SRM UNIVERSITY
(Under section 3 of UGC Act 1956)

BACHELOR OF SCIENCE
IN
COMPUTER SCIENCE

CURRICULUM AND SYLLABUS

(For students admitted from the academic year 2015-16 onward)

UNDER CHOICE BASED CREDIT SYSTEM

DEPARTEMENT OF COMPUTER SCIENCE

FACULTY OF SCIENCE AND HUMANITIES
SRM UNIVERSITY
SRM NAGAR, KATTANKULATHUR – 603 203

BACHELOR OF SCIENCE IN COMPUTER SCIENCE
(For students admitted from academic year 2015 – 2016)
CURRICULUM
SEMESTER I

Career Stream Title	Course Code	Course Title	L	T	P	Total L+T+P	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	UCS15101	Digital Logic Fundamentals	4	0	0	4	4
	UCS15102	Problem Solving Using C	4	0	0	4	4
Compulsory Core Lab	UCS15103	Digital Logic Fundamentals Lab	0	0	3	3	2
	UCS15104	C LAb	0	0	3	3	2
Allied	UCS15105	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		Course Code	Course Title	L	T	P	Total L+T+P	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		UCS15201	Object Oriented Programming Using C++	4	0	0	4	4
		UCS15202	Data Structures	4	0	0	4	4
Compulsory Core Lab		UCS15203	C++ Lab	0	0	3	3	2
		UCS15204	Office Automation Lab	1	0	2	3	2
Allied		UCS15205	Mathematics – II	4	0	0	4	4
Supportive Course (Internal Evaluation)		CDC15201	Quantitative Apptitude and Reasoning – I	2	0	0	2	2
Extension Activity		UNS15201	NSS	0	0	0	0	1
		UNC15201	NCC					
		UNO15201	NSO					
		UYG15201	Yoga					
	Total			**22**	**3**	**5**	**30**	**27**

SEMESTER III

Career Stream Title	Course Code	Course Title	L	T	P	Total L+T+P	C
Compulsory Core	UCS15301	Java Programming	4	1	0	5	4
	UCS15302	Multimedia And Its Applications	4	1	0	5	4
Compulsory Core Lab	UCS15303	Java Programming Lab	0	0	4	4	2
	UCS15304	Multimedia Lab	0	0	4	4	2
Allied	UCS15305	Statistical Methods	4	1	0	5	4
Skill Based Electives-I	UCS15E51	Software Engineering	3	0	0	3	3
	UCS15E52	Operating System					
	UCS15E53	Computer Organization and Architecture					
Non-major Elective-I		Open Elective - I	1	0	1	2	2
Supportive Course (Internal Evaluation)	CDC15301	QuantitativeApptitude and Reasoning – II	2	0	0	2	2
Total			**17**	**4**	**9**	**30**	**23**

SEMESTER IV

Career Stream Title	Course Code	Course Title	L	T	P	Total L+T+P	C
Compulsory Core	UCS15401	Data Base Management Systems	4	1	0	5	4
	UCS15402	Visual Basic .Net	4	1	0	5	4
Compulsory Core Lab	UCS15403	DBMS LAB	0	0	4	4	2
	UCS15404	Visual Basic .Net Lab	0	0	4	4	2
Allied	UCS15405	Resource Management Techniques	4	1	0	5	4
Skill Based Electives-II	UCS15E54	Software Process Management	3	0	0	3	3
	UCS15E55	Software Testing					
	UCS15E56	Management Information Systems					
Non-major Elective-II		Open Elective -II	1	0	1	2	2
Supportive Course (Internal Evaluation)	CDC15401	Communication Skills	2	0	0	2	2
Total			**16**	**4**	**10**	**30**	**23**

SEMESTER V

Career Stream Title	Course Code	Course Title	L	T	P	Total L+T+P	C
Compulsory Core	UCS15501	Advanced Java Programming	4	1	0	5	4
	UCS15502	Scripiting Languages	4	1	0	5	4
	UCS15503	Data Communication and Network	4	1	0	5	4
Compulsory Core Lab	UCS15504	Advanced Java Programming Lab	0	0	4	4	2
	UCS15505	Scripiting Languages lab	0	0	4	4	2
Core Elective – I	UCS15E01	Computer Graphics	4	0	0	4	4
	UCS15E02	Compilier Design					
	UCS15E03	Software Agents					
Supportive	UES15501	Environmental Studies	3	0	0	3	3

Career Stream Title	Course Code	Course Title	L	T	P	Total L+T+P	C
Course							
Total			**19**	**3**	**8**	**30**	**23**

SEMESTER VI

Career Stream Title	Course Code	Course Title	L	T	P	Total L+T+P	C
Compulsory Core	UCS15601	C# Programmaing	4	1	0	5	4
	UCS15602	Object Oriented Analysis and Design	4	1	0	5	4
Compulsory Core Lab	UCS15603	C# Programming Lab	0	0	4	4	2
	UCS15604	Project Work	1	1	4	6	4
Core Elective –II	UCS15E04	Artificial Intiligence	4	0	0	4	4
	UCS15E05	Expert System					
	UCS15E06	System Software					
Core Elective - III	UCS15E07	Grid Computing	4	0	0	4	4
	UCS15E08	Cloud Computing					
	UCS15E09	Big Data Analytics					
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

குறியீட்டுஎண்	பாடம்	L	T	P	Total LTP	C
ULT15101	தமிழ்- I	4	1	0	5	4

பகுதி 1. தமிழ்இலக்கியவரலாறு

(நூல் – தமிழ்இலக்கியவரலாறு- முனைவர்சு.ஆனந்தன், கண்மணிபதிப்பகம், திருச்சி, 2010.)

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

பகுதி 2. இலக்கியம்

அ.இக்காலக்கவிதைகள்

1. பாரதியார்
   நெஞ்சு பொறுக்கு திலையே ...என்றுதொடங்கும்கவிதை
2. பாரதிதாசன்
   உலக ஒற்றுமை - தன்பெண்டு தன்பிள்ளை ...என்றுதொடங்கும்கவிதை
3. ந.பிச்சமூர்த்தி - கிளிக்கூண்டு
4. இன்குலாப் - மரங்களின் சுற்றம்
   சந்திக்கச் செல்வதில்லை...என்று தொடங்கும் கவிதை
5. நா. காமராசன் - கருப்புமலர்கள்
   காகிதப்பூக்கள் - காலமழைத்தூறலிலே... என்று தொடங்கும் கவிதை
6. சு.வில்வரெத்தினம் --வேற்றாகிநின்றவெளி
   நிலவின்எதிரொலி – பறம்புமலை...என்று தொடங்கும்கவிதை
7. பாரதிபுத்திரன் - மாரிக்காலஇரவுகள்

சிவகாசிச்சிசுக்கள் – மகனேஅன்றொருநாள்...என்று தொடங்கும்கவிதை

8. து.நரசிம்மன் - வானம்பிறந்தது

ஒருபிஞ்சின்வேண்டுகோள்...என்று தொடங்கும்கவிதை

9. ப.கல்பனா- வானம்பிறந்தது

கீறல்விழுந்தமாலைக்காலங்கள்- இன்றுவர... என்று தொடங்கும்கவிதை

ஆ. சிற்றிலக்கியம்

கலிங்கத்துப்பரணி- போர்பாடியது: 404 -- 408 பாடல்கள்

குற்றாலக்குறவஞ்சி – மலைவளம்

1. வானரங்கள்கனிகொடுத்து .... என்றுதொடங்கும்பாடல்
2. முழங்குதிரைப்புனலருவிகழங்கெனமுத்தாடும் .... என்றுதொடங்கும்பாடல்

இ. காப்பியங்கள்

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

பகுதி 3 உரைநடைப்பகுதி

"**எண்ணங்கள்**"

டாக்டர்எம்.எஸ்.உதயமூர்த்தி,கங்கைபுத்தகநிலையம், 2005.

பாடநூல்கள் :

1. முனைவர்சு.ஆனந்தன் (2010), தமிழ்இலக்கியவரலாறு, கண்மணிபதிப்பகம், திருச்சி, 2010.
2. எம்.எஸ்.உதயமூர்த்தி, "எண்ணங்கள்",கங்கைபுத்தகநிலையம், 2005.
3. செய்யுள்புத்தகம், தமிழ்த்துறை, அறிவியல்மற்றும்மானுடவியல்புலம் , 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

REFERENCES

1. PrayajonMulak Hindi (Author - *MadhavSontakke*)

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.

REFERENCES

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 MindisWithoutFear 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 isitAnyway?
2. The Accused- Feature Film
3. Water

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

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

TEXT BOOKS

1. Cambridge UniversityPress,. 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.

Course	Course Title	L	T	P	Total of	C

Code					L+T+P	
UCS15101	DIGITAL LOGIC FUNDAMENTALS	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

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

1. To Understand the concept of digital systems
2. To operate on various number systems and Simplify Boolean functions.
3. To Distinguish logical and combinational circuits
4. To Design counters and understand the working of arithmetic logic and control unit

UNIT I - NUMBER SYSTEM AND LOGIC GATES (12 Hours)

Number Systems & Codes: Number System - Base Conversion - Binary Codes - Code Conversion. Digital Logic: Logic Gates - Truth Tables - Universal Gates.

