SRM
UNIVERSITY
(Under section 3 of UGC Act 1956)

BACHELOR OF COMPUTER APPLICATIONS

Curriculum and Syllabus

(For Students admitted from academic year 2015 – 2016 onwards)

UNDER CHOICE BASED CREDIT SYSTEM

DEPARTMENT OF COMPUTER APPLICATIONS

FACULTY OF SCIENCE AND HUMANITIES

SRM UNIVERSITY

SRM NAGAR, KATTANKULATHUR – 603 203

BACHELOR OF COMPUTER APPLICATIONS
(For Students admitted from academic year 2015 – 2016 onwards)

CURRICULUM

SEMESTER I							
Career Stream Title	**Subject Code**	**Subject Title**	**L**	**T**	**P**	**Total of LTP**	**C**
Language	ULT15101	Tamil - I	4	1	0	5	4
	ULH15101	Hindi – I					
	ULF15101	French – I					
	ULE15101	English –I	4	1	0	5	4
Compulsory Core	UCA15101	Open Office and Linux	4	0	0	4	4
	UCA15102	Programming In C	4	0	0	4	4
Compulsory Core Lab	UCA15103	Open Office Using Linux Lab	0	0	3	3	2
	UCA15104	Programming In C Lab	0	0	3	3	2
Allied	UCA15105	Mathematics – I	4	0	0	4	4
Supportive Course **(Internal Evaluation)**	CDC15101	Verbal Ability	2	0	0	2	2
Total			**22**	**2**	**6**	**30**	**26**
SEMESTER II							
Career Stream Title	**Subject Code**	**Subject Title**	**L**	**T**	**P**	**Total of LTP**	**C**
Language	ULT15201	Tamil - II	4	1	0	5	4
	ULH15201	Hindi – II					
	ULF15201	French –II					
	ULE15201	English –II	4	1	0	5	4
Compulsory Core	UCA15201	Fundamentals of Data Structures	4	0	0	4	4
	UCA15202	Object Oriented Programming Using C++	4	0	0	4	4
Compulsory Core Lab	UCA15203	Data Structures Using C++ Lab	0	0	3	3	2
	UCA15204	Internet Lab	1	0	2	3	2

Allied	UCA15205	Mathematics – II	4	0	0	4	4
Supportive Course **(Internal Evaluation)**	CDC15201	Quantitative Aptitude and Reasoning – I	2	0	0	2	2
Extension Activity	UNS15201	NSS	**0**	**0**	**0**	**0**	1
	UNC15201	NCC					
	UNO15201	NSO					
	UYG15201	Yoga					
Total			**23**	**2**	**5**	**30**	**27**
SEMESTER III							
Career Stream Title	**Subject Code**	**Subject Title**	**L**	**T**	**P**	**Total of LTP**	**C**
Compulsory Core	UCA15301	Programming In Java	4	1	0	5	4
	UCA15302	Relational Database Management	4	1	0	5	4
Compulsory Core Lab	UCA15303	Programming In Java Lab	0	0	4	4	2
	UCA15304	Relational Database Management Lab	0	0	4	4	2
Allied	UCA15305	Statistical Methods	4	1	0	5	4
Skill Based Electives-I	UCA15E51	Digital Logic Fundamentals	3	0	0	3	3
	UCA15E52	Design and Analysis of Algorithm					
	UCA15E53	Statistical Package for Social Sciences (SPSS)					
Non-major Elective		Open Elective-I	2	0	0	2	2
Supportive Course **(Internal Evaluation)**	CDC15301	Quantitative Aptitude and Reasoning – II	2	0	0	2	2
Total			**19**	**3**	**8**	**30**	**23**
SEMESTER IV							
Career Stream Title	**Subject Code**	**Subject Title**	**L**	**T**	**P**	**Total of LTP**	**C**
Compulsory	UCA15401	Computer Networks	4	1	0	5	4

Core	UCA15402	Windows Programming Using VB .Net	4	1	0	5	4
Compulsory Core Lab	UCA15403	Computer Networks Lab	0	0	4	4	2
	UCA15404	Windows Programming Using VB .Net Lab	0	0	4	4	2
Allied	UCA15405	Resource Management Techniques	4	1	0	5	4
Skill Based Electives-II	UCA15E54	Web Technology	2	0	1	3	3
	UCA15E55	Linux Administration					
	UCA15E56	Tally					
Non-major Elective		Open Elective-II	2	0	0	2	2
Supportive Course **(Internal Evaluation)**	CDC15401	Communication Skills	2	0	0	2	2
Total			**18**	**3**	**9**	**30**	**23**

SEMESTER V

Career Stream Title	**Subject Code**	**Subject Title**	**L**	**T**	**P**	**Total of LTP**	**C**
Compulsory Core	UCA15501	Multimedia and Animation	4	1	0	5	4
	UCA15502	PHP and MYSQL Programming	4	1	0	5	4
	UCA15503	Operating System	4	1	0	5	4
Compulsory Core Lab	UCA15504	Multimedia and Animation Lab	0	0	4	4	2
	UCA15505	PHP and MYSQL Programming Lab	0	0	4	4	2
Core Elective - I	UCA15E01	E-Commerce	4	0	0	4	4
	UCA15E02	Cryptography & Network Security					
	UCA15E03	Mobile Computing					
Supportive Course	UES15501	Environmental Studies	3	0	0	3	3
Total			**19**	**3**	**8**	**30**	**23**

SEMESTER VI							
Career Stream Title	**Subject Code**	**Subject Title**	**L**	**T**	**P**	**Total of LTP**	**C**
Compulsory Core	UCA15601	Object Oriented Analysis And Design	4	1	0	5	4
	UCA15602	Software Engineering and Testing	4	1	0	5	4
Compulsory Core Lab	UCA15603	Object Oriented Analysis and Design Lab	0	0	4	4	2
	UCA15604	Project Work	1	1	4	6	4
Core Elective – II	UCA15E04	Data mining and Warehousing	4	0	0	4	4
	UCA15E05	Service Oriented Architecture					
	UCA15E06	Management Information System And ERP					
Core Elective – III	UCA15E07	Introduction to Mobile Application Development	4	0	0	4	4
	UCA15E08	Cloud Computing					
	UCA15E09	Information Security					
Supportive Course **(Internal Evaluation)**	CDC15601	Personality Development	2	0	0	2	2
Total			**19**	**3**	**8**	**30**	**24**

Total Credits to be earned for the degree: 146

குறியீட்டு எண்	பாடம்	L	T	P	Total of LTP	C
ULT15101	**தமிழ் - I**	**4**	**1**	**0**	**5**	**4**

பகுதி 1. தமிழ் இலக்கிய வரலாறு

(நூல் – தமிழ் இலக்கிய வரலாறு- முனைவர் சு.ஆனந்தன், கண்மணி பதிப்பகம், திருச்சி, 2010.)

1. சிற்றிலக்கியம் - தோற்றமும் வளர்ச்சியும்
2. புதுக்கவிதை - தோற்றமும் வளர்ச்சியும்
3. சிறுகதை - தோற்றமும் வளர்ச்சியும்
4. புதினம் - தோற்றமும் வளர்ச்சியும்
5. உரைநடை - தோற்றமும் வளர்ச்சியும்

பகுதி 2. இலக்கியம்

அ. இக்காலக்கவிதைகள்

1. பாரதியார்
   நெஞ்சு பொறுக்கு திலையே ...என்று தொடங்கும் கவிதை
2. பாரதிதாசன்
   உலக ஒற்றுமை - தன்பெண்டு தன்பிள்ளை ...என்று தொடங்கும் கவிதை
3. ந.பிச்சமூர்த்தி - கிளிக்கூண்டு
4. இன்குலாப் - மரங்களின் சுற்றம்
   சந்திக்கச் செல்வதில்லை...என்று தொடங்கும் கவிதை
5. நா. காமராசன் - கருப்பு மலர்கள்
   காகிதப் பூக்கள் - கால மழைத்தூறலிலே... என்று தொடங்கும் கவிதை
6. சு.வில்வரெத்தினம் --வேற்றாகி நின்ற வெளி
   நிலவின் எதிரொலி – பறம்பு மலை ...என்று தொடங்கும் கவிதை
7. பாரதி புத்திரன் - மாரிக்கால இரவுகள்
   சிவகாசிச் சிசுக்கள் – மகனே அன்றொரு நாள் ...என்று தொடங்கும் கவிதை
8. து.நரசிம்மன் - வானம் பிறந்தது

ஒரு பிஞ்சின் வேண்டுகோள்...என்று தொடங்கும் கவிதை

9. ப.கல்பனா- வானம் பிறந்தது

கீறல் விழுந்த மாலைக்காலங்கள்- இன்று வர... என்று தொடங்கும் கவிதை

ஆ. சிற்றிலக்கியம்

கலிங்கத்துப்பரணி- போர் பாடியது: 404 -- 408 பாடல்கள்

குற்றாலக்குறவஞ்சி – மலைவளம்

1. வானரங்கள் கனிகொடுத்து .... என்று தொடங்கும் பாடல்
2. முழங்கு திரைப் புனலருவி கழங்கென முத்தாடும் .... என்று தொடங்கும் பாடல்

இ. காப்பியங்கள்

சிலப்பதிகாரம் – வழக்குரை காதை - 'தேரா மன்னா! செப்புவது உடையேன்;-- இணை அடி தொழுது வீழ்ந்தனளே, மடமொழி. (30 – வரிகள்)

பகுதி 3 உரைநடைப் பகுதி

"**எண்ணங்கள்**" டாக்டர் எம்.எஸ்.உதயமூர்த்தி, கங்கை புத்தக நிலையம், 2005.

பாட நூல்கள் :

1. முனைவர் சு.ஆனந்தன் (2010), தமிழ் இலக்கிய வரலாறு, கண்மணி பதிப்பகம், திருச்சி, 2010.
2. எம்.எஸ்.உதயமூர்த்தி, "எண்ணங்கள்", கங்கை புத்தக நிலையம், 2005.
3. செய்யுள் புத்தகம், தமிழ்த்துறை, அறிவியல் மற்றும் மானுடவியல் புலம் , எஸ். ஆர். எம். வெளியீடு, 2014.

Subject Code	Subject Title	L	T	P	Total of LTP	C
ULH 15101	HINDI – I	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

1. To express and communicate literature which is part of life
2. To incorporate day to day personal & professional life's need to communicate in the language.
3. To help the students to imagine & express their mind through Literature .

UNIT – I - Prose **(25 Hours)**

1. USNE KAHA THA (STORY) -
   CHANDRADHAR SHARMA GULERI
2. CHIEF KI DAWAAT (STORY) -
   BHISHAM SAHNI
3. PREMCHAND (NIBANDH) -
   DR. RAMVILAS SHARMA
4. BHOLARAM KA JEEV (SATIRE STORY) -
   HARISHANKAR PARSAI
5. BHAGWAN NE KAHA THA (SATIRE STORY) -
   SURYA BALA
6. CHAMAR KI BETI (STORY) -
   DR.N. CHANDRSHEKHARAN NAIR

UNIT – II- OneActPlay **(10 Hours)**

1. LAXMI KA SAWAGAT ***UPENDRANATH ASHK*** -
2. JAB MAA RO PADI ***SETH GOVIND DAS*** -

UNIT – III - CORRESPONDENCE **(10 Hours)**

1. OFFICIAL LETTER
2. DEMI- OFFICIAL LETTER

UNIT – IV - COMPUTER **(10Hours)**

UNIT – V - TECHNICAL TERMINOLOGY **(5 Hours)**

TEXT BOOK

1. Hindi I Edited by Dr.S.Preethi, Dr.MD.Islam, Dr. S. Razia Begum Published by Department of Hindi, FS&H,SRM University

REFERENCE

1. Prayajon Mulak Hindi (Author - *Madhav Sontakke*)

Subject Code	Subject Title	L	T	P	Total of LTP	C
ULF15101	FRENCH-I	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

1. To encourage greater written skills through comprehension writing and composition writing.
2. Improve their oral and written skills through a combination of theory and practice.
3. Extend and expand their savoir-faire through the acquisition of latest skills and techniques by practical training.

Unité - I **(15 Heures)**

Vous comprenez? – Conjugaison des verbes – Masculin/Féminin – Singulier/Pluriel – Interrogation – Négation simple- L'identité- Les lieux de la ville- Les mots du savoir-vivre.

Unité - II **(15 Heures)**

Au travail ! Conjugaison – Les verbes en –ER – Accord des noms et des adjectifs - Articles indéfinis et définis- Interrogation- Est-ce-que, Qu'est-ce, Qu'est-ce que c'est, Où- L'état civil- Personnes et objets caractéristiques d'un pays.

Unité - III **(15 Heures)**

On se détend ?- Conjugaison- faire, aller, venir, vouloir, pouvoir, devoir- Futur proche - Pronoms moi, toi, lui, elle, etc.., après une préposition – On = Nous- Les loisirs, Sports, Spectacles, Activités.

Unité - IV **(15 Heures)**

Racontez-moi- Passé composé - Présentation d'un événement passé- La date et l'heure- Les moments de la journée, de l'année- Événements liés au temps - **Bon voyage !**- Comparaison simple- Adjectifs démonstratifs- Adjectifs possessifs- Les Voyages – Les transports.

Unité - V **(15 Heures)**

Bon appétit- Articles partitif- Emploi des articles- Interrogation, forme avec inversion- Réponses : Oui, Si, Non- Forme possessive : à+pronom- La nourriture, Les repas, La fête.

REFERENCE

1. **''Echo-A1''**, Méthode de français, J.GIRARDET, J.PECHEUR, CLE International, Janvier-2011.

Subject Code	Subject Title	L	T	P	Total of LTP	C
ULE15101	ENGLISH-I	4	1	0	5	4

Instructional Objectives:

1. To enhance students' proficiency in English language.
2. To enable the students to think in English .
3. To be abreast with the world literature.
4. To equip students with the awareness and strategies needed to enable the study of English as a lifelong process.
5. To engage in ongoing professional development with respect to both teaching and research.

