB Program to align or register images.
2. Write a MATLAB Program to perform following operations on an image.
 - i. Addition
 - ii. Subtraction
 - iii. Array Multiplication
 - iv. Matrix Multiplication
 - v. Array right Division
 - vi. Array left Division
 - vii. Matrix right Division
 - viii. Matrix left Division
3. Write a MATLAB Program to create a Gallery of Transformed Images.
4. Write a MATLAB Program to Pad and Shear an Image simultaneously.
5. Write a MATLAB Program to perform following conversion to an image.
 - i. Binary / BW Image
 - ii. Binary / BW image with custom threshold value
 - iii. Grayscale
6. Write a MATLAB Program to reduce an image to the following.
 - i. Indexed color
 - ii. Indexed color without dithering
 - iii. Indexed color using custom map.

7. Write a MATLAB program to perform Butterworth Low pass and High Pass Filter on an image.
8. Write a MATLAB program to deblur an image using Blind Deconvolution algorithm.
9. Write a MATLAB program to deblur an image using Lucy-Richardson algorithm.
10. Write a MATLAB program to deblur an image using Wiener filter.
11. Write a MATLAB Program to enhance the contrast of the following type of image.
 - a) Grayscale
 - b) Color.
12. Write a MATLAB Program to reconstruct a Phantom Image using projections.
13. Write a MATLAB Program to Detect a Cell Using Image Segmentation
14. Write a MATLAB Program to visualize Marker-Controlled Watershed Segmentation.
15. Write a MATLAB Program to perform texture segmentation using Texture Filters.
16. Write a MATLAB Program to perform Color-Based Segmentation Using the L*a*b* Color Space.
17. Write a MATLAB Program to perform Color-Based Segmentation Using K-Means Clustering.
18. Write a MATLAB Program to Detect and Measure Circular Objects in an Image.
19. Write a MATLAB Program to Find the Length of a Pendulum in Motion.
20. Write a MATLAB Program to Identify the Round Objects in an image.



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Semester III	FUNDAMENTALS OF INFORMATION TECHNOLOGY	Hours/Week: 5	
NMEC		Credits: 4	
Course Code 18PITN31		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, the students will be able to

- study about Basics of Computers.
- get knowledge about Input / Output devices.
- learn about the basics of computer networks.
- understand the intranet concepts.
- know about e-commerce
- implementation of computers in business and industries

UNIT I

Five Generation of Modern Computers: Introduction–First Generation Computers – Second Generation Computers– Third Generation Computers -Fourth Generation Computers - Fifth Generation Computers. **Classifications of Digital Computer Systems:** Introduction – Microcomputers – Minicomputers – Mainframes – Supercomputers – Network Computers – **Anatomy of Digital Computer:** Introduction – Parts of a Computer.

Central Processing Unit (CPU) and Memory: Introduction – Central Processing Unit (CPU) – Memory – Memory Organization – Random Access Memory (RAM) – Read Only Memory(ROM) – Registers. (15 Hours)

UNIT II

Input Devices: Introduction – Keyboard – Mouse – Track Ball – Game Controllers – Scanners – Barcode Reader – Card Reader – Digitizer – Voice Recognition – Webcams-

Digital cameras – Video Cameras (Camcorders) – Optical Character Recognition (OCR) – Optical Mark Recognition (OMR) – Intelligent Character Recognition (ICR) – Magnetic Ink Character Recognition (MICR). **Output Devices:** Introduction – Monitor – Printer – Plotter – Multimedia Projector – Speech Synthesizers – Sound Cards and Speakers – Dumb, Smart, and Intelligent Terminals. (10 Hours)

UNIT III

Computer Networks: Introduction – Overview of a Network – Communication Processors – Communication Media – Telecommunications Software - Types of Networks – Network Topology – Network Protocols – Network Architecture. **Internet & World Wide Web:** Introduction –Special about the Internet – Internet Access- Internet Basics – Internet Protocols – Internet Addressing - World Wide Web(WWW) –Web Pages and HTML – Web Browsers . (20 Hours)

UNIT IV

Introduction To Intranets: Introduction – Characteristics of Intranet – Advantages of Intranets – Business Benefits of Intranets –Drawbacks of Intranets – need of Intranet for an organization – Intranet vs. Groupware – Intranet vs. E-mail – Intranet vs. Client –Server Systems – Extranet – Intranets, Extranets and E-commerce. **Introduction to E-Commerce and E-Business:** Introduction – Technological Advancements – E-Commerce Defined – E-Commerce – E-Commerce and E-Business. (15 Hours)

UNIT V

Computers in Business and Industries: Introduction – Office Automation – People – Ergonomics – Office Automation Technologies – Office Automation Systems – Transaction Processing – Centralized Transaction Processing – Client /Server Systems – Distributed Computing – Tools for Management Control – **Computers at Home:** Introduction Household Business – Business Applications at Home – Smart Cards – Communication, Education and Information – Home Entertainment Redefined – Creativity and Leisure. **Computer in Education and Training:** Introduction – Computer in Schools – Distance Learning: Virtual Schools. (15 Hours)

TEXT BOOK

Alexis Leon and Mathews Leon, *Fundamentals of Information Technology*, Vikas Publishing House Private Limited, 2nd Edition.

REFERENCE BOOKS

1. Alexis Leon & Mathews Leon, (2009). *Principles of Information Technology*, New Delhi: Vikas Publishing House.
2. Rajaraman, V. *Introduction of Information Technology*, PHI Learning Private Limited, 2nd Edition.