UNIT II - BOOLEAN ALGEBRA (12 Hours)

Boolean Algebra: Laws & Theorems - SOP, POS Methods - Simplification of Boolean Functions - Using Theorems, K-Map, Prime - Implicant Method - Implementation using Universal Gates. Binary Arithmetic: Binary Addition - Subtraction - Various Representations of Binary Numbers - Arithmetic Building Blocks - Adders - Subtracters.

UNIT III - COMBINATIONAL LOGIC (12 Hours)

Combinational Logic: Multiplexers - Demultiplexers - Decoders - Encoders - Code Converters - Parity Generators & Checkers - PAL - PLA.

UNIT IV - FLIP FLOP (12 Hours)

Sequential Logic: RS, JK, D, and T Flip-Flops - Edge-Triggered - Master-Slave Flip-Flops. Registers: Shift Registers - Types of Shift Registers.

UNIT V - COUNTERS (12 Hours)

Counters: Asynchronous Counters Ripple, Mod, Up-Down Counters- Decoding Gates - Synchronous Counters - Ring, Decade, Presettable, Shift Counters. Memory: Basic Terms & Ideas - Magnetic Memories - Memory Addressing - Types of ROMs - Types of RAMs.

TEXT BOOKS

1. Leach.D.P&Malvino.A.P, (2002), “Digital Principles and Applications”, Fifth Edition, TMH.(UNIT I,II,III)
2. MorisMano.M,(2001),“Digital Logic and Computer Design”, Forth Edition, PHI. (UNIT – IV – V)

REFERENCE BOOKS

1. Vijayendran. V, (2003), “Digital Fundamentals”, S.V. Publishers.
2. AnanthiShashasaayee, Sheshasaayee.J.G,(2003), “Digital Logic Fundamentals”, First Edition ,Margham Publications.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15102	PROBLEM SOLVING USING 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 - INTRODUCTION (12 Hours)

C fundamentals Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical , Assignment and Conditional Operators - Library functions.

UNIT II - CONTROL STRUCTURES (12 Hours)

Data input output functions - Simple C programs - Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

UNIT III - FUNCTIONS (12 Hours)

Functions -Definition - prototypes - Passing arguments - Recursion. Storage Classes - Automatic, External, Static, Register Variables.

UNIT IV - ARRAYS (12 Hours)

Arrays - Defining and Processing - Passing arrays to functions - Multi-dimension arrays - Arrays and String. Structures - User defined data types - Passing structures to functions - Self-referential structures - Unions - Bit wise operations.

UNIT V - POINTERS (12 Hours)

Pointers - Declarations - Passing pointers to Functions - Operation on Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers - Files: Creating, Processing, Opening and Closing a data file.

TEXT BOOKS

1. Ashok N.Kamthane ,(2006), “Programming with ANSI and Turbo C” , Second Edition ,Pearson Education. (UNIT I – III)
2. Deitel.H.M. &Deitel.P.J, (2001), “How to Program C”, Prentice Hall India. (UNIT IV, V)

REFERENCE BOOKS

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

2. KamthaneAshok.N, (2013), "Programming in C", 2nd Edition, Pearson Education.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15103	DIGITAL LOGIC FUNDAMENTALS LAB	0	0	3	3	2

1. Verification of Boolean Theorems using Digital Logic Gates 4
2. Design and Implementation of Combinational Circuits using Basic Gates for Arbitrary Functions, Code Converters, Etc
3. Design and Implementation of 4-Bit Binary Adder / Subtractor using Basic Gates and MSI Devices
4. Design and Implementation of Parity Generator / Checker using Basic Gates and MSI Devices.
5. Design and Implementation of Magnitude Comparator.
6. Design and Implementation of Application using Multiplexers/Demultiplexers.
7. Design and Implementation of Shift Registers.
8. Design and Implementation of Synchronous and Asynchronous Counters.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15104	C Lab	0	0	3	3	2

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 mark sheet of the student using structure.
15. Program to copy the content of one file to other file.

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15105	MATHEMATICS-I	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

(i) To apply basic concepts for clear understanding of mathematical principles.

(ii) 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.

UNITIV -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 BOOK

1. Veerarajan, T.(2006), "Discrete Mathematics",7thEdition,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)

REFERENCE BOOKS

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.

REFERENCE BOOKS:

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 LTP	C
ULT15201	**தமிழ்- II**	**4**	**1**	**0**	**5**	**4**

பகுதி -1 தமிழ்இலக்கியவரலாறு

(நூல் – தமிழ்இலக்கியவரலாறு- முனைவர்சு.ஆனந்தன், கண்மணிபதிப்பகம், திருச்சி, 2010.)

1. சங்கஇலக்கியங்கள்
2. நீதிஇலக்கியங்கள்
3. பக்திஇலக்கியங்கள்
4. காப்பியங்கள்

பகுதி -2 அ. சங்கஇலக்கியம்

1. முளி தயிர் பிசைந்த... என்றுதொடங்கும்**குறுந்தொகை(167)**பாடல்முல்லை, செவிலித்தாய் கூற்று).
2. மனை நடு வயலை வேழம் சுற்றும்... என்றுதொடங்கும் **ஐங்குறுநூறு**(11) பாடல் (மருதம்,ஐங்குறுநூறு- வேழப்பத்து.)
3. எம்வெங்காமம்இயைவதுஆயின் ....என்றுதொடங்கும்**அகநானூறு (15)** பாடல் (**பாலை , மகட்போக்கியதாய்சொல்லியது**)
4. சுடர் தொடீஇ கேளாய்.....என்றுதொடங்கும்**கலித்தொகை (51)**பாடல் (குறிஞ்சி, தலைவிகூற்று)
5. மண்டு அமர் அட்ட ...என்றுதொடங்கும்**புறநானூறு (213)** பாடல்**,** பாடியவர் :புல்லாற்றூர் எயிற்றியனார், பாடப்பட்டோன் : கோப்பெருஞ்சோழன்; திணை :வஞ்சி; துறை- துணைவஞ்சி.

6. **நறவுவாய்உறைக்கும்நாகுமுதிர் ...**

என்றுதொடங்கும்**பத்துப்பாட்டு** –சிறுபாணற்றுப்படை (51-67) பாடல்

7. கலந்தோர்உவப்பஎயில்பலகடையி**...**

என்றுதொடங்கும்**பத்துப்பாட்டு -- மதுரைக்காஞ்சி (220-237)** பாடல்.

ஆ. நீதிஇலக்கியம்

1. திருக்குறள்- நட்பாராய்தல்

புலவிநுணுக்கம் (2 அதிகாரம்)

2. நாலடியார்- பொருட்பால்- மேன்மக்கள் – 5 பாடல்

இ. பக்திஇலக்கியம்

சைவம் – பன்னிருதிருமுறைகள்

1. திருஞானசம்பந்தர்தேவாரம் – முதலாம்திருமுறை

காதல் ஆகி, கசிந்து ... என்றுதொடங்கும்பாடல்

2. திருநாவுக்கரசர்தேவாரம் - ஐந்தாம்திருமுறை

மாசில் வீணையும் மாலை ... என்றுதொடங்கும்பாடல்

3. சுந்தரர்தேவாரம் – ஏழாம்திருமுறை

பொன்னார் மேனியனே ... என்றுதொடங்கும்பாடல்

4. மாணிக்கவாசகர் – திருவாசகம் – பிடித்தபத்து

பால்நினைந்துஊட்டும்தாயினும்சால ... என்றுதொடங்கும்பாடல்

5. திருமூலர் – திருமந்திரம்

மரத்தை மறைத்தது மாமத யானை ... என்றுதொடங்கும்பாடல்

வைணவம் – நாலாயிரத்திவ்யப்பிரபந்தம்

1. பூதத்தாழ்வார்

பெருகு மத வேழம் மாப்பிடிக்கு...என்றுதொடங்கும்பாடல்

2. குலசேகராழ்வார்

ஆனாதசெல்வத்துஅரம்பையர்கள்தற்சூழ

...என்றுதொடங்கும்பாடல்

3. பெரியாழ்வார்

எந்நாள் எம்பெருமான் ...என்றுதொடங்கும்பாடல்

4. ஆண்டாள்ஓங்கி உலகளந்த உத்தமன் ... என்றுதொடங்கும்பாடல்

5. திருப்பாணாழ்வார்

சதுர மாமதில் சூழ் இலங்கைக்கு ... என்று தொடங்கும் பாடல்

இஸ்லாம்

குணங்குடிமஸ்தான்சாகிபுபாடல்கள் –

தவமேபெறவேண்டுமெனல்- 3 பாடல்கள்

கிறித்துவம்

ஆதிநந்தாவனப்பிரளயம்– ஏதேன்தோட்டம்- 3 பாடல்கள்

பகுதி 3:சிறுகதை

"**ஒற்றைச் சிறகு**",இலக்கியச்சிந்தனை 2012 ஆம்ஆண்டின்சிறந்தசிறுகதைகள்தொகுப்பு.