UNIT I Poetry: **(15 Hours)**

1. If by Rudyard Kipling
2. Where the Mind is Without Fear by Rabindranath Tagore
3. The Road Not Taken by Robert Frost
4. Snake by D. H. Lawrence

UNIT II Prose: **(15 Hours)**

1. Of Truth by Francis Bacon
2. Spirit of India by A.P.J.Abdul Kalam

UNIT III Short Stories: **(15 Hours)**

1. The Bet by Anton Chekhov
2. The Postmaster by Rabindranath Tagore

UNIT IV Movie Review: **(15 Hours)**

1. Whose Life is it Anyway?
2. The Accused- Feature Film
3. Water

UNIT V Language Component : **(15 Hours)**

1. Tenses
2. Focus on Articles, Prepositions, Subject Verb Agreement
3. Comprehension Passage

TEXT BOOKS

1. Cambridge University Press,. Raymond Murphy, Essential Grammar in Use 3rd Edition 2010
2. Edited by Dr.Shanthichitra, Glean to ACME English Tex Book Published by Department of English, FSH, SRM University.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15101	OPEN OFFICE AND LINUX	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain knowledge on the basic Linux commands.
2. To have a hands on experience in open office
3. To have clear understanding in open source softwares

UNIT I - INTRODUCTION TO LINUX (12 Hours)

What Is Linux? -The Problems with Windows -The Benefits of Linux - Proprietary Software and the GPL- GNU and Linux Together- Different Flavors of Linux- Who Uses Linux?- Understanding How Linux Differs from Windows- Using Ubuntu

UNIT II - BASH SHELL (12 Hours)

What Is the BASH Shell? -Working with Files-Listing Files-Copying Files and Directories -Moving Files and Directories -Deleting Files and Directories -Changing and Creating Directories-Real Files and Virtual Files. -Users and File Permissions - The File System Explained -File Searches -Using the find Command -Using the locate Command -Using the whereis Command-File Size and Free Space -Viewing File Sizes -Finding Out the Amount of Free Space.

UNIT III - WRITER — THE WORD PROCESSOR (12 Hours)

Creating a Document -Opening a Document -Laying Out the Page-Setting paper size, margins, and orientation -Creating headers and footers -Numbering pages -Entering and Editing Text-Modifying text-Moving and copying text -Finding and replacing text - Correcting mistakes automatically-Printing -Adding character to your characters - Planning Your Paragraphs-Aligning paragraphs -Spacing your lines -Making Lists - Bulleting lists-Numbering lists-Using a style -Creating a style - tables and columns

UNIT IV - CALC — THE SPREADSHEET (12 Hours)

Creating a Spreadsheet -Inputting Your Data -Entering your data -Editing your data - Filling cells automatically -Managing Columns and Rows-Copying, pasting, cutting, dragging, and dropping your cells -Adding the Art -Formula Basics-Adding, Subtracting, and More -Adding and other arithmetic -Adding with the Sum function - Rocketing into Orbit with Functions Using the AutoPilot: Functions dialog box -Editing functions -Entering functions manually -Copying and pasting formulas -Creating formula arrays -Recalculating formulas -Creating Magic Formula-Nesting functions - Creating conditional formulas

UNIT V - IMPRESS — THE PRESENTATION (12 Hours)

Creating a Presentation -Opening an existing presentation -Adding Slides -Adding text to a slide -Saving Your Presentation for Posterity - Making Presentations Picture Perfect -Adding Images -Clipping art -Drawing objects -Coloring Backgrounds - Creating a plain-colored background -Creating a gradient background -Hatching a background -Using a bitmap image as a background -Creating 3-D text-Inserting 3-D objects -Animating Impressively -Using Text Effects Effectively -Creating Animation Effects -Creating Animated GIF files -Adding Slide Transition Effects - Showing a Presentation -Setting slide timing -Hiding slides -Specifying slide show settings - Delivering a Slide Show .

TEXT BOOKS

1. Keir Thomas and Andy Channelle with Jaime Sicam (2009), "*Beginning Ubuntu Linux*" , Apress.(Unit I & II)
2. Gurdy Leete, Ellen Finkelstein, and Mary Leete (2004), "*Openoffice.org for dummies*", Wiley Publishing, Inc.(Unit III,IV & V)

REFERENCE

1. Andy channelle (2009), "*Beginning OpenOffice 3*", Aprèss.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15102	PROGRAMMING IN C	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To acquire basic knowledge about Programming in C
2. To gather extensive knowledge in C programming and developing programming skills
3. To strengthen the knowledge on structures, arrays etc., of C programming

UNIT I - OVERVIEW OF C (12 Hours)

Introduction- Importance of C- Basic Structure of C program- Tokens-Variables- Data types- Operators and Expression- Managing Input and Output Operators.

UNIT II - CONDITIONAL STATEMENTS (12 Hours)

If statement- switch statement- goto statement- while statement- do statement-for statement- continue statement- break statement.

UNIT III - ARRAYS AND FUNCTIONS (12 Hours)

One dimensional array- Two dimensional array- Multidimensional array-Built in functions (Library functions): String Handling functions-User defined functions.

UNIT IV - STRUCTURES, UNIONS AND POINTERS (12 Hours)

Structure definition- Arrays of structures- Structures and functions- Unions- Understanding pointers- Declaring and initializing pointers- Pointers and arrays- Pointers and functions- Pointers and structures.

UNIT V - FILE MANAGEMENT (12 Hours)

Defining and Opening a file- Closing a file- Input output operations on files-Error Handling during I/O operations- Command line arguments.

TEXT BOOK

1. Balagurusamy.E (2008), *"Programming in ANSI C"* , Second Edition, Tata McGraw Hill.

REFERENCES

1. Kamthane Ashok.N (2013), *"Programming in C"*, 2nd Edition, Pearson Education.
2. Yashvant P. Kanetkar (2008*), "Let us C",* 8th Edition, Infinity science press.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15103	**OPEN OFFICE USING LINUX LAB**	**0**	**0**	**3**	**3**	**2**

LIST OF EXPERIMENTS

1. To open a new open office document and perform the following operations in it.
   i. Text Alignment
   ii. Change line spacing to 1.5
   iii. Place a box to the entire text
   iv. Add the bullets and numbering
   v. Change type of font types and sizes
   vi. Insert the symbols
2. To prepare an advertisement to a company with the following specifications
   i. Attractive Page Border.
   ii. Design the name of company using WordArt.
   iii. Use ClipArt
   Using of OpenOffice writer.
3. To design a Visiting Card for a company following specification
   i. Size of the Visiting Card 4" X 3".
   ii. Name of the company with a WortArt.
   iii. Using of OpenOffice writer.
4. To perform Table Creation, Formatting and Conversion using OpenOffice.org.
5. To perform mail merge and letter preparation using OpenOffice.org.
6. To draw a flow chart for a given problem in the OpenOffice.org.
7. To perform the formula editor in OpenOffice.org Calc .
8. To perform the insertion of objects, graphics and protecting the document in OpenOffice.org Calc
9. To Draw a line, XY, bar and pie chart for a given user data in OpenOffice.org Calc
   To perform the sorting and import/export features in OpenOffice.org Calc.
10. Creating An Impress Presentation using wizard
11. Create a presentation on Tourism of a place using different template, color schema and text formats
12. Create a presentation about your college and department using animations and sound effects.Add OLE object to your presentation.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15104	PROGRAMMING IN C LAB	0	0	3	3	2

LIST OF EXPERIMENTS

1. Program to check whether a number is positive or negative or zero using if statement.
2. Program to check vowel or consonant using switch case statement.
3. Program to check whether a number is prime or not using while statement.
4. Program to generate multiplication table using do…while statement.
5. Program to check the given string is palindrome or not using for statement.
6. Program to display Fibonacci series.
7. Program to search an element in an array using linear search method.
8. Program to find the smallest and largest number among 'n' numbers.
9. Program to sort elements in an array.
10. Program to add two matrices.
11. Program for manipulating the strings using string handling functions.
12. Program to find the sum of 'n' numbers by making function.
13. Program to calculate factorial of a number using recursion.
14. Program to generate the marksheet of the student using structure.
15. Program to copy the content of one file to other file.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15105	MATHEMATICS-I	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

1. To apply basic concepts for clear understanding of mathematical principles.
2. To solve practical problems

UNIT I - SETS, RELATIONS AND FUNCTIONS

Sets: sets, representation of sets, types of sets, operation on sets, Venn diagram.
Relation: types of relation, equivalence relation.
Function: types of functions, composite of two functions, composite of three functions

UNIT II - MATHEMATICAL CONNECTIVES

Logic - Statements, connectives, conjunction, disjunction, negation, tautology, contradiction, logical equivalence, tautological implications, arguments, validity of arguments – Normal forms – Principal disjunctive normal form - Principal conjunctive normal form.

UNIT III - THEORY OF EQUATIONS

Polynomial equations, irrational roots, complex roots,(up to third order equations only) - Reciprocal equations, Approximation of roots of a polynomial equation by Newton's and Horner's methods.

UNIT IV - MATRICES

Symmetric, Skew symmetric, Hermitian, Skew Hermitian, Orthogonal,Unitary matrices – Cayley Hamilton Theorem – Eigen values – Eigen vectors – solving the equations using Cramers rule.

UNIT V - DIFFERENTIATION

Simple problems only – maxima and minima of functions of single variable – Radius of curvature (Cartesian co– ordinate) – partial differentiation – Euler's theorem.

TEXT BOOKS:

1. Veerarajan, T. (2006), *"Discrete Mathematics"*, 7th Edition,Tata-Macgrawhill, New Delhi.
2. Singaravelu, A. (2011), "*Allied Mathematics"*, 3rd Edition, Meenakshi Agency, Chennai.

Treatment as in : DISCRETE MATHEMATICS by Veerarajan, T.
Unit I: Chapter2 (pg.no: 51-70), Chapter4 (pg.no: 182-186)
Unit II: Chapter 1(pg.no: 1-14)

Treatment as in : ALLIED MATHEMATICS by Singaravelu, A.
Unit III: Chapter 3(3.1 – 3.18, 3.36 – 3.60)
Unit IV: Chapter2(2.1-2.22, 2.68-2.140)
Unit V: Chapter 5(5.1 – 5.12, 5.31 – 5.35, 5.52-5.60)

REFERENCES

1. Vittal, P.R.(2013), *"Allied Mathematics",* 4th Edition Reprint,Margham Publications, Chennai.
2. Venkatachalapathy, S.G.(2007), *"Allied Mathematics"*, 1st Edition Reprint, Margham Publications, Chennai.

Subject Code	Subject Title	L	T	P	Total of LTP	C
CDC15101	VERBAL ABILITY	2	0	0	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this course, the students will be able to,

(i) Communicate with better diction
(ii) Take up competitive exams confidently

COURSE REQUIREMENT: At the end of every unit, the students will be expected to answer a model verbal ability exam.

UNIT - I

Vocabulary- Synonyms, Antonyms, Idioms and phrases, ordering of words/sentences.

UNIT - II

Grammar- Sentence improvement, Change of speech, sentence correction.

UNIT - III

Vocabulary-One word Substitute, Verbal Analogies, Closet test.

UNIT - IV

Grammar- Spotting errors, selecting words, sentence completion

UNIT - V

Vocabulary- Word Quest, Puzzles, Crossword

TEXT BOOKS

1. Raymond Murphy (2007), *Essential English Grammar*, Cambridge University Press.
2. Raymond Murphy (2007), *Intermediate English Grammar*, Cambridge University Press.
3. Raymond Murphy (2007), *Advanced English Grammar* Cambridge University Press.

REFERENCES

1. Norman Lewis (2011), Word Power Made Easy New Revised and Expanded Edition, Goyal publication.
2. Prabhu.C, Vivekanandan.P (2012), "*The Essentials of Quantitative Aptitude and Verbal Aptitude*", Enrich & Excell, BEACON, Chennai.

SEMESTER II

குறியீட்டு எண்	பாடம்	L	T	P	Total of LTP	C
ULT15201	**தமிழ் - II**	**4**	**1**	**0**	**5**	**4**

பகுதி -1 தமிழ் இலக்கிய வரலாறு

(நூல் – தமிழ் இலக்கிய வரலாறு - முனைவர் சு.ஆனந்தன், கண்மணி பதிப்பகம், திருச்சி, 2010.)

1. சங்க இலக்கியங்கள்
2. நீதி இலக்கியங்கள்
3. பக்தி இலக்கியங்கள்
4. காப்பியங்கள்

பகுதி - 2 அ. சங்க இலக்கியம்

1. முளி தயிர் பிசைந்த... என்று தொடங்கும் **குறுந்தொகை (167)** பாடல் முல்லை, செவிலித்தாய் கூற்று).
2. மனை நடு வயலை வேழம் சுற்றும்... என்று தொடங்கும் **ஐங்குறுநூறு** (11) பாடல் (மருதம், ஐங்குறுநூறு- வேழப்பத்து.)
3. எம் வெங் காமம் இயைவது ஆயின் ....என்று தொடங்கும் **அகநானூறு (15)** பாடல் (**பாலை , மகட் போக்கிய தாய் சொல்லியது**)
4. சுடர் தொடீஇ கேளாய்..... என்று தொடங்கும் **கலித்தொகை (51)** பாடல் (குறிஞ்சி, தலைவி கூற்று)
5. மண்டு அமர் அட்ட ... என்று தொடங்கும் **புறநானூறு (213)** பாடல், பாடியவர் : புல்லாற்றூர் எயிற்றியனார், பாடப்பட்டோன் : கோப்பெருஞ்சோழன்; திணை : வஞ்சி; துறை - துணைவஞ்சி.
6. **நறவுவாய் உறைக்கும் நாகுமுதிர்** ... என்று தொடங்கும் **பத்துப்பாட்டு –** சிறுபாணற்றுப்படை (51-67) பாடல்
7. கலந்தோர் உவப்ப எயில் பல கடையி... என்று தொடங்கும் **பத்துப்பாட்டு -- மதுரைக் காஞ்சி (220-237)** பாடல்.

ஆ. நீதி இலக்கியம்

1. திருக்குறள் - நட்பாராய்தல்
   புலவி நுணுக்கம் (2 அதிகாரம்)

2. நாலடியார்- பொருட்பால்- மேன்மக்கள் – 5 பாடல்

இ. பக்தி இலக்கியம்

சைவம் – பன்னிரு திருமுறைகள்

1. திருஞானசம்பந்தர் தேவாரம் – முதலாம் திருமுறை
   காதல் ஆகி, கசிந்து ... என்று தொடங்கும் பாடல்
2. திருநாவுக்கரசர் தேவாரம் - ஐந்தாம் திருமுறை
   மாசில் வீணையும் மாலை ... என்று தொடங்கும் பாடல்
3. சுந்தரர் தேவாரம் – ஏழாம் திருமுறை
   பொன்னார் மேனியனே ... என்று தொடங்கும் பாடல்
4. மாணிக்கவாசகர் – திருவாசகம் – பிடித்த பத்து
   பால் நினைந்து ஊட்டும் தாயினும் சால ... என்று தொடங்கும் பாடல்
5. திருமூலர் – திருமந்திரம்
   மரத்தை மறைத்தது மாமத யானை ... என்று தொடங்கும் பாடல்

வைணவம் – நாலாயிரத் திவ்யப் பிரபந்தம்

1. பூதத்தாழ்வார்
   பெருகு மத வேழம் மாப்பிடிக்கு...என்று தொடங்கும் பாடல்
2. குலசேகராழ்வார்
   ஆனாத செல்வத்து அரம்பையர்கள் தற்சூழ ...என்று தொடங்கும் பாடல்
3. பெரியாழ்வார்
   எந்நாள் எம்பெருமான் ...என்று தொடங்கும் பாடல்
4. ஆண்டாள்
   ஓங்கி உலகளந்த உத்தமன் ... என்று தொடங்கும் பாடல்
5. திருப்பாணாழ்வார்
   சதுர மாமதில் சூழ் இலங்கைக்கு ... என்று தொடங்கும் பாடல்

இஸ்லாம்

குணங்குடி மஸ்தான் சாகிபு பாடல்கள் – தவமே பெற வேண்டுமெனல் - 3 பாடல்கள்

கிறித்துவம்

ஆதிநந்தாவனப் பிரளயம் – ஏதேன் தோட்டம் - 3 பாடல்கள்

பகுதி 3: சிறுகதை

"**ஒற்றைச் சிறகு**", இலக்கியச் சிந்தனை 2012 ஆம் ஆண்டின் சிறந்த சிறுகதைகள் தொகுப்பு.