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Semester IV	R PROGRAMMING LAB	Hours/Week: 6	
Core Practical-7		Credits: 3	
Course Code 18PITE41		Internal 40	External 60

- Write the basic R commands for the given vector:-
 - $x \leftarrow c(4,2,6)$ (ii) $y \leftarrow c(1,0,-1)$
- Write the R commands for the following results:-
 - (i) 7 8 9 10 11
 - (ii) Sequence from 2 to 9
 - (iii) Sequence from 3 to 30 of length 10
 - (iv) 6 4 2 0 -2 -4
- Write the command for the following results:-
 - (i) 2 2 2 2
 - (ii) 1 2 1 2 1 2 1 2
 - (iii) 1 1 1 1 2 2 2 2
 - (iv) 1 2 3 4 1 2 3 4
 - (v) 1 1 1 2 2 2 3 3 3 4 4 4
 - (vi) 6,6,6,6,6,6
 - (vii) 5,8,5,8,5,8,5,8
 - (viii) 5,5,5,5,8,8,8,8
- Create a given matrix using R commands
 - | | | |
|-----|---|---|
| a. | x | y |
| [1] | 5 | 6 |
| [2] | 7 | 3 |
| [3] | 9 | 4 |

 - Find the dimension of the created matrix
 - Use the R commands to bind the row of created matrix
 - Use the R commands to bind the column of created matrix
- Create a matrix using given vector $z \leftarrow c(5,7,9,6,3,4)$ where the number of row should be 3.

6. Create a matrix using given vector $z \leftarrow c(5,7,9,6,3,4)$ where the number of column should be 3.
7. Write a R program to perform a arithmetic operation.
8. Write a R program to perform string manipulation.
9. Write a R program to import CSV file to R console.
10. Write a R program to import from R console to CSV file.
11. Write a R program to sort a array.
12. Draw a line graph using student details to perform R console to CSV file.
13. Draw a pie chart using employee details to accessing CSV file to R console.
14. Draw a bar chart using hostel details to perform R console to CSV file.
15. Draw a pie chart using sample population for the village to perform R console to CSV file.
16. Write a R program to perform K Means Clustering Algorithm.



V.V. VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)

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Re-accredited with 'A' Grade (3rd Cycle) by NAAC

VIRUDHUNAGAR - 626 001

M.Sc. INFORMATION TECHNOLOGY (2018 -19 onwards)

Semester IV	BIG DATA ANALYTICS	Hours/Week: 6	
DSEC-4		Credits: 5	
Course Code 18PITE41		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, the students will be able to

- be exposed to big data
- learn the different ways of Data Analysis
- be familiar with data streams
- understand the impact of big data for business decisions
- master the use of the R interactive environment
- explore and understand how to use the R documentation

UNIT I

Introduction: Volume – Velocity – Variety – Veracity. **Drivers for Big Data:** Sophisticated Consumers – Automation – Monetization. (15 Hours)

UNIT II

Big Data Analytics Applications: Social Media Command Center – Product Knowledge Hub – Infrastructure and Operations Studies – Product Selection, Design and Engineering – Location-Based Services – Micro-Segmentation and Next Best Action – Online Advertising – Improved Risk Management. **Architecture Components:** Massively Parallel Processing (MPP) Platforms – Unstructured Data Analytics and Reporting – Search and Count – Context – Sensitive and Domain – Specific Searches – Categories and Ontology – Qualitative Comparisons– Focus on Specific Time Slice or Using Other Dimensions – Big Data and Single

View of Customer/Product – Data Privacy Protection – Real-Time Adaptive Analytics and Decision Engines. (20 Hours)

UNIT III

Advanced Analytics Platform: Real – Time Architecture for Conversations – Orchestration and Synthesis Using Analytics Engines – Entity Resolution – Model Management – Command Center – Analytics Engine – Discovery Using Data at Rest – Integration Strategies. **Implementation of Big Data Analytics:** Revolutionary, Evolutionary, or Hybrid – Big Data Governance – Integrating Big Data with MDM – Journey, Milestones, and Maturity Levels – Analytics Business Maturity Model. (20 Hours)

UNIT IV

Getting Started: Run R – A First R Session – Introduction to Functions – Preview of Some Important R Data Structures – Extended Example: Regression Analysis of Exam Grades – Startup and Shutdown – Getting Help. **Vectors:** Scalars, Vectors, Arrays, and Matrices – Declarations – Recycling – Common Vector Operations – Using all() and any()– Vectorized Operations – Filtering – A Vectorized if-then-else: The ifelse() Function – Testing Vector Equality – Vector Element Names – More on c(). (20 Hours)

UNIT V

Data Frames: Creating Data Frames – Other Matrix – Like Operations – Merging Data Frames – Applying Functions to Data Frames. **R Programming Structures:** Control Statements – Arithmetic and Boolean Operators and Values – Default Values for Arguments – Return Values – Functions Are Objects – Environment and Scope Issues – No Pointers in R – Writing Upstairs – Recursion. (15 Hours)

TEXT BOOK

1. Arvind Sathi, *Big Data Analytics*, MC Press, 1st Edition.
2. Norman Matloff, (2011). *The Art of R Programming: A Tour of Statistical Software Design*, No Starch Press.

REFERENCE BOOKS

1. Mark Gardener, (2013). *Beginning R – The Statistical Programming Language*, Wiley.
2. Torsten Hothorn and Brian S. Everitt (2014), *A Handbook of Statistical Analyses Using R*, CRC Press, 3rd Edition.
3. Seema Acharya, Subhasini Chellappan, (2015). *Big Data Analytics*, Wiley.