பாடநூல்கள் :

1. முனைவர்சு.ஆனந்தன் (2010), தமிழ்இலக்கியவரலாறு, கண்மணிபதிப்பகம், திருச்சி, 2010.
2. ஒற்றைச்சிறகு, இலக்கியச்சிந்தனை 2012 ஆம்ஆண்டின்சிறந்தசிறுகதைகள்தொகுப்பு, 2012.
3. செய்யுள்புத்தகம், தமிழ்த்துறை, அறிவியல்மற்றும்மானுடவியல்புலம் , 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. SuprashidDohey***Kabir, Rahim, Bihari, Surdas*** -
2. Nar Ho Na NirashKaro Mann Ko***Maithlisharangupt*** -
3. Jo Tum AaaJaate***MahadeviVarma*** -
4. Hum PanchiUnmuktGaganKe***Shivmangalsinghsuman*** -
5. Chalawa***Santoshshreeyansh*** -
6. YahanThiVahaNadi***MangleshDabral*** -

UNIT - IISTORY **(15 Hours)**

1. Eidgaha***Premchand*** -
2. Vapsi***PriyamvadaUsha*** -
3. EkMuthiAakash***SantoshSrivastav***
4. Ek Plate Sailab***Mannu Bhandari*** -

UNIT - III **(10 Hours)**

1. Anuvad : Anuvad Ki ParibhashaEvamBhed

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.RaziaBegum.Published by Department of Hindi, FS&H,SRM.University

REFERENCES

1. PrayajonMulak Hindi (Author - MadhavSontakke)
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.

REFERENCES

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: **(15Hours)**

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

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

1. The Story of myExperimentswithTruth by M.K. Gandhi (Excerpts)
2. I have aDream by Martin Luther King
3. Farewell Speech by Mark Antony

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

1. Monkey'sPaw by W.W.Jacobs
2. Bear by Anton Chekhov

UNIT IV - Book Review: **(15Hours)**

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

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

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

TEXT BOOKS

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

Course Code	Course Title	L	T	P	L+T+P	C
UCS15201	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 and File Handling.
3. To do effective file management.

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

Principles of Object Oriented Programming (OOP) : Evolution of C++ -Programming Paradigms - Key Concepts of OOP - Advantages of OOP - Usage of OOP and C++ .Input and Output in C++-Streams-Stream classes Unformatted console I/O operations-Member functions of iostream class-manipulators-manipulators with parameters

UNIT II - INTRODUCTION TO C++ **(12 Hours)**

Introduction to C++; Tokens, Keywords, Identifiers, Variables, Operators, Expressions and Control Structures: If,If..Else, Switch - Repetitive Statements- for, while, do..while - Pointers and arrays

UNIT III - FUNCTIONS, CLASSES AND OBJECTS **(12 Hours)**

Functions in C++ - Main Function - Function Prototyping - Parameters Passing in Functions - Values Return by Functions - inline Functions - Function Overloading Classes and Objects; Constructors and Destructors; and Operator Overloading - Type of Constructors

UNIT IV - INHERITANCE AND POLYMORPHISM (12 Hours)

Inheritance: Single Inheritance - Multilevel inheritance - Multiple inheritances - Hierarchical Inheritance - Hybrid Inheritance. Pointers - Virtual Functions and Polymorphism

UNIT V - FILES (12 Hours)

Working with Files: Classes for File Stream Operations - Opening and Closing a File - End-of-File Detection - File Pointers - Updating a File - Error Handling during File Operations - Command-line Arguments

TEXT BOOKS

1. Ashok N.Kamthane,(2006), "Object Oriented Programming with ANSI & Turbo C ++", First edition ,Pearson Education. (UNIT - I , II)
2. Balagurusamy.E, (2008), "Object Oriented Programming with C++", Tata McGraw-Hill Publication. (UNIT III – V)

REFERENCE BOOK

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

Course Code	Course Title	L	T	P	L+T+P	C
UCS15202	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 (12 Hours)

Introduction to theory of data structures – Complexity – Asymptotic Notation – Algorithm Analysis - Recursion – Introduction to Linear data structures – Array Operations – pointers and Arrays – Introduction to Lists and Linked Lists

UNIT II - STACK AND QUEUES (12 Hours)

Introduction to stacks – Representation of Stacks through Array and Lists – Applications of Stacks – Introduction to Queues – Representation of Queues – Circular Queues – Double Ended Queues – priority Queues – Applications of Queues

UNIT III - TREES (12 Hours)

Introduction - Non Linear data Structures – Binary Trees – Types of Trees – Properties of Binary Trees – Representation of Binary Trees – Binary Tree Traversal – Applications of Binary Tree – AVL Trees – Representation – Operations – Expression Trees

UNIT IV - SEARCHING AND SORTING **(12 Hours)**

Introduction – Efficiency of Sorting Algorithm – Bubble Sort – Selection Sort – Quick Sort – Insertion Sort – Merge Sort – Binary Tree Sort – Radix sort – Shell sort – Heap sort – Searching: Binary Search – Indexed Sequential Search

UNIT V - GRAPHS **(12 Hours)**

Introduction – Terms Associated with graphs – sequential representation of Graphs – Linked Representation – Traversal of Graphs – Spanning Trees – Shortest path – Applications of Graphs

TEXT BOOK

1. Instructional Software Research and Development (ISRD) Group , (2006), "Data Structures Using C" , First edition, TMH Education Private Limited. (UNIT I – V)

REFERENCE BOOKS

1. Weiss Mark Allen, (2006), "Data Structure and algorithm analysis", Pearson Education.
2. Ellis Horowitz, Sahni, Dinesh Mehta, (1999), "Fundamentals of Data Structures in C++", Golgotha publication, New Delhi.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15203	C++ LAB	0	0	3	3	2

1. Write a C++ program to implement the concept of classes and object
2. Create a class 'staff ', to create different objects and to test the functioning of member functions, constructors and Destructors.
3. write a C++ program to implement the concept Arrays of Objects
4. Create Class 'student', create an array of students, find out the student who get the first rank
5. Write a C++ program to implement operator overloading to perform complex arithmetic
6. 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)
7. Write a C++ program to handle the error using Exception Handling.
8. Write a C++ program to implement stack using array.
9. Write a C++ program to implement Queue using array.
10. Write a C++ program to convert the infix to postfix expression.
11. Write a C++ program for inorder, preorder and post order tree traversals.

12. Write a C++ program for sorting the given set of elements using selection and bubble sort.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15204	OFFICE AUTOMATION LAB	1	0	2	3	2

UNIT I - MS-WORD

Text manipulation. -- Usage of numbering, bullet, footer, and headers, -- Usage of spell check, and find & replace --Text formatting -- Picture insertion and alignment. -- Creation of document, using templates. -- Creation templates. Mail merge concept -- Coping text & picture from excel.

UNIT II - MS-EXCEL

Cell editing -- Usage and formulate and built-in function -- -File manipulation -- Data sorting (both number and alphabets) -- Worksheet preparation -- Drawing graph -- Usage of auto formatting

UNIT III - POWER POINT

Inserting clip arts and picture -- Frame movement of the above -- Inserting of new slide -- Preparation of organizational charts -- Preparation using wizard -- Usage of design templates

UNIT IV - MS-ACCESS

Creating a table -- Displaying the field -- Queries operation -- Create a report -- Sorting

UNIT V - INTERNET

Creating an e-mail id using yahoo.com--Creating a text file and sent email -- Downloading files, text, picture from email Checking email -- Searching search engine -- Insert a text file into web -- Composing a email -- Sending a group of members to different user -- Chatting

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15205	MATHEMATICS-II	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES:

1. To apply Mathematical techniques for clear understanding of Mathematical principles.
2. 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

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)

REFERENCE BOOKS:

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) AncillaryMathematics,Reprint,S.Viswanathan Printers & Publishers Pvt. Ltd.Chennai

Subject Code	Subject Title	L	T	P	Total of LTP	C
CDC 15201	QUANTITATIVE APPTITUDE AND REASONING – I	2	0	0	2	2

INSTRUCTIONAL OBJECTIVES:

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

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

REFERENCE BOOKS:

1. AbhijitGuha, Quantitative Aptitude - McGraw Hills Publishers
2. Agarwal R S, 'A modern approach to Logical reasoning' S.Chand Publishers

SEMESTER III

Course Code	Course Title	L	T	P	L+T+P	C

UCS15301	JAVA PROGRAMMING	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 (12 Hours)

The Genesis of Java- Buzzwords- Object oriented Concept- Lexica Issues- Data types and variables- Arrays- Operators

UNIT II - OBJECT ORIENTED CONCEPTS (12 Hours)

Control Statements Selection- Control Statement Iteration and jump Statement- Introducing classes- Class fundamentals- The General form of a class- Declaring Objects- Assigning object reference variables.

UNIT III - METHODS AND CLASSES (12 Hours)

Introducing method – Constructors- The this Keyword- Garbage Collection- Finalize() method- Overloading methods- Overloading constructors- Using objects as parameters- Returning Objects- Recursion- Introducing access control- introducing final- Nested and Inner Classes- String class- command-Line arguments.

UNIT IV - INHERITANCE & EXCEPTION HANDLING (12 Hours)

Inheritance Basics- using Super- method Overriding - abstract classes- Using final with Inheritance- Object class- Packages-Interfaces-Exception handling fundamentals- types- Using try, catch, throw, throws and finally exceptions.

UNIT V - MULTITHREADING, APPLET AND STRING HANDLING (12 Hours)

Java thread model -creating thread-Thread priorities-synchronization-Inter-thread communication-Deadlock- Applet fundamentals- string constructors- string operations- character Extraction- string comparison- searching strings- modifying a string.

TEXT BOOK

1. Naughton and Schildt.H, (2007),"Java 2-The complete reference", Fifth Edition, McGraw Hill. (UNIT I – V).

REFERENCE BOOKS

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

Course Code	Course Title	L	T	P	L+T+P	C
UCS15302	MULTIMEDIA AND ITS APPLICATIONS	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES

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

1. To Understand the concept of multimedia and it's hardware
2. To Understand the concept of multimedia software
3. To do Efficient in authoring tools , image processing.