பாட நூல்கள் :

1. முனைவர் சு.ஆனந்தன் (2010), தமிழ் இலக்கிய வரலாறு, கண்மணி பதிப்பகம், திருச்சி, 2010.
2. ஒற்றைச் சிறகு, இலக்கியச் சிந்தனை 2012 ஆம் ஆண்டின் சிறந்த சிறுகதைகள் தொகுப்பு, 2012.
3. செய்யுள் புத்தகம், தமிழ்த்துறை, அறிவியல் மற்றும் மானுடவியல் புலம் , எஸ். ஆர். எம். வெளியீடு, 2014.

Subject Code	Subject Title	L	T	P	Total of LTP	C
ULH 15201	HINDI-II	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

1. To express and communicate literature which is part of life
2. To incorporate day to day personal & professional life's need to communicate in the language.
3. To help the students to imagine & express their mind through Literature .

UNIT - I POETRY **(25 Hours)**

1. Suprashid Dohey ***Kabir, Rahim, Bihari, Surdas*** -
2. Nar Ho Na Nirash Karo Mann Ko ***Maithlisharan gupt*** -
3. Jo Tum Aaa Jaate***Mahadevi Varma*** -
4. Hum Panchi Unmukt Gagan Ke ***Shiv mangal singh suman*** -
5. Chalawa ***Santosh shreeyansh*** -
6. Yahan Thi Vaha Nadi ***Manglesh Dabral*** -

UNIT - II STORY **(15 Hours)**

1. Eidgaha ***Premchand*** -
2. Vapsi ***Priyamvada Usha*** -
3. Ek Muthi Aakash ***Santosh Srivastav***
4. Ek Plate Sailab ***Mannu Bhandari*** -

UNIT - III **(10 Hours)**

1. Anuvad : Anuvad Ki Paribhasha Evam Bhed

UNIT - IV **(5 Hours)**

1. Anuvad : English to Hindi

UNIT - V **(5 Hours)**

1. Administrative words

TEXT BOOK

1. Hindi I Edited by Dr.S.Preethi, Dr. MD.Islam, Dr.S.Razia Begum.Published by Department of Hindi, FS&H,SRM.University

REFERENCES

1. Prayajon Mulak Hindi (Author - Madhav Sontakke)
2. Practcal Guide to is Translation & Composition (Author- K. P. Thakur)

Subject Code	Subject Title	L	T	P	Total of LTP	C
ULF15201	FRENCH-II	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

1. Consolidate the knowledge of theoretical aspects of French grammar with examples provided from different angles: from present day literature, day to day conversation.
2. Improve their oral and written skills through a combination of theory and practice.

Unité - I **(15 Heures)**

Quelle journée !- La conjugaison pronominale- L'impératif- L'expression de la quantité : peu, un peu de, quelque, etc..,- Les activités quotidiennes- Les achats, L'argent - **Qu'on est bien ici !** Prépositions et adverbes de lieu- Verbes exprimant un déplacement : emploi des prépositions- Le logement, La localisation, L'orientation, L'état physique, Le temps qu'il fait.

Unité - II **(15 Heures)**

Souvenez-vous- L'imparfait- Emploi du passé composé et de l'imparfait- Expression de la durée- L'enchainement des idées : alors, donc, mais- Les sens réciproque- Les moments de la vie- La famille- Les relations amicales, amoureuses, familiales.

Unité - III **(15 Heures)**

On s'appelle ? – Les pronoms compléments directs- les pronoms compléments indirects de personne- L'expression de la fréquence et de la répétition – Les moyens de communication : courrier, téléphone, internet.

Unité - IV **(15 Heures)**

Un bon conseil ! – Expression du déroulement de l'action – Passé récent- Présent progressif – Futur proche – Action achevée/ inachevée – Les phrases rapportés – Les Corps – La santé et la maladie.

Unité - V **(15 Heures)**

Parlez-moi de vous – La place de l'adjectif – La proposition relative finale avec « qui » - C'est/il est – Impératif des verbes avec pronoms – La formation des

mots – La description physique et psychologique des personnes – Les vêtements – Les Couleurs.

REFERENCE

1. **"Echo-A1"**, Méthode de français, J.GIRARDET, J.PECHEUR, CLE International, Janvier-2011.

Subject Code	Subject Title	L	T	P	Total of LTP	C
ULE15201	ENGLISH - II	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

1. To enhance students' proficiency in English language.
2. To enable the students to think in English.
3. To become aware of the world literature and the writers.
4. To equip students with the awareness and strategies needed to enable the study of English as a lifelong process.
5. To engage in ongoing professional development with respect to both teaching and research.

UNIT I - Poetry: (15 Hours)

1. The Hawk in the Rain by Ted Hughes
2. Crutches by Bertolt Brecht
3. Obituary- A. K. Ramanujan
4. Dream Deferred- Langston Hughes

UNIT II - Prose: (15 Hours)

1. The Story of my Experiments with Truth by M.K. Gandhi (Excerpts)
2. I have a Dream by Martin Luther King
3. Farewell Speech by Mark Antony

UNIT III - Play and Short Story: (15 Hours)

1. Monkey's Paw by W.W.Jacobs
2. Bear by Anton Chekhov

UNIT IV - Book Review: (15 Hours)

1. To kill a Mocking Bird (Excerpts)
2. Merchant of Venice (Excerpts)

UNIT V - Language Component: (15 Hours)

1. Transformation of Sentences
2. Jumbled Sentences
3. Précis Writing

TEXT BOOKS

1. Raymond Murphy (2010), Essential Grammar in Use, 3rd Edition, Cambridge University Press,.
2. Edited by Dr.Shanthichitra, Glean to ACME English Tex Book Published by Department of English, FSH, SRM University.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15201	FUNDAMENTALS OF DATA STRUCTURES	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To learn Several data structure concepts like stack, queue, linked list, trees and graphs
2. To learn the Applications of data structures.
3. To improve the Problem solving quality using data structure techniques.

UNIT I - INTRODUCTION TO DATA STRUCTURES (12 Hours)

Definition – types of data structure-abstract data type-array as an abstract data type-representation of array- sparse matrices- asymptotic notation.

UNIT II - STACKS AND QUEUES (12 Hours)

Stacks- queue- mazing problem- evaluation of expression- postfix notation- infix to post fix- multiple stack and queue.

UNIT III - LINKED LIST (12 Hours)

Singly linked list- representation of linked singly list- operations on singly linked list-doubly linked list- representation of doubly linked list- operations on doubly linked list-differentiate singly and doubly linked list- circularly singly and doubly linked list

UNIT IV - TREES (12 Hours)

Tree Terminology- representation of tree- binary tree- binary tree traversal-operations on tree- applications- Sorting : selection sort- bubble sort- quick sort

UNIT V - GRAPHS (12 Hours)

Definition- representation of a graph- operations- breadth first search- depth first search- minimum cost spanning trees- kruskal's algorithm and prim's algorithm-shortest path and transitive closure- single source- floyds algorithm- all pair dijikstra's algorithm.

TEXT BOOK

1. Ellis Horowitz, Sahni, Dinesh Mehta (1999), "Fundamentals of Data Structures in C++", Golgotha publication, New Delhi.

REFERENCE

1. Weiss Mark Allen (2006), "Data Structure and algorithm analysis", Pearson Education.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15202	OBJECT ORIENTED PROGRAMMING USING C++	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To learn the concepts of class & objects.
2. To perform Inheritance, Overloading of operators, functions, constructors, File Handling and exception handling.

UNIT I - PRINCIPLES OF OBJECT ORIENTED PROGRAMMING (12 Hours)

Object Oriented Programming Paradigms- basic concept of OOPS- benefits of OOP-what is C++-simple C++ program-structure of C++ program- creating a source file – compiling and linking.

UNIT II - TOKENS, EXPRESSION AND CONTROL STRUCTURES (12 Hours)

Tokens-keywords-identifiers and constants-basic data types-user defined data types-derived data types-type compatibility-declaration of variables-dynamic initialization of variables-reference variables-operators in C++-manipulators-type cast operator-implicit conversion-operator overloading-control structures.

UNIT III - CLASS AND OBJECTS (12 Hours)

Functions in C++- function overloading-Specifying a class- defining member function-arrays within a class-arrays of objects- objects as function arguments- friendly functions-constructor and destructor

UNIT IV - INHERITANCE, POINTER, VIRTUAL FUNCTION AND POLYMORPHISM (12 Hours)

Single inheritance-multilevel-multiple inheritance-hierarchical-hybrid-virtual base class-abstract classes-pointers-this pointer-virtual functions-pure virtual functions.-operator over loading- rules for operator overloading

UNIT V - MANAGING CONSOLE I/O OPERATIONS (12 Hours)

C++ streams- streams classes-unformatted I/O operations-formatted console I/O operations-managing output with manipulators- exception handling- basics of exception handling.

TEXT BOOK

1. Balagurusamy.E (2008), "Object Oriented Programming with C++", Tata McGraw-Hill Publication.

REFERENCE

1. Herbert Schildt (2003), "C++: The Complete Reference", Tata McGraw publication.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15203	DATA STRUCTURES USING C++ LAB	0	0	3	3	2

LIST OF EXPERIMENTS

1. Write a C++ program to implement the concept of classes and object
a. Create a class 'staff ', to create different objects and to test the functioning of member functions, constructors and Destructors.
2. write a C++ program to implement the concept Arrays of Objects
a. Create Class 'student', create an array of students, find out the student who got the first rank
3. Write a C++ program to implement operator overloading to perform complex arithmetic
4. Write a C++ program to implement the concept of Inheritance
a. Create a class 'College', create another class 'department' by using 'college' as a base class, and verify the functions in the derived and base classes. Also to verify by keeping the two functions with same name (one in the base class and another in derived class)
5. Write a C++ program to handle the error using Exception Handling.
6. Write a C++ program to implement stack using array.
7. Write a C++ program to implement Queue using array.
8. Write a C++ program to convert the infix to postfix expression.
9. Write a C++ program for inorder, preorder and post order tree traversals.
10. Write a C++ program for sorting the given set of elements using selection and bubble sort.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15204	INTERNET LAB	1	0	2	3	2

LIST OF EXPERIMENTS

1. Create a web page with necessary formats, images and marquees.
2. Create a web page with lists(Ordered, Unordered and Definition Lists).
3. Create a web page with table content.
4. Create a web site using links for text and images.
5. Using frames, create web page for a travel agency.
6. Create a web-page using forms for our college students admission process
7. Create a web page which displays the wage of style attributes and event function with demo.
8. Create a web page which displays the mouse co-ordinates and image co-ordinates.
9. Create a web page which receives suggestions from customers for a software development and consultancy agency using necessary functions.
10. Create a web site for SRM University.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15205	MATHEMATICS-II	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

(i) To apply Mathematical techniques for clear understanding of Mathematical principles.

(ii) To solve practical problems.

UNIT - I Integral calculus- polynomial and irrational function – partial fraction(Simple algebraic functions only) - Bernoulli's formula – reduction formula- $\int \sin^n x\,dx$ - $\int \cos^n x\,dx$ - $\int_0^{\frac{\pi}{2}} \sin^n x dx$ - $\int_0^{\frac{\pi}{2}} \cos^n x dx$

UNIT - II

Trigonometry – Expansion of Sin nθ, Cos nθ and Tan nθ – expansion of $Sin^n\theta$ and $Cos^n\theta$ - Expansion of $Sin^n\theta.Cos^n\theta$

UNIT – III

Differential Equation: Second order Differential Equation with constant coefficient. Problem based on R.H.S: $0, e^{ax}, Sin\,ax, Cos\,ax, x$.

UNIT – IV

Laplace Transformation – basic properties and simple problems – $L[e^{at} f(t)]$ – $L[tf(t)]$ – $L[e^{at} tf(t)]$ – $L\left[\frac{f(t)}{t}\right]$

UNIT – V

Inverse Laplace transformation – Simple Problems based on Inverse Laplace Transformation - multiplied by 's'- multiplied by '1/s'- 'Partial Fraction Method'.

TEXT BOOK

1. Singaravelu, A. (2011), ALLIED MATHEMATICS, 3rd Edition, Meenakshi Agency, Chennai.

Treatment as in : ALLIED MATHEMATICS by Dr.A. Singaravelu.
Unit I: Chapter7 (7.1 – 7.85)(Simple Algebraic functions only), (7.87 – 7.95)
Unit II: Chapter6 (6.1 – 6.24)
Unit III: Chapter8 (8.41 – 8.50), (8.54 – 8.65), (8.70 – 8.86)
Unit IV: Chapter10 (10.1 – 10.27), (10.36 – 10.47)
Unit V: Chapter10 (10.64 – 10.82), (10.90-10.95)

REFERENCES

1. Vittal, P.R.(2013), "*Allied Mathematics"*, 4th Edition Reprint,Margham Publications, Chennai.
2. Venkatachalapathy, S.G.(2007), *"Allied Mathematics"*, 1st Edition Reprint, Margham Publications, Chennai.
3. Manickavasagam Pillai, T.K. and Narayanan, S. (2013), "*Ancillary Mathematics"*, Reprint, S.Viswanathan Printers & Publishers Pvt. Ltd.Chennai.

Subject Code	Subject Title	L	T	P	Total of LTP	C
CDC15201	QUANTITATIVE APTITUDE AND REASONING – I	2	0	0	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this course, the students will be able to,

1. Critically evaluate various real life situations by resorting to Analysis of key issues and factors

2. Demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

COURSE REQUIREMENT: At the end of every unit, the students will be expected to answer a model quantitative aptitude test for internal assessment.

UNIT - I
Simple equations - Ratio & Proportion – Variation

UNIT - II
Percentages - Profit and loss – Partnership - Simple interest and Compound interest

UNIT - III
Deductions – Connectives

UNIT - IV
Analytical Reasoning puzzles - Problems on Linear arrangement -Problems on Circular arrangement

UNIT - V
Clocks – Calendars - Blood relations

TEXT BOOKS
1. Agarwal R S (2013), 'Quantitative Aptitude' S.Chand Publishers,
2. Agarwal R S,'A modern approach to Logical reasoning' S.Chand Publishers

REFERENCES
1. Abhijit Guha, Quantitative Aptitude - Mc Graw Hills Publishers
2. Agarwal R S, 'A modern approach to Logical reasoning' S.Chand Publishers.