UNIT I - INTRODUCTION (12 Hours)

What is Multimedia: Definitions – CD ROM and the multimedia Highway- where to use Multimedia – Introduction to making multimedia: The stage of project – what you need – Multimedia skills and Training: The team

UNIT II - MULTIMEDIA HARDWARE (12 Hours)

Macintosh and Windows Production Platforms: Macintosh versus PC – the Macintosh platform – The windows multimedia PC Platform – Hardware peripherals: Connections – Memory and storage devices – input devices – output hardware – communication devices

UNIT III - MULTIMEDIA SOFTWARE (12 Hours)

Basic Tools: Text editing and word processing tools – OCR Software – painting and drawing tools – 3D modeling and animation tools – Image editing tools- Sound editing tools – Animation video and Digital Movie Tools – Making instant Multimedia: Linking multimedia objects – Office suites

UNIT IV - AUTHORING TOOLS AND TEXT (12 Hours)

Types of Authoring Tools – Card and page based – Icon based – Time Based – Object Oriented Authoring Tools – Text: The power of meaning – About fonts and Faces – Using text in multimedia – computer and text – Font editing and designing tools – Hypermedia and hypertext

UNIT V - IMAGES AND ANIMATION (12 Hours)

Images: Before you start to create – making still images – color – Image file formats – Animation: Principles of Animation – Making animations that work – Video: Using video – How video works – Broadcast video standards – video tips – Recording formats – Digital video

TEXT BOOK

1. Tay Vaughan,(1999), "Multimedia: Making it Work", Fourth Edition, TMH, New York. (UNIT I – V)

REFERENCE BOOK

1. Urbashi Mitra, (2004), "Introduction to Multimedia Systems" Academic Press.

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15303	JAVA PROGRAMMING LAB	0	0	4	4	2

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.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15304	MULTIMEDIA LAB	0	0	4	4	2

Flash

1. Drawing a Semi Circle by snap tool
2. Drawing a 24 spokes on a wheel
3. Placing a text along a curved path
4. Changing on objects shape using shape tweening
5. Changing on objects shape using text tweening
6. Changing on objects shape using motion tweening
7. Slide show presentation (minimum 5 slides)
8. Creating an application to show the masking effect in Flash
9. Creating an application to water masking

Photoshop

1. Working with the clone stamp tool
2. Drawing Watch using custom shape
3. Testing lab mode
4. Using multichannel mode
5. Using the sponge Tool
6. Antique framing
7. Isolating a Complex Image

8. Removing an element from an image Adjusting the focus

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15305	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 and 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,7ThEdition,S.ChandLtd,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

REFERENCE BOOKS:

1. Gupta, S.P. (2011) , "Applied Statistical Methods" ,4thEdition,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%.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E51	SOFTWARE ENGINEERING	3	0	0	3	3

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To classify the various Software Process Models
2. To appreciate SQA and SCM principle
3. To build an Analysis Model and subsequently architect a suitable design
4. To understand Testing Strategies and Testing Tactics

UNIT I - THE PRODUCT AND THE PROCESS (9 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 - SOFTWARE QUALITY ASSURANCE AND SCM (9 Hours)

Quality Concepts– Software Quality Assurance– Software Reviews– Formal Technical Reviews– Formal Approaches to SQA – Statistical Software Quality Assurance– Software Reliability– Software Configuration Management- The SCM Process- Identification of Objects in the Software Configuration- SCM Standards.

UNIT III - SYSTEM ENGINEERING AND ANALYSIS CONCEPTS (9 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 IV - ANALYSIS MODELING AND DESIGN CONCEPTS (9 Hours)

Data Modeling – Data Flow Diagrams – Behavioral Modeling – The Mechanics of Structured Analysis – The Data Dictionary – Software Design and Software Engineering – The Design Process – Design Principles – Design Concepts – Effective Modular Design – Design Heuristics for effective Modularity – The Design Model – Design Documentation.

UNIT V - SOFTWARE TESTING TECHNIQUES (9 Hours)

Software Testing Fundamentals– Test Case Design- White-Box Testing– Basis Path Testing– Control Structure Testing – Black-Box Testing– A Strategic Approach to Software Testing– Unit Testing – Integration Testing– Validation Testing– System Testing.

TEXT BOOK

1. Roger S. Pressman, (2001), "Software Engineering ",Fifth edition, McGraw-Hill Higher Education-A Division of The McGraw-Hill Companies. (UNIT I – V)

REFERENCE BOOK

1. Ian Sommervile, (2008) , "Software Engineering", 9th edition , Pearson Education India

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E52	OPERATING SYSTEM	3	0	0	3	3

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 I - 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 – Structures

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 - OS Synchronization

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. (UNIT I – V).

REFERENCE BOOKS

1. MilankovicM , (1992), “Operating System concepts and Design”, 2nd edition, Tata Mcgraw hill.

Course Code	Course Title	L	T	P	LTP	C
UCS15E53	COMPUTER ORGANIZATION AND ARCHITECTURE	3	0	0	3	3

INSTRUCTIONAL OBJECTIVES

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

1. To Understand the concept of digital systems
2. To Understand the concept of Microprocessor
3. To Write own Assembly level programming
4. To do Efficient I/O and memory management.

UNIT I - MICROPROCESSOR (9 Hours)

Introduction to Micro Computers, Microprocessors and Assembly Languages – Micro Processor Architecture and its operations – 8085 MPU – 8085 Instruction Set and Classifications.

UNIT II - ASSEMBLY LEVEL PROGRAMS (9 Hours)

Writing assembly level programs – Programming techniques such as looping, counting and indexing addressing nodes – Data Transfer Instructions– arithmetic and Logic Operations – Dynamic Debugging.

UNIT III - COUNTERS (9 Hours)

Counters and time delays – Hexadecimal counter – Modulo 10 counter – Pulse Timings for Flashing lights – Debugging Counter and Time delay program – stack – subroutine – conditional call and return instructions.

UNIT IV - I/O ORGANIZATION (9 Hours)

Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer: Handshaking – Serial Transfer – Communication Interface – Modes of Transfer – Priority Interrupt – DMA – Serial Communication

[

UNIT V - MEMORY ORGANIZATION (9 Hours)

Main memory- Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware.

TEXT BOOKS

1. Morris M Mano,(2008), “Computer System Architecture”, Third Edition, Prentice Hall of India. (UNIT I , II)
2. Gaonkar. R. S, (2002), “Microprocessor Architecture. Programming and Applications with 8085/8080A”, Fifth edition, Wiley Eastern limited. (UNIT III - V)

REFERENCE BOOK

1. Sunil Mathur, (2010), "Microprocessor 8085 and Its Interfacing", PHI Learning Pvt. Ltd.

Course Code	Course Title	L	T	P	Total of L+T+P	C
CDC15301	QUANTITATIVE APPTITUDE 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. R S Agarwal, 'Quantitative Aptitude' S.Chand Publishers,2013
2. R S Agarwal,'A modern approach to Logical reasoning' S.Chand Publishers

REFERENCE BOOKS

1. AbhijitGuha, Quantitative Aptitude - McGraw Hills Publishers
2. R S Agarwal, "A modern approach to Logical reasoning",S.Chand Publishers.

SEMESTER IV

Course Code	Course Title	L	T	P	L+T+P	C
UCS15401	DATA BASE MANAGEMENT SYSTEMS	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES

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

1. To Understand the concept of DBMS and it's application
2. To Understand the concept of storing and reterving the data
3. To do Efficient in authoring tools , back –end processing.

UNIT I - INTRODUCTION TO DBMS (15 Hours)

Advantages and Components of a Database Management Systems – Feasibility Study – Class Diagrams – Data Types – Events – Normal Forms – Data Rules and Integrity – Converting Class Diagrams to Normalized Tables – Data Dictionary.

UNIT II - QUERIES (15 Hours)

Query Basics – Computation Using Queries – Subtotals and GROUP BY Command – Queries with Multiple Tables – Subqueries – Joins – DDL & DML – Testing Queries

UNIT III - FORMS AND REPORTS (15 Hours)

Effective Design of Forms and Reports – Form Layout – Creating Forms – Reports – Procedural Languages – Data on Forms – Programs to Retrieve and Save Data – Error Handling.

UNIT IV – APPLICATIONS (15 Hours)

Power of Applications: Application Structure – User Interface Features – Transaction – Forms Events – Custom Reports – Distributing Application – Table Operations – Data Storage Methods – Storing Data Columns – Data Clustering and Partitioning.

UNIT V- DATABASE ADMINISTRATION AND DISTRIBUTION (15 Hours)

Database Administration – Development Stages – Backup and Recovery – Security and Privacy – Distributed Databases – Client/Server Databases – Web as a Client/Server System – Objects – Object Oriented Databases – Integrated Applications.

TEXT BOOK

1. Post.G.V ,(1999), "Database Management Systems Designing and Building Business Application" , McGraw Hill International edition. (UNIT I – V).

REFERENCE BOOK

1. Raghu Ramakrishnan,(2003), "Database Management Systems", First Edition, WCB/McGraw Hill**.**

Course Code	Course Title	L	T	P	L+T+P	C
UCS15402	VISUAL BASIC .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 - VISUAL BASIC .NET AND FRAME WORK (15 Hours)

The Common Type System- The Common Language Specification- The Common Language Runtime -Microsoft Intermediate Language- Metadata- Executable Code- Managed Execution- Side−by−Side Execution- Understanding Assemblies- Assembly- - Strong Names Introduction to Visual Basic .NET Development environment.