UNC15201/ UNS15201/ UNO15201/ UYG15201	NATIONAL CADET CORPS (NCC)/ NATIONAL SERVICE SCHEME (NSS)/ NATIONAL SPORTS ORGANIZATION (NSO) / YOGA	L	T	P	C
		0	0	0	1
PURPOSE					
To imbibe in the minds of students the concepts and benefits of NCC/NSS/NSO/YOGA and make them practice the same					
INSTRUCTIONAL OBJECTIVES					
1.	To enable the students to gain knowledge about NCC/NSS/NSO/YOGA and put the same into practice				

SEMESTER – III

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15301	PROGRAMMING IN JAVA	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand the principles and concepts of object oriented programming
2. To learn multithreading concepts
3. To Store and retrieve the information from Files.
4. To Implements various application like banking, inventory, etc.

UNIT I - INTRODUCTION TO JAVA (15 Hours)

The Genesis of Java- Buzzwords- Object oriented Concepts- Lexical Issues- Data types and variables- Arrays- Operators - Control Statements: Selection- Iteration and jump Statement.

UNIT II - CLASSES AND METHODS (15Hours)

Introducing classes - Class fundamentals - Declaring Objects - Assigning object reference variables. Introducing method – Constructors- The this Keyword- Garbage Collection- Finalize() method- Overloading methods- Using objects as parameters- Argument Passing - Returning Objects- Recursion – static and final keyword - Nested and Inner Classes - String Class - Command Line arguments.

UNIT III - INHERITANCE, PACKAGES, INTERFACES (15 Hours)

Inheritance Basics - using Super- method Overriding – Dynamic method dispatch - abstract classes- Using final with Inheritance – Packages – Access Protection – Importing packages –Interfaces.

UNIT IV - EXCEPTION HANDLING, MULTITHREADING, APPLET (15 Hours)

Exception handling fundamentals- Types- Using try, catch, throw, throws and finally - Java thread model – Creating a Thread – Creating multiple threads - Thread priorities – synchronization - Inter-thread communication - Applet Basics – Applet Skeleton – HTML applet tag – Passing parameters to applet

UNIT V - I/O STREAMS, UTILITY CLASSES, EVENT HANDLING (15 Hours)

I/O Streams: Byte Streams – Character Streams – Reading and Writing Files –– Legacy Classes and Interface: Vector, Stack, The Enumeration Interface - Utility classes: String Tokenizer, Date, Calendar, GregorianCalendar, Random, Scanner – Introduction to Event Handling : Event Classes – Event Listener Interfaces

TEXT BOOK

1. Herbert Schildt, (2007), "*Java : The Complete Reference*", Seventh Edition, McGraw Hill.

REFERENCES

1. Arnold and J.Gosling (2000), "*The Java Programming Language*", Second edition, Addision Wesley.
2. Art Gittleman (2002), " *Ultimate Java Programming*", Wiley Publications.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15302	RELATIONAL DATABASE MANAGEMENT	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain knowledge in the areas of database design and SQL programming.
2. To understand relational database technology for building applications for the current trend.
3. To analyze a business situation and build suitable database applications.

UNIT I - INTRODUCTION (15 Hours)

Data- Database – DBMS-File Processing System Vs DBMS- - Data Independence-Data Catalog-Three schema Architecture of a database-Functional components of DBMS - ER Model: Entity - Attributes and its Type -Entity and Relationship ship-Design Issues of ER Model - Constraints.

UNIT II - STRUCTURED QUERY LANGUAGE (SQL) (15 Hours)

Overview of SQL, Data Definition Commands, Set operations, Aggregate function, Null values, Data Manipulation commands, Data Control commands, Views in SQL, Nested and Complex queries

UNIT III - RELATIONAL–DATABASE DESIGN (15 Hours)

Relational–Database Design: Design guidelines for relational schema, Function dependencies, Normal Forms- 1NF, 2 NF, 3NF, BCNF and 4NF. Integrity and Security in Database: Domain Constraints, Referential integrity.

UNIT IV - TRANSACTIONS MANAGEMENT (15 Hours)

Transactions Management: Transaction concept, Transaction states, ACID properties, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of isolation.

UNIT V - CONCURRENCY CONTROL & PHYSICAL STORAGE MEDIA (15 Hours)
Concurrency Control: Lock-based, Timestamp-based, Validation-based protocols, Deadlock handling, Recovery System: Failure Classification, Storage structure. Overview of Physical Storage Media: Magnetic Disks – RAID – Tertiary storage – File Organization – Organization of Records in Files – Indexing and Hashing –Ordered Indices– Static Hashing – Dynamic Hashing.

TEXT BOOKS

1. Abraham Silberschatz, Henry F. Korth, Sudharshan S., (2006), "Database System Concepts", Fifth Edition, Tata McGraw Hill.(Unit I, IV & V)
2. Date C.J., Kannan A., Swamynathan S., (2006), "An Introduction to Database Systems", Eighth Edition, Pearson Education.(Unit II & III)

REFERENCE

1. Ramez Elmasri, Shamkant B. Navathe (2007), "Fundamentals of Database Systems", Fourth Edition , Pearson / Addision wesley.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15303	PROGRAMMING IN JAVA LAB	0	0	4	4	2

LIST OF EXPERIMENTS

1. Program to illustrate the use of classes and objects
2. Program to illustrate the use of String Class
3. Program to illustrate the use of final and static keyword
4. Program to illustrate the use of inheritance
5. Program to illustrate the use of interfaces
6. Program to illustrate the use of packages
7. Program to illustrate the use of multithreading
8. Program to illustrate the use of Exception handling
9. Program to illustrate the use of Utility classes
10. Program to create and read file.
11. Program to create applet and pass parameter to it
12. Program to illustrate handling of mouse event

Other than these, possible lab exercises related to syllabus can also be included.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15304	RELATIONAL DATABASE MANAGEMENT LAB	0	0	4	4	2

LIST OF EXPERIMENTS

SQL:

1. TABLE CREATION:
   a) Create table CUST based on the following details

Name	Type	Remark
CID	VARCHAR2(6)	PRIMARY KEY
CNAME	VARCHAR2(10)	
CCITY	VARCHAR2(8)	

   b) Create table PROD based on the following details

Name	Type	Remark
PID	VARCHAR2(6)	PRIMARY KEY
PNAME	VARCHAR2(6)	
PCOST	NUMBER(4,2)	
PPROFIT	NUMBER(3)	

   c) Create table SALE_DETAIL based on the following details

Name	Type	Remark
CID	VARCHAR2(6)	COMPOSITE PRIMARY KEY
PID	VARCHAR2(6)	COMPOSITE PRIMARY KEY
SALE	NUMBER(3)	
SALEDT	DATE	

1. INSERTION AND DATA RETRIEVAL:

   a) Insert and Save Records in CUST, PROD and SALE_DETAIL table.
   b) Data Retrieval using SELECT-WHERE, RELATIONAL OPERATOR, ARITHMETIC OPERATOR and use of ORDERBY, DISTINCT, BETWEEN, IN, DUAL and LIKE operator.

2. FUNCTIONS:

   a) Date Functions, Numeric Functions, Character Functions, Conversion Functions.
   b) Group Functions, Set Functions.

3. ALTER, UPDATE, DELETE, SUBQUERY AND JOINS:

a) Use of ALTER, UPDATE, DELETE and DROP Commands.

b) Using SUBQUERY and JOINS (Equi Join, Non-Equi Join, Outer Join, Self Join) in data retrieval.

c) Create Views, Sequences and Constraints related Query.

PL/SQL:

1. Make use of COMMIT, ROLLBACK, and SAVEPOINT in a PL/SQL Block.
2. Create a PL/SQL Script to convert temperature in Fahrenheit into Celsius, and vice versa.
3. Calculate the sum of the even integers between 1 and 100.
4. Create a PL/SQL block to find ODD or EVEN NUMBER by using Searched CASE Statements.
5. Calculate a factorial of given number by using FOR loop.
6. Program development using BUILT –IN Exceptions, USER defined Exceptions, RAISE- APPLICATION ERROR.
7. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
8. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
9. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
10. Develop programs using CURSORS-Declaring, Opening, Fetching, and Closing a Cursor, including the use of CURSOR attributes.
11. Develop Programs using BEFORE and AFTER Triggers, and INSTEAD OF Triggers.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15305	STATISTICAL METHODS	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

1. To provide a strong foundations in the principles of statistics.
2. To apply Statistical techniques for solving real life problems.

UNIT - I

Nature and scope of statistical methods and their limitations - Classification, Tabulation - Diagrammatic representation of various types of statistical data - Frequency curves an O gives - Lorenz curve.

UNIT - II

Measures of Central tendency – Arithmetic mean, Median, Mode – Merits and demerits - graphical solution of Median and Mode.

UNIT - III

Measures of Dispersion – Range, Mean Deviation, Quartile Deviation, Standard Deviation, Coefficient of Variation and their properties – merits and demerits.

UNIT – IV

Correlation - Definition-Uses- Scatter diagram –Types – Karl Pearson's Correlation Co-efficient-Spearman's Rank Correlation Co-efficient -Regression equations – Regression coefficient – properties – Simple problems.

UNIT - V

Definition of t, F and Chi-Square distribution and its applications – Small sample test – Test for single mean and two mean – Testing independent of attributes - Testing the equality of variance – Definition of ANOVA(one way) – properties.

TEXT BOOK:

1. Pillai, R.S.N, Bagavathi, V. (2009),Statistics,Theory and Practice,7Th Edition,S.Chand Ltd,NewDelhi.

Treatment as in : Statistics, Theory Practice by Pillai, R.S.N, Bagavathi, V.

Unit I: Chapter1,2,6,7 and Chapter8 pg.no: 100-110

Unit II: Chapter9 pg.no: 125-172

Unit III: Chapter 10

Unit IV: Chapter11 pg.no: 338-354 , Chapter12 pg.no: 398-420 and Chapter13 pg.no: 465-510

Unit V: Chapter8 (pg.no: 447-468) of Veerarajan, T.(2008), Probability, Statistics and Random Processes, 3rd Edition, Tata MC Graw hill Publishing Company, New Delhi

REFERENCES

1. Gupta, S.P. (2011) ,"*Applied Statistical Methods"* ,4th Edition,Sultan Chand & Sons, New Delhi.
2. Ken Black, (2013), "*Business Statistics for Contemporary Decision Making*", 7th Edition, John Wiley Publications

Question Pattern : Theory:20% ; Problem: 80%.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E51	DIGITAL LOGIC FUNDAMENTALS	3	0	0	3	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To acquire basic knowledge about Boolean algebra to express and simplify logic expressions.
2. To gather extensive knowledge in design of sequential and combinational digital systems.
3. To strengthen the knowledge on logic circuits to hardware description language to design digital systems.

UNIT I - NUMBER SYSTEMS (9 Hours)

Introduction- Conversion from one base to another-Complements- Boolean algebra & properties of Boolean algebra- Logic Gates.

UNIT II – BOOLEN FUNCTIONS (9 Hours)

Boolean functions, Karnaugh map(upto 5 Variables) - SOP-POS- Mc-Clausky Tabulation methods.

UNITI III – FLIP-FLOPS (9 Hours)

Sequential logic circuits - RS & JK Flip-Flops – D&T Flip-Flops-Triggering of flips.

UNIT IV – REGISTERS AND COUNTERS (9 Hours)

Registers – Shift Registers- Counters & Ripple Counters - Synchronous Counters-Design of Counters

UNIT V – ADDERS & SUBTRACTORS (9 Hours)

Adders& Subtractors- Encoders-Decoders-Multiplexer – Demultiplexer

TEXT BOOK

1. Mano M.M. (1994), "*Digital Logic and Computer Design*", Prentice Hall of India,.

REFERENCE

1. Bartee T.C. (1991), *'Computer Architecture and logical Design*', McGraw Hill,

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E52	DESIGN AND ANALYSIS OF ALGORITHMS	3	0	0	3	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To provide a strong foundation about algorithms
2. To learn different techniques for writing algorithm.
3. To apply the techniques for producing algorithm for different problems.

UNIT - I **(9 Hours)**

Introduction – Notion of Algorithm – Fundamentals of Algorithmic Solving – Important Problem types – Fundamentals of the Analysis Framework – Asymptotic Notations and Basic Efficiency Classes.

UNIT - II **(9 Hours)**

Mathematical Analysis of Non-recursive Algorithm – Mathematical Analysis of Recursive Algorithm – Example: Fibonacci Numbers – Empirical Analysis of Algorithms – Algorithm Visualization.

UNIT - III **(9 Hours)**

Brute Force – Selection Sort and Bubble Sort – Sequential Search and Brute-force string matching – Divide and conquer – Merge sort – Quick Sort – Binary Search – Binary tree- Traversal and Related Properties – Decrease and Conquer – Insertion Sort.

UNIT - IV **(9 Hours)**

Transform and conquer – Presorting – Balanced Search trees – AVL Trees – Heaps and Heap sort – Dynamic Programming – Warshall's and Floyd's Algorithm.

UNIT - V **(9 Hours)**

Backtracking – n-Queen's Problem – Hamiltonian Circuit problem – Subset-Sum problem – Branch and bound – Assignment problem – Knapsack problem – Traveling salesman problem.

TEXT BOOK

1. Anany Levitin (2003), "Introduction to the Design and Analysis of Algorithm", Pearson Education Asia.

REFERENCES

1. Cormen T.H., Leiserson C.E., Rivest R.L. and Stein C. (2001), "*Introduction to Algorithms*", PHI Pvt. Ltd.,
2. Sara Baase and Allen Van Gelder (2003), "*Computer Algorithms - Introduction to Design and Analysis*", Pearson Education Asia,.
3. Aho A.V., Hopcroft J.E. and Ullman J.D. (2003), "*The Design and Analysis Of Computer Algorithms*", Pearson Education Asia.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E53	STATISTICAL PACKAGE FOR SOCIAL SCIENCES (SPSS)	3	0	0	3	3

LIST OF EXPERIMENTS

1. Construction of Frequency tables: Univariate Frequency tables -- Cross-Tabulation
2. Graphical representation of Data: Bar diagram – Simple Bar diagram, Multiple Bar Diagram, Sub divided Bar Diagram, Histogram Pie Diagram
3. Calculation of Measures of Central Tendencies: Mean, Median and Mode, Geometric mean
4. Calculation of Methods of Dispersion, (a) Standard Deviation, (b) Quartiles, (c) Skewness, (d) Kurtosis
5. Calculation of Correlation Coefficient: (a) Karl Pearson's Correlation Coefficient, (b) Spearman's Rank Correlation Coefficient
6. Calculation of Regression Trend: (a) Trend Line
7. Test of Significance for Single and two Samples – Large Sample Test (Z-Test)
    (a) Test for Mean
    (b) Test for Proportion
    (c) Test for Standard Deviation
8. Test of Significance for Single and two Samples – Small Sample Test (t-Test, F-test)
    (a) Test of Mean
    (b) Test of Variances
9. Non-Parametric Test
10. One –Way Chi-square test (test for Homogeneity)
11. Two–Way Chi-square test (test for Attributes)
12. Test of Homogeneity of Means for more than 2 samples
    (a) One –Way ANOVA
    (b) Two–Way ANOVA

Subject Code	Subject Title	L	T	P	Total of LTP	C
CDC15301	QUANTITATIVE APTITUDE AND REASONING – II	2	0	0	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this course, the students will be able to,

1. Critically evaluate various real life situations by resorting to Analysis of key issues and factors
2. Demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

COURSE REQUIREMENT: At the end of every unit, the students will be expected to answer a model quantitative aptitude test for internal assessment.