UNIT II - CONTROLS VB.NET (15 Hours)

Working with Toolbox Controls- Controls for Gathering Input- Using Group Boxes and Radio Buttons- Processing Input with List Boxes- Working with Menus, Toolbars, and Dialog Boxes- Adding Access Keys to Menu Commands- Processing Menu Choices- Adding Toolbars with the ToolStrip Control- Using Dialog Box Controls- Event Procedures Common Dialog Boxes- Assigning Shortcut Keys to Menus.

UNIT III - PROGRAMMING FUNDAMENTALS (15 Hours)

Visual Basic Variables and Formulas, and the .NET Framework- Variables- The Dim Statement- Variable to Store Input- Variable for Output- Data Types- Operators- Math Methods in the .NET Framework- Establishing Order of Precedence- If Then Decision Structures- Select Case Decision Structures- For Next Loops- Do Loops- The Timer Control

UNIT IV - TRAPPING ERRORS (15 Hours)

Debugging Visual Basic Programs- Finding and Correcting Errors Tracking Variables by Using a Watch Window- Immediate and Command Windows- The Try Catch , Finally Statement- The Exception handling. Modules and Procedures -Arrays

UNIT V - ADO.NET (15 Hours)

Database Programming with ADO.NET- Data Presentation Using the DataGridView Control- DataGridView- Updating the Original Database.

TEXT BOOKS

1. Jeffrey R.Shaprio, (2002), “Visual Basic .NET The Complete Reference”, First edition,MacGraw Hill. (UNIT I –III)
2. Michael Halvorson,(2010), “Visual Basic 2010 Step by Step”, First Editon, Microsoft Press.(UNIT IV – V)

REFERENCE BOOK

1. Richard Blair, Jonathan Crossland, Matthew Reynolds , (2004), “Beginning VB.NET”, John Wiley & Sons

Course Code	Course Title	L	T	P	L+T+P	C

UCS15403	DBMS LAB	0	0	4	4	2

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.

REFERENCE BOOKS

1. Pranab Kumar Das Gupta , (2009) , "Database Management System/Oracle Sql And Pl/Sql", PHI Learning Private Limited, New Delhi.
2. Benjamin Rosenzwerg, Elena SilvestrovaRakhimov,(2009), "Oracle PL/SQL by Example",4th edition , Pearson India.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15404	VISUAL BASIC .Net LAB	0	0	4	4	2

1. Develop a Math Calculator.
2. Create an Application using the Form Controls.
3. Create an application using the form controls and perform all validation operations.
4. Develop a program which makes use of String and String Builder class.
5. Create a Text Pad Application.
6. Develop a VB.NET application using menu.
7. Create an application using Common Dialog Controls.

8. Create a database driven application to manage employee database.

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

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15405	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),

REFERENCE BOOK:

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

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

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E54	SOFTWARE PROCESS MANAGEMENT	3	0	0	3	3

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To get an overview of Software project management.
2. To acquire knowledge about software managing process.
3. To understand Cocomo model and discipline of software management

UNIT I - FUNDAMENTALS OF SOFTWARE PROJECT MANAGEMENT (9 Hours)

Conventional software management - Evolution of software economics - Improving software economics - Conventional versus modern software project management.

UNIT II - SOFTWARE MANAGEMENT PROCESS FRAMEWORK (9 Hours)

Lifecycle phases - Artifacts of the process - Model based software architectures - Workflows of the process - Checkpoints of the process.

UNIT III - SOFTWARE MANAGEMENT DISCIPLINES (9 Hours)

Iterative process planning - Organisation and responsibilities - Process automation - Process control and process instrumentation - Tailoring the process.

UNIT IV - MANAGED AND OPTIMIZED PROCESS (9 Hours)

Data gathering and analysis - Principles of data gathering - Data gathering process - Software measures - Data analysis - Managing software quality - Defect prevention.

UNIT V - CASE STUDIES (9 Hours)

COCOMO cost estimation model - Change metrics - CCPDS-R.

TEXT BOOKS

1. Walker Royce,(2004), "Software Project Management - A Unified Framework", Pearson Education. (UNIT I – III)
2. Humphrey Watts,(1989), "Managing the Software Process", Addison Wesley. (UNIT IV – V)

REFERENCE BOOK

1. Humphrey Watts, (1989),"Managing the Software Process", Addison Wesley.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E55	SOFTWARE TESTING	3	0	0	3	3

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected :

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

UNIT I - INTRODUCTION TO SOFTWARE TESTING (9 Hours)

Introduction to software testing-The Psychology of Testing-The Economics of Testing -Software Testing Principles-Inspections and Walkthroughs-Code Inspections -An Error checklist for Inspections-White-box testing-Error guessing

UNIT II - MODULE (UNIT) TESTING, HIGHER- ORDER TESTING & DEBUGGING (9 Hours)

Test-Case Design - 1 -Test-Case Design – 2-Incremental Testing-Top-down versus Bottom- up Testing-Function Testing- System Testing -Acceptance Testing-Installation Testing-Debugging.

UNIT III -THE REALITIES OF SOFTWARE TESTING & TESTING THE SOFTWARE (9 Hours)

SDLC Models -STLC Model -Software Testing Terms and Definitions-Testing Fundamentals-Dynamic Black-Box Testing – 1-Dynamic Black-Box Testing – 2-Equivalence Partitioning-Data Testing-State Testing.

UNIT IV - APPLYING TESTING SKILLS (9 Hours)

Configuration Testing -Compatibility Testing-Usability Testing-Testing the Documentation-Testing the Documentation – 2-Web Site Testing – 1-Web Site Testing – 2-Testing for Software Security

UNIT V - AUTOMATED TESTING AND TEST TOOLS & BUG REPORTING (9 Hours)

Automated Testing and Test Tools: -benefits-Test Tools-Software Test Automation-Bug Bashes and Beta Testing-Writing and Tracking

TEXT BOOKS

1. Glenford J. Myers,(2008), "The Art of Software Testing", Second Edition,John Wiley &Sons, New Delhi. (UNIT I –III)
2. Ron Patton, (2007) , "Software Testing", Second Edition, SAMS Techmedia Publication. (UNIT IV –V).

REFERENCE BOOKS

1. William E.Perry, (2000), "Effective Methods for Software Testing", Second edition, John Wiley & Sons, New Delhi.
2. Boris Beizer, (1995), "Black-Box Testing: -Techniques for Functional Testing of Software and Systems", Second edition, John Wiley & Sons, New Delhi.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E56	MANAGEMENT INFORMATION SYSTEMS	3	0	0	3	3

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To get an overview of MIST infrastructure.
2. To acquire knowledge about Computer hardware.
3. To understand service and Data Communication it infrastructure.

UNIT I - MIS AN OVERVIEW (9 Hours)

Introduction – definition – framework for MIS organization – system approach – meaning and objectives of MIS – disadvantages of information system – approaches of MIS development – constraints in developing an MIS – computer based information system – information system for decision making – transaction processing systems – intelligent support system.

UNIT II - COMPUTER HARDWARE AND SOFTWARE FOR INFORMATION SYSTEM (9 Hours)

Computer Hardware : Introduction – basics of data representation – types of computer – basic components of computer system. Computer Software : Introduction – programmer – languages – classification of software – role of software in languages – classification of software – role of software in problem solving – criteria for investment in hardware and software.

UNIT III - DATA COMMUNICATION SYSTEM (9 Hours)

Introduction – telecommunication system – data communication hardware – data communication software – communication network – distributed systems – topology of computer network – protocols and network architecture open systems interconnection (OSI) – network management.

UNIT IV - DECISION SUPPORT SYSTEM (9 Hours)

Introduction – definitions – evolution of DSS – objectives of DSS – classification of DSS – characteristics – components of a DSS – functions of a DSS – Development of DSS – group decision support systems – relationship between MISS and DSS – DSS measures of success in organizations – applications of a DSS – TPS – MIS – DSS and EISS.

UNIT V - DEVELOPMENT OF MIS (9 Hours)

Development of Long Range Plans of MIS - Ascertaining the class of Information - Determining the Information Requirement - Development and Implementation of MIS - Management of Quality in MIS - Organisation for development of MIS - MIS : the factors for Success and Failure

TEXT BOOKS

1. Gupta.A.K,(2000), "Management Information System",FirstEdition,S.Chands Company Ltd.(UNIT I – II)
2. Kenneth C.Laudon and Jane P.Laudon,(2013), "Management Information Systems-Managing the Digital Firm", Pearson Education Asia. (UNIT III – V)

REFERENCE BOOK

1. Sadagopan.S,(2002), "Management Information Systems" ,PHI Learning Pvt. Ltd

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

- Communicate fluently
- 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 BOOK:

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

SEMSTER V

Course Code	Course Title	L	T	P	L+T+P	C

UCS15501	ADVANCED JAVA PROGRAMMING	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To be familiarize with RMI and JSP
2. To understand the Java Servlets and Database connectivity.
3. To know more about the Enterprise Java Bean (EJB) Programming

UNIT I - APPLET, AWT AND EVENT HANDLING (15 Hours)

Applet Basics-Applet architecture-HTML APPLET tag-Passing parameter to Applet-getDocumentBase() and getCodeBase()-AWT classes and Graphics-AWT Controls-Event Handling-Event Classes-Event Listener Interfaces-Layout Managers-Menus

UNIT II - INTRODUCING SWING & JAVA BEANS (15 Hours)

Exploring Swing -JLabel and ImageIcon, JTextField -The Swing Buttons – JTabbedPane -JScrollPane, JList&JcomboBox -Trees &JTables -What Is a Java Bean? - Advantages of Java Beans -Introspection, Bound and Constrained Properties -Persistence & Customizers

UNIT III - RMI & NETWORKING (15 Hours)

Remote Method Invocation -Settingup Remote Method Invocation -RMI with Applets - Networking Basics - The Networking Classes and Interfaces -InetAddress - Inet4Address and Inet6Address -TCP/IP Client sockets -URL - URL Connection - HttpURLConnection .

UNIT IV - JDBC (15 Hours)

Presentation to JDBC CONNECTION settings -The Concept of JDBC -JDBC Driver Types -JDBC Packages -A Brief Overview of the JDBC Process -Database Connection -Associating the JDBC/ODBC Bridge with the Database -Statement Objects – Result Set.

UNIT V - SERVLETS (15 Hours)

Background, The Life Cycle of a Servlet & The JSDK-A Simple Servlet -The Servlet API -RolePlay-Servlet Concept-The javax.servlet Package -Reading Servlet Parameters, The javax.servlet.http Package -Handling HTTP Request and Responses – Using Cookies -Session Tracking.

TEXT BOOK

1. Naughton and H.Schildt, (2007), “Java 2-The complete reference”, Fifth Edition McGraw Hill. (UNIT I – V)

REFERENCE BOOKS

1. Jim Keogh, (2002), “The Complete Reference J2EE”, Tata McGraw Hill Edition, New Delhi.
2. Marty Hall, Larry Brown, (2004), “Core Servlets and Java Server Pages”, 2nd Edition, Pearson Education.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15502	SCRIPTING LANGUAGES	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To classify the various Scripting Languages
2. To understand DOM and XML
3. To create a webpage

UNIT I - INTRODUCTION TO HTML (15 Hours)

Introduction to HTML: Internet basics- formatting text in HTML-lists- Adding graphics to HTML-Internal and external linking in HTML- frames and framesets- creating tables.

UNIT II - HTML FORMS AND CSS (15 Hours)

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

UNIT III - DOM AND INTRODUCTION TO JAVA SCRIPT (15 Hours)

DOM model: Understanding DOM model. Objects in HTML, Browser, object, window, history, location, navigator, document object.Java Script: Introduction to scripting-operators: logical-Increment and decrement operators- control structures.

UNIT IV - FUNCTIONS, ARRAYS AND OBJECTS (15 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 (15 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 enables commercial application development using HTML, DHTML java script, peal CGI”, BPB Publications, New Delhi. UNIT (I – III).
2. Deitel.H.M, Nieto.T.R,(2012), “Internet and world wide web How to program”, Fifth Edition, Prentice Hall of Indian Pvt, Ltd, New Delhi. (UNIT IV- V)

REFERENCE BOOK

1. Williamson, (2001), “Xml: The Complete Reference”, Tata McGraw-Hill Education.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15503	DATA COMMUNICATION AND	4	1	0	5	4

	NETWORK					

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected :

1. To get a general overview of "Computer Networks".
2. To know the functions of Data link layer
3. To understand network layer functions and protocols used in it.
4. To learn about transport layer, session, presentation and application layer

UNIT - I

Data Communication – Communication model – concept and terminology – analog and Digitaldata transmission – Channel capacity – Data Communication networking.

UNIT - II

Networks – Protocols and Standard – Line configuration Topology – Transmission Mode –Categories of networks – Internet works.

UNIT - III

The OSI Model – Functions of the layers – TCP/IP Protocol suite – Signals – Analog and DigitalSignal – Periodic and a periodic Signals – Analog Signals – Digital Signal – Data Transmission –Data Terminal Equipment – Data Circuit Terminals equipment – Modems.

UNIT - IV

Transmission media – Guided Media – Unguided Media – Transmission Impairments – MediaComparison – Multiplexing – FDM – TDM-WDM. Error Detection and Correction – Types oferrors – Detection – Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check(LRC) – Cyclic Redundancy Check (CRC). Check sum – Error Correction.

UNIT V

Switching – Circuit Switching – Packet Switching – Message Switching – Networking andinternetworking Devices – Repeaters – Bridges – Routers – Gateways. Routing Algorithm –Distance Vector Routing – Link Stat Routing – Data Link Control – Line discipline –FlowControl. 20

TEXT BOOKS

1. BehrouzA.Forouzan,(2002), "Data Communications and Networks" –Second Edition, Tata McgrawHill Edition. Unit (I – III)
2. William Stallings, (2006), "Data and Computer Communication",7thEdition, Pearson Education.Unit (IV – V)

Course Code	Course Title	L	T	P	L+T+P	C
UCS15504	ADVANCED JAVA PROGRAMMING LAB	0	0	4	4	2

1. Reading data from HTML, do processing and printing in Servlet

2. Establishing Communication between Applet and Servlet
3. Incorporate Java Database Connectivity inside Servlet to save data in a table
4. Use Servlet to fetch records from a table and display(use conditional queries)
5. Creating Stateless and Stateful Session Beans
6. Creating a web page using JSP Tags
7. Understanding the behavior of cookies and session management using JSP
8. Create MVC application: using Servlet,JavaBeans,JSP, Understanding HttpRequest using MVC

Course Code	Course Title	L	T	P	L+T+P	C
UCS15505	SCRIPTING LANGUAGES LAB	0	0	4	4	2

1. Create Application form using various text formats.
2. Create SRM UNIVERSITY website using HTML tags.
3. Create a table using HTML.
4. Display your information using form controls.
5. Create style sheets with the style elements.
6. Create calculator format using java script.
7. Create an array of 10 numbers and sort them using javascript.
8. String manipulation using string object.
9. Add a simple script using Click event.
10. Create Employee details using schemas.
11. Create our department details using CSS.
12. Create Payroll system using XSL.
13. Changing image using mouseover event.
14. Create a website for a newspaper.
15. Design and apply your application form for course enrolment using javascript.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E01	COMPUTER GRAPHICS	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

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

1. To Understand the concept of graphics and it's hardware
2. To Understand the concept of graphics software
3. To do Efficient in authoring tools , image processing.

UNIT - I

Introduction, What is computer graphics? Elements of graphics workstation, Video Display Devices- Raster Scan Systems, Random Scan Systems, InputDevices-

Algorithms: Line drawing algorithms- DDA Algorithm, Bresenham's Line Algorithm, Frame Buffers

UNIT -II

Circle and elipse generating algorithms- Midpoint Circle Algorithm, Midpoint Elipse Algorithm, Polynomials and spline curves, Filling- Filed -Area Primitives, Scan-Line Polygon File Algorithm, Inside-Outside Tests, Scan-Line File of Curved Boundary Areas, Boundary-File Algorithm, Flod-File Algorithm

UNIT -III

Attributes of Output Primitives, Line Attributes- Line Type, Line Width, Pen and Brush Options, Line Color, Color and Grayscale levels- Color Tables, Grayscale, Area-Fil Attributes- Fil Styles, Pattern Fil , Soft Fil , Character Attributes, Text Attributes (Geometric Transformations: Matrices, 2D transformations, Homogeneous representations – other transformation-Two-Dimensional Viewing, The viewing pipeline, Viewing Coordinate ReferenceFrame, Window-to-viewport Coordinate Transformation, Two-Dimensional Viewing Functions, Clipping Operations- Point Clipping, Line Clipping, Cohen-Sutherland Line Clipping, Polygon Clipping, Sutherland-Hodgeman Polygon Clipping

UNIT -IV

Three -Dimensional Concepts: Three -Dimensional Display Methods- Paralllel Projection, Perspective Projection, Visible Line and surface Identification, Surface Rendering, Three -Dimensional Object Representations- 3D transformations -Bezier Curves and surfaces

UNIT –V

Visibility, Image and object precision, Z-buffer algorithm, Floating horizons- Computer Animations, Design of Animation Sequences, General Computer -Animation Functions- Raster Animations, Key-Frame Systems, Morphing, Motion Specifications

TEXT BOOK

1. Donald Hearn & M. Pauline Baker,(2008), “Computer Graphics”,VIIEdition,Prientice Hal of India.Unit (I –V)

REFERENCE BOOK

1. Steven Harington , (2008), “Computer Graphics HilJr Computer Graphics”, McGraw-Hil.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E02	COMPILER DESIGN	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

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

1. To Understand the concept of system software
2. To Understand the concept of working of compilier
3. To do Efficient in authoring tools ,processing.

UNIT - I

Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools - Lexical Analysis - Role of Lexical Analyzer – Input Buffering – Specification of Tokens.

UNIT - II

Role of the parser –Writing Grammars –Context-Free Grammars – Top Down parsing - Recursive Descent Parsing - Predictive Parsing – Bottom-up parsing - Shift Reduce Parsing – Operator Precedent Parsing .

UNIT - III

Intermediate languages – Declarations – Assignment Statements – Boolean Expressions – Case Statements – Back patching – Procedure calls.

UNIT - IV

Issues in the design of code generator – The target machine – Runtime Storage management – Basic Blocks and Flow Graphs – Next-use Information – A simple Code generator – DAG representation of Basic Blocks – Peephole Optimization.

UNIT - V

Introduction– Principal Sources of Optimization – Optimization of basic Blocks – Introduction to Global Data Flow Analysis – Runtime Environments – Source Language issues – Storage Organization – Storage Allocation strategies – Access to non-local names – Parameter Passing.