UNIT - I

Numbers - Time and Distance - Time and Work - Averages, Mixtures and Allegations

UNIT - II

Data Interpretation - Data Sufficiency – Mensuration - Permutation and Combinations - Probability

UNIT - III

Cubes - Venn diagrams - Binary Logic

UNIT - IV

Number and letter series - Number and Letter Analogies - Odd man out

UNIT - V

Coding and decoding - Direction sense test - Critical Reasoning - Lateral reasoning puzzle

TEXT BOOKS

1. Agarwal R S (2013), 'Quantitative Aptitude' S.Chand Publishers,
2. Agarwal R S,'A modern approach to Logical reasoning' S.Chand Publishers

REFERENCES

1. Abhijit Guha, "*Quantitative Aptitude"* - Mc Graw Hills Publishers
2. Agarwal R S, , '*A modern approach to Logical reasoning'* S.Chand Publishers.

SEMESTER – IV

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15401	COMPUTER NETWORKS	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain knowledge about the networks.
2. To have clear understanding about the Network progamming

UNIT - I **(15 Hours)**

History and Need for Networking - Service Description – Connectionless and Connection-Oriented Services – Circuit and Packet Switching – Access Networks and Physical Media – Wireless Links and Characteristics – OSI Reference Model - Service Models –Ad-hoc network, GPS, Sensor network.

UNIT - II **(15 Hours)**

Principles of Network Applications – The Web and HTTP – FTP – Electronic Mail – SMTP – Mail Message Formats and MIME – DNS – Socket Programming with TCP and UDP. Multimedia Networking: Internet Telephony – RTP – RTCP – RTSP. Network Security: Principles of Cryptography – Firewalls – Application Gateway – Attacks and Counter measures.

UNIT - III **(15 Hours)**

Transport Layer Services – Multiplexing and Demultiplexing – UDP – Reliable Data Transfer – Go-Back-N and Selective Repeat. Connection-Oriented Transport: TCP – Segment Structure – RTT estimation – Flow Control – Connection Management – Congestion Control – TCP Delay Modeling – SSL and TLS. Integrated and Differentiated Services: Intserv – Diffserv.

UNIT – IV **(15 Hours)**

Forwarding and Routing – Network Service Models – Virtual Circuit and Datagram Networks – Router – Internet Protocol (IP) – IPv4 and IPv6 – ICMP – Link State Routing – Distance Vector Routing – Mobile IP

UNIT – V **(15 Hours)**

Layer Services – Error Detection and Correction Techniques – Multiple Access Protocols – Link Layer Addressing – ARP – DHCP – Ethernet – Hubs, Bridges, and Switches –PPP. Ring Topology - Physical Ring – Logical Ring.

TEXT BOOKS

1. James F. Kurose and Keith W. Ross (2006), “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 3rd edition,.

REFERENCES

1. Andrew S. Tanenbaum (2003), "*Computer Networks*", Prentice-Hall of India, 4th edition.
2. Larry L. Peterson and Bruce S. Davie (2007), "*Computer Networks: A Systems Approach*", Elsevier, 4th edition.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15402	WINDOWS PROGRAMMING USING VB .NET	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To gain in-depth knowledge on .NET frame work
2. To develop business applications using VB .net
3. To understand ADO .Net for database programming.

UNIT - I (15 Hours)

.NET FRAMEWORK AND VB.NET: Evolution of the .NET Framework – Overview of the .Net Framework – VB.NET – Simple VB.Net Program. VARIABLES, CONSTANTS AND EXPRESSIONS: Value Types and Reference Types – Variable Declarations and Initializations – Value Data Types – Reference Data Types – Boxing and Unboxing – Arithmetic Operators – Textbox Control – Label Control – Button Control.

UNIT - II (15 Hours)

CONTROL STATEMENTS: If Statements – Radio Button Control – Check Box Control – Group Box Control – Listbox Control – Checked List Box Control – Combo box Control – Select Case Statement – While Statement – Do Statement – For Statement. METHODS AND ARRAYS: Types of Methods – One Dimensional Array – Multi Dimensional Arrays – Jagged Arrays. CLASSES: Definition And Usage of a Class – Constructor Overloading – Copy Constructor – Instance and Shared Class Members – Shared Constructors.

UNIT – III (15 Hours)

INHERITANCE AND POLYMORPHISM: Virtual Methods – Abstract Class and Abstract Methods – Sealed Classes. INTERFACES, NAMESPACES AND COMPONENTS: Definition of Interfaces – Multiple Implementations of Interfaces – Interface Inheritance – Namespaces – Components – Access Modifiers. DELEGATES, EVENTS AND ATTRIBUTES: Delegates – Events – Attributes – Reflection.

UNIT - IV **(15 Hours)**

EXCEPTION HANDLING: Default Exception Handling Mechanism – User Defined Exception Handling Mechanism – Throw Statement – Custom Exception. MULTITHREADING: Usage Of Threads – Thread Class – Start(), Abort(), Join(), and Sleep() Methods – Suspend() And Resume() Methods – Thread Priority – Synchronization. I/O STREAMS: Binary Data Files – Text Files - Data Files – FileInfo and DirectoryInfo Classes.

UNIT - V **(15 Hours)**

ADDITIONAL CONTROLS: Timer – ProgressBar – LinkLabel – Panel – TreeView – Splitter – Menu – SDI & MDI – Dialog Boxes – Toolbar – StatusBar. DATABASE CONNECTIVITY: Advantages Of ADO.NET – Managed Data Providers – Developing a Simple ADO.NET Based Application – Creation of Data Table – Retrieving Data From Tables – Table Updating – Disconnected Data Access Through Dataset Objects.

TEXT BOOK

1. Muthu C. (2008), "*Visual Basic.NET*", 2nd Ed., Vijay Nicole Imprints Pvt.Ltd.,.

REFERRENCES

1. Jeffrey R.Shaprio (2002), "*Visual Basic .NET The Complete Reference*", Mac Graw Hill
2. Michael Halvorson (2010), "*Visual Basic 2010 Step by Step*", Microsoft Press.
3. Harold Davis (2002), "*Visual Basic.NET Programming"*, Sybex.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15403	COMPUTER NETWORKS LAB	0	0	4	4	2

LIST OF EXPERIMENTS

1. Familiarization with configuring and installing a LAN
2. Experimenting with network protocols for achieving communication between computers
3. Interconnection software for communication between two different network architectures
4. Experiments using TCP/IP, POP, e-mail, HTTP
5. Implementation of a web server and web client
6. Design of a mini search engine and firewall
7. Internet/web browser implementation
8. Web programming using HTML/XML/Perl/Java/PHP
9. Network security: email security / web security

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15404	WINDOWS PROGRAMMING USING VB .NET LAB	0	0	4	4	2

LIST OF EXPERIMENTS

1. Develop an Image Viewer Application
2. Simulate a Math Calculator
3. Develop a Notepad Editor using Dialog Control
4. Simulate a Paint Brush Application
5. To Move an object using Timer Control
6. Develop a Simple Student Information System Using Files
7. Develop a College Admission Form Using MDI
8. Validate a Bio – Data Application Form
9. Develop an Inventory Control System Using ADO.NET
10. Develop a mark sheet preparation system Using Grid Control.

Other than these, possible lab exercises related to syllabus can also be included.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15405	RESOURCE MANAGEMENT TECHNIQUES	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

1. To apply Operations research methods for decision making process.
2. To apply Opeartions research techniques for solving real life problems.

UNIT – I

Basics of Operations Research (OR): Characteristics of O.R – Importance of O.R in Industry – O.R and Decision making – Role of computers in O.R.

UNIT – II

Linear programming: Formulations and Graphical solution (of 2 variables) canonical & standard form of Linear Programming problem.
Algebraic solution: Simplex Method.

UNIT – III

Transportation model: Definition – formulation and solution of transportation models – Initial Basic feasible solution by the methods of North west corner, the row – minima,

column – minima, matrix minima and vogel's approximation method – Assignment problem by Hungarian method .

UNIT – IV

Sequencing problem: Processing n jobs through 2 machines – Processing n jobs through 3 machines – Processing n jobs through m machines – Processing 2 jobs through m machines.

UNIT – V

Theory of Games: Characteristics – Pure Strategies – Saddle Point – Value of the game – Mixed Strategies – Rules of Dominance – Two Persons Zero Sum Game – Graphical Solutions of 2 x m and n x 2 game (excluding LPP) – Limitations.

TEXT BOOK:

Sundaresan, V, Ganapahy Subramanian, K.S. and Ganesan,K (2011), "*Resource Management Techniques*", A.R.Publications-Nagapattinam

Treatment as in : Resource Management Techniques by Prof.V.Sundaresan, K.S.Ganapathy Subramanian, K. Ganesan.
Unit I: Chapter 1 (1.1 to 1.8)
Unit II: Chapter 2, Chap 3 (3.1.1 to 3.1.4, 3.2.1)
Unit III: Chapter 7(7.1), Chap 8.
Unit IV: Chapter 14
Unit V: Chapter 16(16.1 to 16.7, except 16.5),

REFERENCES

1. Vittal, . P.R. (2003),"*Operations Research",*Margham Publications, Chennai.
2. Kanti Swarup, Gupta, P.K. and Manmohan (2006),"*Operations Research*",12th Edition-Sultan Chand & Sons, New Delhi.

Question Pattern : Theory:20% ; Problem: 80%.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E54	WEB TECHNOLOGY	2	0	1	3	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:
1. To learn HTML tags for web designing
2. To understand and work with Java scripting language and XML

UNIT I - CSS **(9 Hours)**

Cascading Style Sheet: HTML CSS-Inline styles- creating style sheets with the style elements- Building a web page.

UNIT II - DOM **(9 Hours)**

DOM model: Understanding DOM model. Objects in HTML, Browser, object, window, history, location, navigator, document object.

UNIT III - INTRODUCTION TO JAVA SCRIPT **(9 Hours)**

Java Script: Introduction to scripting-operators: logical-Increment and decrement operators- control structures.

UNIT IV - FUNCTIONS, ARRAYS AND OBJECTS **(9 Hours)**

Functions: Definition-scope rules-recursion-Arrays: Declaring arrays- passing array to function-sorting arrays- object: math object-string object-data object- boolean object and number object, Handling event using java script.

UNIT V - INTRODUCTION TO XML **(9 Hours)**

XML-XML overview-features-HTML XML-processing instructions-application of XML-COMMENTS-XML names space – schema-Document Type Definition (DTD) – Extensible style language (XSL).

TEXT BOOKS

1. Ivan Bayross (2005), "*Web enabled commercial application development using HTML, DHTML java script, peal CGI*", 3rd Edition, BPB Publications, New Delhi. (Unit I & II)
2. Deitel H M, Nieto T.R. (2011) "*Internet and world wide web How to program*", Fifth Edition, Prentice Hall of Indian Pvt. Ltd, New Delhi.(Unit III, IV,V)

REFERENCE

1. Deitel, Nieto,lin, Sadhu (2005), "*XML How to program*", Pearson Education .

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E55	LINUX ADMINISTRATION	2	0	1	3	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To learn about the features of Linux.
2. To learn about installation of Linux.
3. To understand and administer Linux.

UNIT - I **(9 Hours)**

Linux Introduction and Installation: Linux-Advantages-Red Hat Linux-New Features-Installation procedures and Methods. Using Desktop-GNOME-KDE-Linux Commands Accessing and Running Applications.

UNIT - II **(9 Hours)**

Installing Red Hat Linux Applications, Running Window Application, Running Window,DOS and Macintosh Applications –Tools for using Internet and Web.

UNIT - III **(9 Hours)**

Administration: Understanding System Administration: Root login-super user-GUI tools, commands and Log files-Configuring Hardware-File System and Disk Management- Monitoring performances.

UNIT - IV **(9 Hours)**

Setting Up and Supporting users: Creating user accounts – Setting user defaults – Creating Desktops-Modifying and Deleting Accounts.

UNIT - V **(9 Hours)**

Security Issues: Hacker versus Cracker-Password Protection- Protection from break-in-Filtering - Network Access-Firewalls-Detecting Instructions – Encryption techniques

TEXT BOOK

1. Christopher Negus (2003), "*Red Hat Linux 9 Bible*", First Edition, WILEY-Dreamtech India Pvt.Ltd, New Delhi.

REFERENCE

1. Thomas Schenk (2003.),"*Red Hat Linux System Administration*", Techmedia, New Delhi.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E56	TALLY	2	0	1	3	3

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To learn about basics of Accounting
2. To work with Tally Accounting Software for maintaining accounts

UNIT - I Basics of Accounting **(9 Hours)**

Types of accoounts- Golden rules of accounting – Accounting principles – Concepts and conventions - Double entry system of Book keeping – Mode of Accounting – Financial Accounting – Transactions – Recording Transactions.

UNIT - II Fundamentals of Tally **(9 Hours)**

Getting functional with ERP – Creation / Setting up of Company in Tally.
Accounting masters in Tally – F11: Features – F12 Configurations – Setting up of Account Heads.

UNIT -III Inventory in Tally **(9 Hours)**

Stock Groups – Stock Categories - Godowns / Locations – Units of Measure – Stock Items – Creating Inventory Masters for National Traders.

UNIT- IV Voucher Entry in Tally **(9 Hours)**

Accounting Vouchers – Inventory Vouchers – Invoicing.

UNIT – V Advanced Accounting in Tally **(9 Hours)**

Billwise details – Cost Centers and Cost Categories – Voucher class and Class Center Class – Multiple Currencies – Bank Reconciliation – Interest Calculations.

TEXT BOOK

1. Tally .ERP 9 in Simple Steps, Kogent Learning Solutions Inc.

Subject Code	Subject Title	L	T	P	Total of LTP	C
CDC15401	COMMUNICATION SKILLS	2	0	0	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this course, the students will be able to

3. Communicate fluently
4. Develop skills in listening, speaking, reading and writing

COURSE REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT I - LISTENING SKILL

Listening comprehension and response through various modes- face-to-face conversations, telephone conversations, reading out written material, audio-video recorded material, mimes.

UNIT II - SPEAKING SKILL

Group communication- Features of an effective, fluent speech through regular practice- role-play, extempore-situational conversations-Greetings, requests, demands, instructions and enquiries.

Informal speech- Facing audience-Body language- Conversion of mother tongue to English language, Formal speech-Paper presentation and essential aspects of Business communication.