TEXT BOOK

1. Alfred Aho, Ravi Sethi, Jeffrey D Ullman, (2003),"Compilers Principles, Techniques and Tools", Pearson Education Asia. Unit (I – V)

REFERENCE BOOKS

1. Allen I. Holub, (2003), "Compiler Design in C", Prentice Hall of India.
2. Fischer.C.N and LeBlanc.R.J,(2003), "Crafting a compiler with C", Benjamin Cummings.
3. Bennet.J.P,(2003), "Introduction to Compiler Techniques", Second Edition, Tata McGraw-Hill.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E03	SOFTWARE AGENTS	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To classify the various Software agent design
2. To appreciate agent communication and collaboration

3. To build an architectureand a suitable design
4. To understand Mobile agents

UNIT I -AGENT AND USER EXPERIENCE

Interacting with Agents - Agent From Direct Manipulation to Delegation - Interface Agent Metaphor with Character - Designing Agents - Direct Manipulation versus Agent Path to Predictable

UNIT II - AGENTS FOR LEARNING IN INTELLIGENT ASSISTANCE

Agents for Information Sharing and Coordination - Agents that Reduce Work Information Overhead - Agents without Programming Language - Life like Computer character - S/W Agents for cooperative Learning - Architecture of Intelligent Agents

UNIT III - AGENT COMMUNICATION AND COLLABORATION

Overview of Agent Oriented Programming - Agent Communication Language - Agent Based Framework of Interoperability

UNIT IV- AGENT ARCHITECTURE

Agents for Information Gathering - Open Agent Architecture - Communicative Action for Artificial Agent

UNIT V - MOBILE AGENTS

Mobile Agent Paradigm - Mobile Agent Concepts -Mobile Agent Technology - Case Study: Tele Script, Agent Tel

TEXT BOOKS

1. Jeffrey M.Bradshaw,(2000), "Software Agents", MIT Press. Unit (I – IV)
2. William R. Cockayne, Michael Zyda, (1998), "Mobile Agents", Prentice Hall.Unit (V)

REFERENCE BOOKS

1. Russel&Norvig, (2002), "Artificial Intelligence: A Modern Approach", Prentice Hall, 2nd Edition.
2. Joseph P.Bigus& Jennifer Bigus, (1997), "Constructing Intelligent agents with Java: A Programmer's Guide to Smarter Applications", Wiley.

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 BOOK

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

REFERENCE BOOKS

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

e-BOOK

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

SEMSTER VI

Course Code	Course Title	L	T	P	L+T+P	C
UCS15601	C # PROGRAMMING	4	1	0	5	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected :

1. To get a general overview of C#.
2. To know the Object oriented functions of C#.
3. To write own programs in C#.

UNIT I - C# LANGUAGE FUNDAMENTALS (15 Hours)

An Overview of C# - Data Types – Literals – Variables - The Scope and Lifetime of variables - Type Conversion and Casting - Type Conversion in expressions – Operators. Program Control Statements - if and switch Statements - for, while, do-while and for each loop - Using break - continue and goto Statements.

UNIT II - OBJECT-ORIENTED CONCEPTS IN C# (15 Hours)

Class Fundamentals - Creating objects - Reference variables and assignment and methods Constructors - the new operator – Destructors - the this keyword – Arrays - One dimensional array - Multidimensional arrays - Jagged arrays - Assigning array references - Using the length property - Implicitly typed arrays – for each loop – Strings.

UNIT III - OBJECT-ORIENTED CONCEPTS IN C# (15 Hours)

Controlling access to class members - Passing references to methods - Use ref and out parameters - Use a variable number of arguments - Return objects - Method Overloading - Overload Constructors - Object initializes The Main() method – Recursion - understanding static - Static classes -Operator Overloading - Indexers and Properties.

UNIT IV - OBJECT-ORIENTED CONCEPTS IN C# (15 Hours)

Inheritance Basis - Member access and inheritance - Constructors and inheritance - inheritance and name hiding - Creating a multilevel hierarchy - Base class references and derived objects - Virtual methods and Overriding - Using Abstract classes - Using sealed to prevent Inheritance. The Object class – Interfaces - Using Interface references - Interface properties - Interface indexers - Interface can be inherited - Name hiding with interface inheritance

UNIT V - I/O INTERFACES (15 Hours)

The .NET Standard Interfaces - Structures and Enumerations - Exception Handling - Using I/O - The Stream Classes - Console I/O – File Stream and Byte-Oriented File I/O - Character-Based File I/O - Redirecting the Standard Streams - Reading and Writing Binary data - Random Access Files - Delegates.

TEXT BOOK

1. Herbert Schildt,(2009), "C# 3.0 The Complete Reference" ,McGraw-Hill.Unit (I – V)

REFERENCE BOOK

1. Neil Smyth, (2008)," C# Essentials", McGraw-Hill.

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15E89	OBJECT ORIENTED ANALYSIS & DESIGN	4	1	0	5	4

OBJECTIVES:

At the end of this course the learner is expected :

1. Develop a working understanding of normal object-oriented analysis and design processes
2. Develop an appreciation for and understanding of the risks inherent to large-scale software development
3. Develop an understanding of the application of OOAD practices from a software project

UNIT I - MODELING IN GENERAL (15 Hours)

Object Oriented development – Evidence for Usefulness of Object Oriented development - Modeling Concepts: Modeling – Abstraction - The Three Models – Overview of Unified Modeling Language and introduction to UML diagrams.

UNIT II - CLASS MODELING (15 Hours)

Class Modeling: Object and Class Concepts – Link and Association Concepts - Inheritance - Sample Class Model - Navigation of Class Models - Advanced Class Modeling: Advanced Object & Class Concepts - Association Ends -N-ary Associations – Aggregation - Abstract Classes - Multiple Inheritance –Metadata – Reification – Constraints - Derived Data – Packages.

UNIT III - DYNAMIC MODELING (15 Hours)

State Modeling: Events – States – Transitions & Conditions - State diagrams - State Diagram Behavior - Advanced State Modeling: Nested State Diagrams - Nested States - Signal Generalization – Concurrency - Sample State Model - Relation of Class & State Models - Interaction Modeling: Use Case Models - Sequence Models - Activity Models - Advanced Interaction Modeling: Use Case Relationships - Procedural Sequence Models - Special Constructs for Activity Models.

UNIT IV - SYSTEM ANALYSIS (15 Hours)

Process Overview: Development Stages - Development Life Cycle - System Conception: Devising a System Concept - Elaborating a Concept- Preparing a problem Statement - Domain Analysis: Overview of Analysis - Domain Class Model - Domain State Model - Domain Interaction Model - Iterating the Analysis - Application Analysis: Application Interaction Model -Application Class Model - State Model – Operations.

UNIT V - SYSTEM DESIGN (15 Hours)

System Design: Overview of System Design - Estimating performance - Making a Reuse plan - Breaking a System into Subsystems - Identifying Concurrency- Allocation of Subsystems - Management of Data Storage - Handling Global Resources - Choosing a Software Control Strategy - Handling Boundary Conditions - Setting Trade-off Priorities - Common Architectural Styles - Architecture of the ATM System - Class Design: Bridging the Gap - Realizing Use Cases - Designing Algorithms - Recursing Downward – Refactoring - Design Optimization - Reification of Behavior -Adjustment of Inheritance – Organizing Class Design.

TEXTBOOKS:

1. Michael Blaha and James Rumbaugh, (2012), "Object-Oriented Modeling and Design with UML",II edition, Prentice Hall of India Private Limited, New Delhi. (For Units I to III)
2. Ali Bahrami,(1999), "Object-oriented Systems Development using UML", McGraw Hill, Boston. (For Units IV to V) .

REFERENCE BOOKS:

1. Michael Blaha and James Rumbaugh , (2006), "Object-Oriented Modeling and Design with UML", Prentice Hall of India Private Limited, New Delhi.
2. Grady Booch,RobertA.Maksimchuk,MichaelW.Engle, (2010), "Object-Oriented Analysis and Design with Applications", 3rd Edition.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15603	C # PROGRAMMING LAB	0	0	4	4	2

1. Write a Program in C# to Check whether a number is Palindrome or not.
2. Write a Program in C# to demonstrate Command line arguments processing.
3. Write a Program in C# to find the roots of Quadratic Equation.
4. Write a Program in C# to demonstrate boxing and unBoxing.
5. Write a Program in C# to implement Stack operations.
6. Write a program to demonstrate Operator overloading.
7. Write a Program in C# to find the second largest element in a single dimensional array.
8. Write a Program in C# to multiply to matrices using Rectangular arrays.
9. Find the sum of all the elements present in a jagged array of 3 inner arrays.
10. Write a program to reverse a given string using C#.
11. Using Try, Catch and Finally blocks write a program in C# to demonstrate error handling.
12. Design a simple calculator using Switch Statement in C#.
13. Demonstrate Use of Virtual and override key words in C# with a simple program
14. Implement linked lists in C# using the existing collections name space.
15. Write a program to demonstrate abstract class and abstract methods in C#.