UNIT III - READING SKILL

Reading Comprehension-Poems, passages- conversations, short messages, e-mails, formal/informal letters, Phonics, Speed Reading, Reading comprehension strategies.

UNIT IV - WRITING SKILL

Letter Writing- Formats and language- Types-Personal, Business, Applications, Thanks, Invitation, Condolence, Requests, Complaints-E-mail etiquette. Reports, Essay Writing.

UNIT - V

Interpersonal and intrapersonal communication- Ways to communicate in different scenarios- job interview, business meeting, project submission/proposal, informal gathering, speech for a large audience, a debate etc.- dress code, Eye contacts, body language and handshakes.

TEXT BOOK

1. Soft Skills- Know You and Know the World, Author-Dr.K.Alex.

REFERENCE

1. Communication Skills-Language in Use-Cambridge Edition.

SEMESTER V

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15501	MULTIMEDIA AND ANIMATION	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand the different components, different file formats and various tools of multimedia system
2. To gain knowledge in Animation and images

UNIT - I **(15 Hours)**

MULTIMEDIA: What Is Multimedia: Interactive Multimedia – Advantages Of Interactive Multimedia – Where To Use Multimedia – Text – Graphics – Audio – Film – Video. UNDERSTANDING TEXT: Typeface or Fonts – Types of Fonts. COMPUTER GRAPHICS: 2D Computer Graphics – 3D Computer Graphics API. UNDERSTANDING SOUND: Basic Sound Concept – Audio Formats and Quality Levels – AIF Format – AU Format – EA Format – MIDI Format – Mp3 Format. UNDERSTANDING VIDEO: Digital Vs Analog Video.

UNIT - II **(15 Hours)**

PHOTOSHOP: Fundamentals – Opening and Importing Images – Resolution – Models and Colour Spaces – Layers. PAINTING PIXELS: The Painting Tools – Erasing – Fills – Type. SELECTION AND ALLIED OPERATIONS: Marquee selection and cropping – Lasso Selection – Paths – Combining and Transforming Selections.

UNIT - III **(15 Hours)**

ADJUSTMENTS AND RETOUCHING: Tonal Adjustment – Colour Adjustments – Retouching By Hand. EFFECTS AND FILTERS: Blurring and Sharpening – Special Effects and Distortion – Layer Effects and Layer Styles.

UNIT - IV **(15 Hours)**

FLASH: Animation with Interacting – Basic Concepts – Drawing – Lines and Shapes – Strokes and Fill – Shapes and Brushes – Selection – Transformation and Reshaping – Importing Artwork and Manipulating Images. ANIMATION: Animating One Frame at a Time – Motion Tweening – Symbols and Instances – Shape Tweening – Sound.

UNIT - V **(15 Hours)**

ACTIONS: Buttons – Button action – Frame Action – Action and Movie Clip Symbols – Actions – Browsers and Networks – Beyond the Basic Actions. FLASH MX275: Interface Elements – Panels – Tools – Layer Folders – Accessibility – Video –

Components – User Interface Components – Changing the Appearance of Components.

TEXT BOOK

1. Vishnu Priya Singh (2006), "*A Text Book of Multimedia*", 1st Ed., Computech Pub. Ltd, New Delhi,. UNIT I
2. Nigel Chapman and Jenny Chapman, "*Practical Multimedia*", 2nd Ed., Wiley – Dream Tech Pvt. Ltd. UNITS II, III, IV & V

REFERENCES

1. Thiagharajan and Anbumani, "*Flash MX 2004*", Tata McGraw Hill, New Delhi.
2. Laurie Ulrich Fuller and Robert C. Fuller, "*Photoshop CS3 Bible*", Willey India Pvt. Ltd.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15502	PHP AND MYSQL PROGRAMMING	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To create dynamic Web pages and web platform Applications
2. To create and to use Graphical, Database objects for interactive web applications such as Cloud solutions

UNIT I - BASICS OF PHP (15 Hours)

Introduction to PHP – what does PHP Do? – a brief history of PHP – language basics – lexical structure – data types – variables – expressions and operators – flow control statements – including code – embedding PHP in web pages.

UNIT II - FUNCTIONS & STRINGS (15 Hours)

Functions & Strings: Calling a function – defining a function – variable scope – function parameters – return values – variable functions – anonymous functions. Strings: Accessing individual characters – cleaning strings – encoding and escaping – comparing strings – manipulating and searching strings – regular expression.

UNIT III - ARRAYS & OBJECTS (15 Hours)

Arrays and Objects : Indexed Vs associative arrays – identifying elements of an array – storing data in arrays – multidimensional arrays – extracting multiple values – converting between arrays and variables – traversing arrays – sorting. Objects: Creating an object – accessing properties and methods – declaring a class – introspection.

UNIT IV - MYSQL AN OVERVIEW (15 Hours)

Introduction – connecting to and disconnecting from the server – Entering queries – Creating and using a database – Creating and selecting a database – creating a table – loading data into a table – Retrieving information from a table – selecting all data – selecting particular rows – selecting particular columns – sorting rows – date calculations – working with NULL values – pattern matching – counting rows – using more than one tables.

UNIT V - MYSQL DATABASES IN PHP (15 Hours)

Introduction – connecting to a MySQL database – querying the database – Retrieving and displaying the results – modifying data – deleting data. Designing simple applications.

TEXT BOOKS

1. Rasmus Lerdorf, Kevin Tatroe, Bob Kaehms, Ric McGredy (2002), Programming PHP, O'REILLY(SPD). (Unit I,II & III)
2. Lee Babin, Nathan A. Good, Frank M. Kromann, Jon Stephens (2005), "PHP 5 Recipes, A problem solution approach", aprèss.(Unit IV & V)

REFERENCE

1. Vikram Vaswani (2008), PHP: A BEGINNER'S GUIDE, McGraw-Hill

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15503	OPERATING SYSTEM	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To learn different types of Operating Systems
2. To Perform Scheduling and memory management.
3. To Handle Components of Operating System and Deadlocks

UNIT - INTRODUCTION (9 Hours)

Definition – Mainframe system – Desktop Systems – Multiprocessor systems – Distributed systems – clustered systems – Real time and Hand held systems – System components – OS Services – System Calls – Programs.

UNIT II - PROCESSES & SCHEDULING (9 Hours)

Process concepts – Process Scheduling – operation on Process – Cooperating process – IPC – CPU Scheduling: Basic Concepts – Scheduling criteria – Scheduling algorithms – Multiprocessor Scheduling – Real time Scheduling.

UNIT III - PROCESS SYNCHRONIZATION (9 Hours)

Background – The critical Section problem – synchronization hardware – semaphores – Classic Problems of Synchronization - critical Regions – Monitors.

UNIT IV - DEADLOCKS (9 Hours)

System model – Deadlock Characterization – Methods for Handling Deadlocks – Deadlock prevention – Deadlock Avoidance – Deadlock Detection and Recovery from Deadlock.

UNIT V - MEMORY MANAGEMENT (9 Hours)

Swapping – Contiguous memory Allocation – Paging – segmentation – segmentation with paging – Demand Paging – Process creation – Page Replacement – Thrashing

TEXT BOOK

1. Abraham Silberschatz, Peter Baer Galvin & Greg Gagne (2006), "Operating System Concepts", Sixth Edition, John Wiley & Sons, Inc.

REFERENCES

1. Milankovic M (1992),"Operating System concepts and Design, 2nd edition, Tata Mcgraw hill.
2. Deitel H.M. (2002), "An Introduction to Operating Sysems",2nd edition, Pearson Education.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15504	MULTIMEDIA AND ANIMATION LAB	0	0	4	4	2

LIST OF EXPERIMENTS

Photoshop

1. Create an image using different properties.
2. Picture manipulation using filter.
3. Design pictures using layers.
4. Design our college ID Card.
5. Design Marriage Invitation.

Flash

6. Design a car.
7. Move a Ball.
8. Human Movement using animation.
9. Create an Advertisement.
10. Develop a webpage using Photoshop and flash.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15505	PHP AND MYSQL PROGRAMMING LAB	0	0	4	4	2

LIST OF EXPERIMENTS

1. Creating simple webpage using PHP
2. Use of conditional statements in PHP
3. Use of looping statements in PHP
4. Creating different types of arrays
5. Usage of array functions
6. Creating user defined functions
7. Creating simple applications using PHP
8. Creating simple table with constraints
9. Insertion, Updation and Deletion of rows in MYSQL tables
10. Searching of data by different criteria
11. Sorting of data
12. Working with string and date functions
13. Database connectivity in PHP with MySQL

Any Application Using PHP and MySQL based on syllabus can be included.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E01	E-COMMERCE	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand about Business of internet
2. To appreciate EDI & E-Payment
3. To know about internet security and e-commerce ethics

UNIT I - INTRODUCTION **(12 Hours)**

History of E- Commerce - Overview of E- Commerce framework - E- Business models - Network infrastructure - Role of Internet - E- commerce and World Wide Web.

UNIT II - E-COMMERCE **(12 Hours)**

Consumer oriented E- Commerce applications - Mercantile process models; Electronic Payment Systems - Digital Token based EPS - Smart cards - Credit cards - Risks - designing EPS.

UNIT III - ORGANIZATIONAL COMMERCE AND EDI (12 Hours)

Electronic Data Interchange - EDI applications in Business - EDI and e Commerce - EDI standardization and implementation - Internet based EDI.

UNIT IV - SECURITY (12 Hours)

Internet security standards - secure electronic payment protocols ; cryptography and authentication - security issues - encryption techniques.

UNIT V - E-PAYMENT MECHANISMS AND E-COMMERCE ETHICS (12 Hours)

E-commerce payment mechanisms -SET protocol - electronic check - electronic cash; E-commerce ethics, regulations and social responsibility.

TEXT BOOKS

1. Ravi Kalakota and Andrew B Whinston, (1999), "Frontiers of Electronic Commerce", Pearson Education Asia,.(Unit I,II & III)
2. Marilyn Greenstein and Todd M Feinman , (2000), "Electronic commerce: Security, Risk Management and Control" Tata McGraw-Hill,.(Unit IV & V)

REFERENCES

1. Judy Strauss and Raymond Frost, (2002), "*E Marketing*", PHI.
2. Brenda Kienan, (2001),"*Managing e Commerce Business*", PHI.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E02	CRYPTOGRAPHY & NETWORK SECURITY	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand about Network Security.
2. To appreciate System Security
3. To know about Techniques for ciphering

UNIT - I (12 Hours)

Overview – Symmetric Ciphers: Classical Encryption Techniques

UNIT - II (12 Hours)

Symmetric Ciphers: Block ciphers and Data Encryption Standards. Public-key encryption and Hash Functions: Public-Key Cryptography and RSA

UNIT - III (12 Hours)

Network Security Practices: Authentication applications – Electronic Mail Security

UNIT - IV (12 Hours)

Network Security Practices: IP Security – Web security

UNIT - V **(12 Hours)**

System Security: Intruders – Malicious Software – Firewalls.

TEXT BOOK

1. William Stallings (2003), "*Cryptography and Network Security – Principles and Practices*', Prentice-Hall, Third edition.

REFERENCES

1. Johannes A, Buchanan, "*Introduction to cryptography*", Springer-Verlag
2. Atul kahate, "*Cryptography and Network Security*". TMH

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E03	MOBILE COMPUTING	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To describe the basic concepts of mobile communications
2. To describe the design of mobile architecture.
3. To discuss the emerging mobile applications

UNIT I - WIRELESS TRANSMISSION **(12 Hours)**

History of wireless transmission-Wireless transmission-Frequencies for Radio Transmission-Signals - Antennas-Signal propagation -Multiplexing-TDM,FDM, CDM, SDM

UNIT II - MODULATION & SWITCHING **(12 Hours)**

Modulation – introduction & its types -Modulation – ASK & FSK, PSK -Medium access control – Motivation for a specialized MAC -SDMA-FDMA-TDMA-CDMA-Comparing FDMA/CDMA/TDMA

UNIT III - TELECOMMUNICATION SYSTEMS **(12 Hours)**

GSM- DECT -TETRA-UMTS and IMT -2000.-Satellite systems-Basics-GEO satellite – LEO satellite-MEO satellite -Routing -Localization & Handover.

UNIT IV - BROADCAST SYSTEMS **(12 Hours)**

Broadcast systems : Digital Audio Broadcasting-Digital Video Broadcasting-Wireless LAN: Infrared Vs Radio Transmission-IEEE 802.11.

UNIT V - MOBILE NETWORK LAYER **(12 Hours)**

Mobile IP- DHCP-Mobile Adhoc networks-traditional TCP -Classical TCP improvements –Support for mobility -WWW-WAP- Case study : Android OS, Symbion OS

TEXT BOOKS

1. Jochen Schiller (2008), "*Mobile Communications*" ,Pearson Education, 2nd Edition.
2. William Stallings (2005),"*Mobile Communications and Networks*", Pearson Education.

REFERENCE

1. Lee C.Y.& William (1997), *"Mobile Cellular Telecommunication",* McGraw Hill Inter Edition.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UES15501	ENVIRONMENTAL STUDIES	3	0	0	3	3

INSTRUCTIONAL OBJECTIVES:

1. To gain knowledge on the importance of natural resources and energy.
2. To understand the structure and function of an ecosystem.
3. To imbibe an aesthetic value with respect to biodiversity, understand the threats and its conservation and appreciate the concept of interdependence
4. To understand the causes of types of pollution and disaster management.
5. To observe and discover the surrounding environment through field work.

UNIT I - INTRODUCTION TO NATURAL RESOURCES/ENERGY (9 Hours)

Environmental Studies: Definition, scope, objectives and awareness- Introduction to natural resources: food, forest, water and energy – Renewable and non renewable resources-coal, oil, tidal, wind, geothermal, solar, biomass(over view) – nuclear fission and fusion-nuclear energy.

UNIT II - ECOSYSTEMS (9 Hours)

Concept of an ecosystem-structure and function of an ecosystem-producers, consumers and decomposers- ecological succession- food chains(any 2 eg)- food webs(any 2 eg)-ecological pyramids.

UNIT III - BIODIVERSITY AND ITS CONSERVATION (9 Hours)

Introduction, definition: genetic, species and ecosystem diversity-Values of biodiversity: consumptive, productive, social, ethical, aesthetic and option values-hot spots of biodiversity-Threats to biodiversity: habitat loss, poaching of wildlife - endangered species and endemic species of India -conservation of biodiversity: in – situ and ex-situ conservation of biodiversity.

UNIT IV-ENVIRONMENTAL POLLUTION /DISASTER MANAGEMENT (9 Hours)

Definition-causes, effects and control measures of : Air, Water and Soil pollution- e-waste management- Disaster management: Natural and man made-food/earthquake/cyclone, tsunami and landslides.

UNIT V - SOCIAL ISSUES AND THE ENVIRONMENT (9 Hours)

Sustainable development- Climate change: global warming, acid rain, ozone layer depletion and nuclear radiation- Environment Protection Act (any imp 2) air, water, wildlife and forest.

FIELD WORK

1. Students will visit any one of the following place of interest and submit a written report by the end of the semester:
2. Visit to a hospital/industry/canteen for solid waste management
3. Visit to a chemical industry to study about the practices followed there for waste disposal
4. Visit to Vandalur zoo for study of animal conservation/plants- flora and fauna
5. Study of simple ecosystems-lake/hill slopes
6. Naming the trees in the campus at SRM
7. Study of common plants, insects, birds in the neighbourhood
8. Study of common diseases and their prevention
9. Optional: Street plays and rally for awareness of obesity/diabetes/ vitamin D deficiency/health issues/ waste management/ solid waste management/ no plastics/ energy consumption/wild life protection.

TEXT BOOKS

1. Sharma B.K. (2001). "*Environmental Chemistry*" Goel Publ. House, Meerut
2. Jeyalakshmi R. (2014), Text book of "*Environmental Studies*", Devi publications, Chennai.

REFERENCES

1. Agarwal, K.C. 2001 "*Environmental Biology*", Nidi Publ. Ltd. Bikaner.
2. De A.K., "*Environmental Chemistry*", Wiley Eastern Ltd.

e-BOOK

1. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380013, India, Email:mapin@icenet.net (R)

SEMESTER VI

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15601	OBJECT ORIENTED ANALYSIS AND DESIGN	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course, the learners is expected:

1. To analyze and design the problem domain using unified Object approach
2. To identify and categorize business, access and view layer objects of the application
3. To construct the software system

UNIT - I **(15 Hours)**

INTRODUCTION TO UML: Importance of Modeling - Principles of Modeling - Object Oriented Modeling - Conceptual Model of the UML- Architecture - Software Development Life Cycle.

UNIT - II **(15 Hours)**

STRUCTURAL MODELING: Classes – Relationships – Common Mechanisms – Diagrams.

UNIT - III **(15 Hours)**

CLASS & OBJECT DIAGRAMS: Terms – Concepts - Modeling Techniques for Class and Object Diagrams.

UNIT - IV **(15 Hours)**

BEHAVIORAL MODELING: Interactions - Interaction Diagrams – Use cases – Use case Diagrams – Activity Diagrams.

UNIT - V **(15 Hours)**

ARCHITECTURAL MODELING: Component – Deployment – Component Diagrams and Deployment Diagrams.

TEXT BOOK

1. Grady Booch, James Rumbaugh and Ivar Jacobson (2004). *"The Unified Modeling Language User Guide*". Addison Wesley Longman Pvt. Ltd., Singapore,

REFERENCE

1. Grady Booch, James Rumbaugh and Ivar Jacobson (2000), "*The Unified Modeling language Reference manual*". Addison Wesley Longman Pvt. Ltd., Singapore,

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15602	SOFTWARE ENGINEERING AND TESTING	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To classify the various Software Process Models
2. To understand the Software Testing Concepts.
3. To implement the Software Quality and Control Concepts
4. To Design the Test cases and to get familiarity over Automated Testing tools

UNIT I - THE PRODUCT AND THE PROCESS (15 Hours)

The Evolving Role of Software– Software Characteristics– Software Applications– Software: A Crisis on the Horizon?- Software Myths- Software Engineering: A Layered Technology– The Software Process– Software Process Models– The Linear Sequential Model– The Prototyping Model- The RAD Model- Evolutionary Software Process Models- Component-Based Development.

UNIT II - SYSTEM ENGINEERING AND ANALYSIS CONCEPTS (15 Hours)

Computer-Based Systems– The System Engineering Hierarchy – Business Process Engineering: An Overview– Product Engineering: An Overview– Requirements Engineering– System Modeling– Requirement Analysis- Requirements Elicitation for Software- Software Prototyping- Specification- Specification Review.

UNIT III PRINCIPLES OF TESTING (15Hours)

PRINCIPLES OF TESTING: Introduction - Phases of software – Quality assurance and Quality control - Testing verification and validation - TECHNIQUES: White box - static testing - structural testing - challenges in white box testing - Black box testing.

UNIT IV - TYPES OF TESTING (15Hours)

TYPES OF TESTING: Integration testing - Top-Down Integration – Bottomup integration-Bi-Directional Integration - System - Integration – SYSTEM ACCEPTANCE TESTING: Functional versus Non Functional Testing - Functional System Testing - Non Functional Testing Acceptance Testing.

UNIT V - PERFORMANCE TESTING (15Hours)

PERFORMANCE TESTING: Introduction - Factors of governing - performance testing - Methodology for performance testing - Tools for performance testing - Process for performance Testing – REGRESSION TESTING : Introduction - Types regression testing - Best pratice in regression testing.

TEXT BOOKS

1. Roger S. Pressman, (2001), "*Software Engineering* ", Fifth edition, McGraw-Hill Higher Education - A Division of The McGraw-Hill Companies.
2. Srinivasan Desikan and Gopalasamy Ramesh, "*Software Testing for Principles and Practices*", Person Education,.

REFERENCES

1. William E. Perry (2006), "*Effective Methods of Software Testing*", 3rd Ed, Wiley India.
2. Renu Rajani, Pradeep Oak (2007), *"Software Testing"*, TMH.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15603	OBJECT ORIENTED ANALYSIS AND DESIGN LAB	0	0	4	4	2

LIST OF EXPERIMENTS

PART I – To Familiarize with CASE tools using ATM system as specification.

1. Introduction and project definition
2. Software process overview
3. Project planning
4. Software requirements and RequisitePro
5. Introduction to UML and use case diagrams
6. System modeling (DFD and ER)
7. Flow of events and activity diagram
8. OO analysis: discovering classes
9. Interaction diagrams: sequence and collaboration diagrams
10. Software Design: software architecture and object-oriented design
11. State Transition Diagram
12. Component and deployment diagrams
13. Software testing
14. Presentations.

PART II- Design a project using CASE tools

Students are divided into batches of 5 each and each batch has to draw the following diagrams using UML for given different case studies for each batch.

UML diagrams to be developed are:

1. Use Case Diagram.
2. Class Diagram.
3. Sequence Diagram.
4. Collaboration Diagram.
5. State Diagram

6. Activity Diagram.
7. Component Diagram
8. Deployment Diagram.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15604	PROJECT WORK	1	1	4	6	4
Students can choose problems of their own interest to develop software package using the programming languages/tools available						

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E04	DATA MINING AND WAREHOUSING	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To know the basic concepts of data mining
2. To classify & cluster the data
3. To use association rules on data.
4. To introduce the concept of data warehousing
5. To recover data in case of data loss.

UNIT I - DATA MINING (12 Hours)

Introduction- information and production factor- data mining Vs query tools - data mining and marketing -self learning computer system-computer learning-data learning, data mining and data warehouse.

UNIT II - KNOWLEDGE DISCOVERY PROCESS (12 Hours)

Data selection- cleaning-enrichment-coding preliminary analysis of data set using traditional query tools-visualization techniques-OLAP tools-decision trees association rules-Neural networks genetic algorithms-KDD(Knowledge discover in databases) environment.

UNIT III - DATA WAREHOUSE – ARCHITECTURE (12 Hours)

System process-process architecture, - design – database schema- partitioning strategy-aggregations - data marting-meta data-system and data warehouse process managers.

UNIT IV - HARDWARE AND OPERATIONAL DESIGN (12 Hours)

Hardware and operational design of data warehouse - hardware arch-physical layout-security-backup and receiver-service level agreement-operating the data warehouse.

UNIT V - PLANNING, TUNING AND TESTING (12 Hours)

Capacity planning- tuning the data warehouse- testing the data warehouses-data warehouse features.

TEXT BOOKS

1. Pieter Adriaans, Dolf, Zantinge (1996), "*Data mining"*, Addison Wesley" (Unit I & II)
2. Sam Anahory, Dennis Murray "*Data Warehousing in real world*" (1997)**,** Addison Wesley.(Unit III, IV & V)

REFERENCES

1. Mark Hall, Ian Witten and Eibe Frank (2011),"*Data Mining: Practical Machine Learning Tools and Techniques*", Third edition, Morgan Kaufmann Publisher.
2. Paulraj Ponniah (2012), "*Data Warehousing: Fundamentals for IT Professionals*", Second Edition, Wiley India Pvt Ltd.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E05	SERVICE ORIENTED ARCHITECTURE	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To get an overview of service oriented architecture.
2. To understand the concept of web services and SOA.
3. To acquire knowledge about enterprise platforms and SOA.

UNIT I - INTRODUCTION TO SOA (12 Hours)

Fundamental SOA- Common Characteristics of contemporary SOA- Benefits of SOA- A SOA timeline (from XML to Web Services to SOA) - The continuing evolution of SOA (Standards organizations and Contributing vendors) - The roots of SOA (comparing SOA to Past architectures).

UNIT II - PRINCIPLES OF SERVICE – ORIENTATION (12 Hours)

Services-orientation and the enterprise- Anatomy of a service-oriented architecture- Common Principles of Service-orientation- Service orientation and Object-orientation- Service layer abstraction- Business service layer- Orchestration service layer.

UNIT III - WEB SERVICES AND SOA (12 Hours)

The Web services framework- Services (as Web Services)- Service Registry- Service descriptions (with WSDL)- Messaging (with SOAP), Transactions, Coordination,

Business Activity, Orchestration, Choreography- Reliable Messaging, Metadata, Security, Notification and Events.

UNIT IV - BUSINESS PROCESS DESIGN (12 Hours)

Business Process Management basics- WS BPEL language basics- WS Coordination overview- Service oriented business process design- WS addressing language basics- WS-Reliable Messaging language basics- Service Component Architecture basics.

UNIT V - ENTERPRISE PLATFORMS AND SOA (12 Hours)

SOA platform basics- Enterprise Service Bus basics (including basic and complex patterns) - SOA support in J2EE- SOA support in .NET- SOA Reference Architecture.

TEXT BOOKS

1. Thomas Erl (2005), "*Service-Oriented Architecture Concepts and Technology and Design*", Pearson Education.(Unit I ,II)
2. Eric Newcomer, Greg Lomow (2005), "*Understanding SOA with Web Services"* , Pearson Education (Unit III, IV & V)

REFERENCES

1. Chris Britton (2004),"*IT Architecture and Middleware, Strategies for Building Large Integrated Systems*" ,Pearson Education.
2. Sandeep Chatterjee, James Webber (2004) "*Developing Enterprise Web Services – An Architect's Guide*", Pearson Education.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E06	MANAGEMENT INFORMATION SYSTEM AND ERP	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand the importance of IS.
2. To understand evolution, implementation and advantage of ERP.

UNIT - I (12 Hours)

FOUNDATION OF IS IN BUSINESS: Components of IS – Competing with IT - Fundamentals of Strategic Advantage – Using IT for Strategic Advantage.

UNIT - II (12 Hours)

BUSINESS APPLICATIONS: Enterprise, Functional Business Systems. Customer Relationship Management: The Business Focus – Supply Chain Management: The Business Network.

UNIT - III **(12 Hours)**

E-COMMERCE SYSTEMS – E-Commerce Fundamentals – E-commerce Applications and Issues – Decision Support Systems- Decision Support in Business.

UNIT - IV **(12 Hours)**

ENTERPRISE RESOURCE PLANNING (ERP): an overview – benefits of ERP - ERP and related technologies – Business process reengineering – Data warehousing – Data mining – online analytical processing.

UNIT - V **(12 Hours)**

ERP IMPLEMENTATION - ERP implementation life cycle – ERP Present and Future: ERP and E- Commerce – ERP and Internet.

TEXT BOOKS

1. James O Brien, George M Marakas (2007), *"Management Information Systems*", 7th Ed, Tata MC Graw Hill Publishing Company Ltd, New Delhi, UNITS I, II & III
2. Alexis Leon (2008), "*ERP Demystified*", 2nd Ed, Tata Mc Graw Hill publishing Company Ltd, New Delhi. Units IV & V

REFERENCE

1. WS Jawadekar (1998), "*Management Information System*", Tata McGraw Hill Publishing Company Ltd, New Delhi.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA156E07	INTRODUCTION TO MOBILE APPLICATION DEVELOPMENT	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To understand the basic principles of Mobile application development
2. To develop mobile applications.

UNIT I - MOBILE APPLICATION PRINCIPLES **(12 Hours)**

Mobile Application Development Paradigm - What is and application? - Mobile Application - Programming rules and Challenges - Mobile Programming Tools - Mobile Application Evolution - Thin Client - Fat Client - Future of Mobile App Development - Mobile Client Server App Architecture - Introduction to Client-Server Architecture - Distributed Client-Server Architecture - Role of Client-Server - Adaptation Techniques - Extended Client-Server Architecture - Mobile Data Access - Platform Dependencies and Trends - Platform Dependency difficulty - How to address and solve dependency.

UNIT II - MOBILE PROGRAMMING LANGUAGES AND PRACTICES (12 Hours)
Mobile App Programming in Java - Introduction to Java - Java Compiler - Java Interpreter - Advantages of Java - Disadvantages of Java - Programming Methodology - Mobile App Programming in C++ - Introduction to C++ - Symbian C++ - Microsoft embedded VC++ - Mobile Programming best practices - User Analysis - Organizational Analysis .

UNIT III - MOBILE PLATFORM AND NW ENVIRONMENT (12 Hours)
Mobile App Testing Environment - OTA App Provisioning. Mobile Applications: What is Web App? - Context of Mobile Applications - Pros and Cons of Mobile Web App - SIM based Mobile App Development - What is SIM? - SIM as a Platform - SIM as Service Differentiator - Introduction to UI - Principles for UI development

UNIT IV - MOBILE SERVICES (12 Hours)
Evolution of Mobile Services - Types of Mobile Services - Personal Services - CommModuley Services - Introduction to Consumer Services - Various Consumer Services - SMS - MMS - Games - Proprietary vs. Standardize Interface - Various Developer Services - SMS Web Service - MMS Web Service - Overview and Features of Mobile Services.

UNIT V - Application (App) Server (12 Hours)
App Server Definition - What App Server does? - How App Server works - Mobile Context of AS - AS Deployment Architecture - App Server Layers - Advantages and Disadvantage of App Server - AS in VAS - AS in VAS Evolution .

TEXT BOOK
1. Jeff McWherter, Scott Gowell (2012), *"Professional Mobile Application Development*".

REFERENCE
1. Reza, Mobile Computing Principles: "*Designing and Developing Mobile Applications"*.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E08	CLOUD COMPUTING	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:
At the end of this course the learner is expected:
1. To understand the basic concepts on cloud computing.
2. To attain the knowledge on the reason for migration on cloud.
3. To acquire the clear idea about the working principles of cloud computing.

UNIT I - CLOUD COMPUTING BASICS (12 Hours)

Cloud Computing Overview- Applications – Intranets and the cloud – Why Cloud Computing Matters – Benefits – Limitations – Companies in the Cloud Today – Cloud Services.

UNIT II - CLOUD COMPUTING TECHNOLOGY (12 Hours)

Hardware and Infrastructure – Clients – Security- Network – Services – Accessing the Cloud - Platforms – Web Applications – Web APIs –Web Browsers –Cloud Storage – Overview – Cloud Storage Providers –Standards – Application – Client – Infrastructure – Service.

UNIT III - CLOUD COMPUTING AT WORK (12 Hours)

Software as a service – Overview – Driving Forces – Company offerings – Industries – Software plus Services – Overview - Mobile Device Integration –Providers – Microsoft Online.

UNIT IV - DEVELOPING APPLICATIONS (12 Hours)

Google – Microsoft – Intuit Quick Base – Cast Iron Cloud – Bungee Connect - Local clouds and Thin Clients – Virtualization – Server Solutions – Thin Clients.

UNIT V - MIGRATING TO THE CLOUD (12 Hours)

Cloud Services for Individuals – Cloud services aimed at the mid-market –Enterprise-Class Cloud Offerings – Migration.

TEXT BOOK

1. Velte T. Antony, Velte J. Toby. and Elsen Peter Robert (2010), "*Cloud Computing: A Practical Approach*", Tata McGraw- Hill

REFERENCES

1. Miller Michael (2008), *"Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online*", Que Publishing.
2. Beard Haley (2008), "*Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs*", Emereo Pvt. Limited.

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E09	INFORMATION SECURITY	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To get an overview of Information Security.
2. To understand the basics of information security.
3. To gain knowledge about network and database security.

UNIT I - INTRODUCTION **(12 Hours)**

Meaning, importance, basics - changing nature and global information systems. Threats: New Technologies Open Door Threats - information Level Threats Vs Network Level- Threats - Information system security - Computer Viruses - Classifications of Threats and assessing damages and protecting information system security.

UNIT II - INFORMATION SECURITY POLICY **(12 Hours)**

Security policy, standards, guidelines, Information security management system, Basic Principles, Security related Terms, Three Pillars of Information Security. Information Classification, criteria for information and classification.

UNIT III - PHYSICAL SECURITY **(12 Hours)**

Need, Meaning, Natural Disasters and control, basic tenets of physical security of information systems resources, physical entry controls. Biometrics Controls for Security: Introduction, Access Control, User Identification & Authentication. Meaning, Nature of Biometric identification/Authentication techniques, Biometric techniques. Key Success factors and benefits.

UNIT IV - NETWORK SECURITY, CRYPTOGRAPHY **(12 Hours)**

Need, Basic concepts, network security dimensions, establishing security perimeter for network protection, Network types, Firewall: Introduction, need, topologies for different type of firewalls. Cryptography: basic elements of cryptography, Digital Signature, Cryptography algorithms – IES, AES and public key cryptography (RSA)

UNIT V - DATABASE SECURITY **(12 Hours)**

Introduction, Need, federated databases, securing the contents of mobile databases, data integrity as a parameter for database security, database security policy. Security Models & Frameworks: Intro, Terminology. Methodologies for Information System Security

TEXT BOOKS

1. Nina Godbole (2009), "*Information Systems Security*" , Wiley Publications. (Unit I , II , III & V)
2. Atul Kahate (2003), "*Cryptography & Network Security*", TataMcgraw (Unit IV)

REFERENCES

1. Mark Merkow (2006),"*Information Security, 1/e: Principles and Practices*" Pearson Education.
2. Bragg, Roberta (2004), "*Network Security: The Complete Reference*", TataMcgraw Hill.

Subject Code	Subject Title	L	T	P	Total of LTP	C
CDC15601	PERSONALITY DEVELOPMENT	2	0	0	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this course, the students will be able to,

1. Understand the concept of Personality Development
2. Summarize the principles of proper courtesy as practiced in the workplace

UNIT – I **(6 Hours)**

Introduction-Personality –Definition, Determinants of Personality-Personality Characteristics and Behaviour at work-Big Five dimensions of Personality

UNIT – II **(6 Hours)**

Personality Types- Sensation –Intuitive- Feelers & Thinkers category - Filling the GAP- Grooming, Attitude and Personality- Time management-Projective Personality Tests.

UNIT - III **(6 Hours)**

Introduction-Meaning and Definition of Ethics- Nature and objective of Ethics- Ethics and Morality – Ethics and Religion - Morals, Values and Ethics – Integrity – Work Ethic – Honesty – Courage –Empathy – Self-Confidence – Character .

UNIT – IV **(6 Hours)**

Ethical Theories – Classification- Basic Moral theories –Peace - Justice Ethical Decision Making - Structure - competence in professional ethics- How to use ethical reasoning-approaches and methods of resolving ethical dilemmas

UNIT – V **(6 Hours)**

Development of Ethical corporate Behaviour – Factors affecting managerial work - codes of ethics- Importance of attitudes in personal and professional lives.

TEXT BOOKS

1. John R Boatright (2003), *"Ethics and the Conduct of Business*", Pearson Education, New Delhi,.
2. Elizbeth Hurlock (2007), "*Personality Development*", McGraw Hill, 4th Edition,.

REFERENCES

1. Stephen P. Robins (2012), "*Organisational Behavior*", PHI Learning / Pearson Education, 15th edition,.
2. Subramaniam.R (2013), Professional Ethics, Oxford Publication.

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NON-MAJOR ELECTIVE SUBJECTS

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCA15E81	OFFICE AUTOMATION	1	0	1	2	2
	UCA15E82	PRINCIPLES OF INTERNET					
	UCA15E83	PROGRAMMING IN C					
IV	UCA15E84	WEB DESIGN	1	0	1	2	2
	UCA15E85	SPSS					
	UCA15E86	PROGRAMMING IN C++					

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	**UCA15E81**	**OFFICE AUTOMATION**	**1**	**0**	**1**	**2**	**2**

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To have clear understanding in open source software
2. To have hands on experience in open office

UNIT I - WRITER — THE WORD PROCESSOR (6 Hours)

Creating a Document -Opening a Document -Laying Out the Page-Setting paper size, margins, and orientation -Creating headers and footers -Numbering pages -Entering and Editing Text-Modifying text-Moving and copying text -Finding and replacing text -Correcting mistakes automatically-Printing

UNIT II - WRITER — THE WORD PROCESSOR (6 Hours)

Adding character to your characters -Planning Your Paragraphs-Aligning paragraphs -Spacing your lines -Making Lists -Bulleting lists-Numbering lists-Using a style -Creating a style - tables and columns

UNIT III - CALC — THE SPREADSHEET (6 Hours)

Creating a Spreadsheet -Inputting Your Data -Entering your data -Editing your data -Filling cells automatically -Managing Columns and Rows-Copying, pasting, cutting, dragging, and dropping your cells -Adding the Art -Formula Basics-Adding, Subtracting, and More -Adding and other arithmetic -Adding with the Sum function.

UNIT IV - CALC — THE SPREADSHEET (6 Hours)

Rocketing into Orbit with Functions Using the AutoPilot: Functions dialog box -Editing functions -Entering functions manually -Copying and pasting formulas -Creating formula arrays -Recalculating formulas -Creating Magic Formula-Nesting functions - Creating conditional formulas

UNIT V - IMPRESS — THE PRESENTATION (6 Hours)

Creating a Presentation -Opening an existing presentation -Adding Slides -Adding text to a slide -Saving Your Presentation for Posterity - Making Presentations Picture Perfect -Adding Images -Clipping art -Drawing objects -Coloring Backgrounds - Creating a plain-colored background -Creating a gradient background -Hatching a background -Using a bitmap image as a background -Creating 3-D text-Inserting 3-D objects -Animating Impressively -Using Text Effects Effectively -Creating Animation Effects -Creating Animated GIF files -Adding Slide Transition Effects - Showing a Presentation -Setting slide timing -Hiding slides -Specifying slide show settings - Delivering a Slide Show .

TEXT BOOKS

1. Keir Thomas and Andy Channelle with Jaime Sicam (2009), “Beginning Ubuntu Linux” , Apress.(Unit I & II)
2. Gurdy Leete, Ellen Finkelstein, and Mary Leete (2004), “Openoffice.org for dummies”, Wiley Publishing, Inc.(Unit III,IV & V)

REFERENCE

1. Andy channelle (2009), “Beginning OpenOffice 3”, Aprèss.

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCA15E82	PRINCIPLES OF INTERNET	1	0	1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To acquire basic knowledge about Internet
2. To gather extensive knowledge about uses of Internet

UNIT I **(6 Hours)**

Introduction to Internet - The Internet's underlying Architecture

UNIT II **(6 Hours)**

Connecting to the Internet – Communicating on the Internet

UNIT III **(6 Hours)**

How the World Wide Web works. Common Internet tools

UNIT IV **(6 Hours)**

Multimedia on the Internet – Intranet and shopping on the Internet

UNIT V **(6 Hours)**

Safeguarding the Internet

TEXT BOOK

1. How the Internet works , Fourth Edition, Techmedia – Preston Gralla Millennium Edition.

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	UCA15E83	PROGRAMMING IN C	1	0	1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To acquire basic knowledge about Programming in C
2. To gather knowledge in C programming and developing programming skills
3. To strengthen the knowledge on structures, arrays etc., of C programming

UNIT I - OVERVIEW OF C (6 Hours)

Introduction- Importance of C- Basic Structure of C program- Tokens-Variables- Data types- Operators and Expression- Managing Input and Output Operators.

UNIT II - CONDITIONAL STATEMENTS (6 Hours)

If statement- switch statement- goto statement- while statement- do statement-for statement- continue statement- break statement.

UNIT III - ARRAYS (6 Hours)

One dimensional array- Two dimensional array- Multidimensional array

UNIT IV - FUNCTIONS (6 Hours)

Built in functions (Library functions): String Handling functions-User defined functions.

UNIT V – STRUCTURES AND UNIONS (6 Hours)

Structure definition- Arrays of structures- Structures and functions- Unions

TEXT BOOK

1. Balagurusamy.E, (2008), ”Programming in ANSI C” , Second Edition, Tata McGraw Hill.

REFERENCES

1. Kamthane Ashok.N, (2013), ”Programming in C”, 2nd Edition, Pearson Education.
2. Yashvant P. Kanetkar, (2008), “Let us C”, 8th Edition, Infinity science press.

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCA15E84	WEB DESIGN	1	0	1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To learn the concepts of HTML and web page designing.
2. To design websites.

UNIT I **(6 Hours)**

BASIC INTERNET CONCEPTS: What is Internet – History – Host Machines and Host Names-Client / Server Model – Domain Names – Protocols- IP Address.

UNIT II **(6 Hours)**

ADVANCED INTERNET CONCEPTS: Anatomy of an Email Message – Viewing - Sending – Replying - Search Engines – Meta Search Engine.

UNIT III **(6 Hours)**

HTML INTRODUCTION: History of HTML – HTML Document – Anchor Tags – Hyper Links-Sample HTML Documents.

UNIT IV **(6 Hours)**

HEAD AND BODY SECTIONS: Header Section – Title – Prologue – Links – Comment – Heading – Horizontal Rule – Paragraph – Images and Pictures - Ordered and Unordered List.

UNIT V **(6 Hours)**

TABLES: Table Creation – ColSpan, RowSpan – Cell Spacing, Cell Padding – Nested Tables. FRAMES: Frameset Definition – Frame Definition – Nested Frames. FORMS: Action Attribute – Method Attribute – Drop Down List – Sample Forms.

TEXT BOOKS

1. Wendy G. Lehnert, “Internet 101 - A Beginners Guide to Internet and the World Wide Web”, Addison Wesley. UNITS I & II
2. Xavier.C,”World Wide Web design with HTML”, Tata McGraw Hill Publishing Limited, New Delhi. UNITS III, IV & V

REFERENCE

1. Bryan Pfaffenberger and Bill Karow, “HTML 4 Bible”, 2nd Edition, IDG Books Worldwide, Inc

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCA15E85	SPSS	1	0	1	2	2

LIST OF EXPERIMENTS

1. Construction of Frequency tables: Univariate Frequency tables -- Cross-Tabulation
2. Graphical representation of Data: Bar diagram – Simple Bar diagram, Multiple Bar Diagram, Sub divided Bar Diagram, Histogram Pie Diagram
3. Calculation of Measures of Central Tendencies: Mean, Median and Mode, Geometric mean
4. Calculation of Methods of Dispersion - Standard Deviation, Quartiles, Skewness, Kurtosis
5. Calculation of Correlation Coefficient: (a) Karl Pearson's Correlation Coefficient, (b) Spearman's Rank Correlation Coefficient
6. Calculation of Regression Trend: (a) Trend Line
7. Test of Significance for Single and two Samples – Large Sample Test (Z-Test) (a) Test for Mean, (b) Test for Proportion, (c) Test for Standard Deviation
8. Test of Significance for Single and two Samples – Small Sample Test (t-Test, F-test) (a) Test of Mean, (b) Test of Variances
9. Non-Parametric Test (a) One –Way Chi-square test (test for Homogeneity) (b) Two–Way Chi-square test (test for Attributes)
10. Test of Homogeneity of Means for more than 2 samples (a) One –Way ANOVA (b) Two–Way ANOVA

REFERENCES:

1. Vijay Gupta, (1999),SPSS for Beginners, Published by VJBooks Inc.
2. Levine's Guide to SPSS for Analysis of Variance.2nd Edition, Melanie C. Page, Sanford L. Braver and David P. MacKinnon, LAWRENCE ERLBAUM ASSOCIATES, PUBLISHERS2003 Mahwah, New Jersey, London.

Semester	Subject Code	Subject Title	L	T	P	Total of LTP	C
IV	UCA15E86	PROGRAMMING IN C++	1	0	1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this Subject the learner is expected:

1. To learn the concepts of class & objects.
2. To perform Inheritance, Overloading of operators, functions and constructors

UNIT I - PRINCIPLES OF OBJECT ORIENTED PROGRAMMING (6 Hours)

Object Oriented Programming Paradigms- basic concept of OOPS- benefits of OOP-what is C++-simple C++ program-structure of C++ program- creating a source file – compiling and linking.

UNIT II - TOKENS, EXPRESSION AND CONTROL STRUCTURES (6 Hours)

Tokens-keywords-identifiers and constants-basic data types-user defined data types-derived data types-type compatibility-declaration of variables-dynamic initialization of variables-reference variables-operators in C++-manipulators-type cast operator-implicit conversion-operator overloading-control structures.

UNIT III - CLASS AND OBJECTS (6 Hours)

Functions in C++- function overloading-Specifying a class- defining member function-arrays within a class-arrays of objects- objects as function arguments- friendly functions-constructor and destructor

UNIT IV - INHERITANCE (6 Hours)

Single inheritance-multilevel-multiple inheritance-hierarchical-hybrid.

UNIT V - POLYMORPHISM (6 Hours)

Virtual base class-abstract classes - operator over loading- rules for operator overloading

TEXT BOOK

1. Balagurusamy.E, (2008), “Object Oriented Programming with C++”, Tata McGraw-Hill Publication.