16. Write a program in C# to build a class which implements an interface which is already existing.
17. Write a program to illustrate the use of different properties in C#.
18. Demonstrate arrays of interface types with a C# program.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15604	PROJECT WORK	1	1	4	6	5

The project work is given with the subject what they have studied has a theory and practical and the training is given to know the work style in the software industry.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E04	ARTIFICIAL INTELLIGENCE	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

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

1. To learn the basics of designing intelligent agents that can solve general purpose problems,
2. To Represent and process knowledge,
3. To Plan and act, reason under uncertainty and can learn from experiences

UNIT I PROBLEM SOLVING

Introduction – Agents – Problem formulation – uninformed search strategies – heuristics – informed search strategies – constraint satisfaction

UNIT II LOGICAL REASONING

Logical agents – propositional logic – inferences – first-order logic – inferences in firstorder logic – forward chaining – backward chaining – unification – resolution

UNIT III PLANNING

Planning with state-space search – partial-order planning – planning graphs – planning and acting in the real world

UNIT IV UNCERTAIN KNOWLEDGE AND REASONING

Uncertainty – review of probability - probabilistic Reasoning – Bayesian networks – inferences in Bayesian networks – Temporal models – Hidden Markov models

UNIT V LEARNING

Learning from observation - Inductive learning – Decision trees – Explanation based learning – Statistical Learning methods - Reinforcement Learning

TEXT BOOK:

1. Russel.SandNorvig.P, (2003), "Artificial Intelligence – A Modern Approach", Second Edition, Pearson Education. Unit (I – V)

REFERENCE BOOKS:

1. David Poole, Alan Mackworth, Randy Goebel,(2004),"Computational Intelligence : a logical approach", Oxford University Press.
2. Luger.G,(2002), "Artificial Intelligence: Structures and Strategies for complex problem solving", Fourth Edition, Pearson Education.
3. Nilsson.J,(1998), "Artificial Intelligence: A new Synthesis", Elsevier Publishers.

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E05	EXPERT SYSTEM	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

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

1. To learn the basics of designing intelligent & expert agents that can solve general purpose problems,
2. To Represent and process knowledge,
3. To Plan and act, reason under uncertainty and can learn from experiences

UNIT – I

Introduction to Expert System What are Expert Systems, Features of Expert System, features of good Expert System, Role of human in Expert System, Expert System organization, Difference between expert system and conventional program, Basic activities of expert system and the areas in which they solve problems, Prospector systems-features, working

UNIT – II

Expert System Tools Knowledge representation in expert systems-using rules semantic nets, frames, Types of tools available for expert system building and how they are used, Stages in the development of expert system tools, Examples of knowledge engineering

UNIT – III

Building an Expert Systems Necessary requirements for expert systems development, Justification for expert system development, Task in building expert systems, Stages of expert system development, Choosing a tool for building expert system, Acquiring knowledge from the experts, Examples of the expert system-building process, Examples of expert system used in different areas

UNIT – IV

Difficulties in developing an expert system Common pitfalls in-planning an expert system, Scaling with the domain expert during development process.

UNIT – V

Neural Network Introduction Biological neural networks-neuron physiology, eyeís neural network, Artificial neuron models, Neural net architecture (Topologies), Learning in ANN, Characteristics of ANN

TEXT BOOKS

1. Stamatios V. Kartalopolous, "Understanding Neural Network and Fuzzy Logic", PHI Pvt Ltd. Unit (I – III)
2. KishanMehrotra, "Elements of ANN" , IIEditon, Penram International Publishing (I) Pvt. Ltd.Unit (IV – V)

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E06	SYSTEM SOFTWARE	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To classify the various Sytem Software
2. To build an assembler and complier
3. To understand Linkers and loaders

UNIT-I

Introduction - System Software - Components of System Software Evolution by System Software – Model of Computer System; Introduction to Software Processors.

UNIT-II

Assemblers: Elements of Assembly Language Programming - Over View of the Assembly Process - Design of Two Pass Assembler - A Single Pass Assembler for the IBM PC - Macros And Macro Processors.

UNIT-III

Compilers: Aspects of Compilation - Overview of the Compilation Process - Programming Languages Grammars – Scanning:- Parsing - Storage Allocation - Compilation of Expressions and Control Structures - Code Optimization – Compiler Writing Tools, Software Process for Interactive Environment

UNIT-IV

Loaders and Linkage Editors: Loading. Linking and Relocation – Program – Relocatability - Overview of the Editing - A Linkage Editor for the IBM PC - Linking for Program over-lays

UNIT-V

Software tools: Spectrum of software tools - Text editors - Interpreters and program generators - Debug monitors - Programming environments.

TEXT BOOK:

1. Dhamdhere,(1991), "Introduction to system software" ,6th Edition, McGraw Hill. Unit (I – V)

REFERENCE BOOK:

1. Leland L.Beck ,(2007), “An Introduction to System Programming” , III edition, Addison Wesley.

ELECTIVE –IV

Course Code	Course Title	L	T	P	L+T+P	C
UCS15E07	GRID COMPUTING	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To classify the various grid computing applications
2. To build an architecture of Grid computing
3. To understand Grid computing standards

UNIT - I

Introduction: Grid Computing & Key Issues – Applications – Other Approaches – Grid Computing Standards – Pragmatic Course of Investigation.

UNIT - II

Grid Benefits & Status of Technology: Motivations – History of Computing, Communications and Grid Computing – Grid Computing Prime Time – Suppliers and Vendors – Economic Value – Challenges.

UNIT - III

Components of Grid Computing Systems and Architectures: Basic Constituent Elements-A Functional View – A Physical View – Service View.

UNIT IV

Grid Computing Standards-OGSI: Standardization – Architectural Constructs – Practical View – OGSA/OGSI Service Elements and Layered Model – More Detailed View.

UNIT V

Standards Supporting Grid Computing-OGSA: Functionality Requirements – OGSA Service Taxonomy – Service Relationships – OGSA Services – Security Considerations.

TEXT BOOK

1. Daniel Minoli , (2005), “A Networking Approach to Grid Computing” , Wiley Publication.Unit (I – V)

BOOK FOR REFERENCE

1. Ahmar Abbas, (2004), “Grid Computing – A Practical Guide to Technology and Applications”, Charles River Media Publication.

Course Code	Course Title	L	T	P	L+T+P	C

UCS15E08	CLOUD COMPUTING	4	0	0	4	4

INSTRUCTIONAL OBJECTIVES

At the end of this course the learner is expected:

1. To classify the various Cloudcomputing applications
2. To build an architecture of Cloud computing
3. To understand Cloud computing standards

UNIT - I

Introduction to Cloud Computing, Definition, Characteristics, Components, Cloud provider, SAAS, PAAS, IAAS and Others, Organizational scenarios of clouds, Administering & Monitoring cloud services, benefits and limitations, Deploy application over cloud, Comparison among SAAS, PAAS, IAAS Cloud computing platforms: Infrastructure as service: Amazon EC2,Platform as Service: Google App Engine, Microsoft Azure, Utility Computing, Elastic Computing

UNIT - II

Introduction to Cloud Technologies, Study of Hypervisors Compare SOAP and REST Webservices, AJAX and mashups-Web services: SOAP and REST, SOAP versus REST, AJAX: asynchronous 'rich' interfaces, Mashups: user interface services Virtualization Technology: Virtual machine technology, virtualization applications in enterprises, Pitfalls of virtualization Multitenant software: Multi-entity support, Multi-schema approach, Multitenance using cloud data stores, Data access control for enterprise applications

UNIT - III

Data in the cloud: Relational databases, Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo. Map-Reduce and extensions: Parallel computing, The map-Reduce model, Parallel efficiency of Map-Reduce, Relational operations using Map-Reduce, Enterprise batch processing using Map-Reduce, Introduction to cloud development, Example/Application of Mapreduce, Features and comparisons among GFS,HDFS etc, Map-Reduce model

UNIT - IV

Cloud security fundamentals, Vulnerability assessment tool for cloud, Privacy and Security in cloud -Cloud computing security architecture: Architectural Considerations- General Issues, Trusted Cloud computing, Secure Execution Environments and Communications, Micro-architectures; Identity Management and Access controlIdentity management, Access control, Autonomic Security Cloud computing security challenges: Virtualization security managementvirtual threats, VM Security Recommendations, VM-Specific Security techniques, Secure Execution Environments and Communications in cloud.

UNIT - V

Issues in cloud computing, Implementing real time application over cloud platform Issues in Intercloud environments, QOS Issues in Cloud, Dependability, data

migration, streaming in Cloud. Quality of Service (QoS) monitoring in a Cloud computing environment. Cloud Middleware. Mobile Cloud Computing. Inter Cloud issues. A grid of clouds, Sky computing, load balancing, resource optimization, resource dynamic reconfiguration, Monitoring in Cloud

TEXT BOOK

1. Judith Hurwitz, Bloor.R, Kanfman.M, Halper.F, (2010), "Cloud Computing for Dummies" ,Wiley India Edition.Unit (I – V)

REFERENCE BOOKS

1. Gautam Shroff, (2010), "Enterprise Cloud Computing" ,CambridgeUniversity press.
2. Ronald Krutz and Russell Dean Vines,(2010), "Cloud Security",Wiley-Indiapvt. Ltd.

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15E09	BIG DATA ANALYTICS	4	0	0	4	4

OBJECTIVES:

At the end of this course the learner is expected:

1. To understand the basics of Hadoop, MapReduce, Pig Latin
2. To understand how the analysis of data derives from the statement of a research problem or hypothesis and the availability of empirical data.
3. Gain experience looking at analytics from a strategic perspective

UNIT I - INTRODUCTION TO BIG DATA **12 Hours**

Introduction to BigData Platform – Challenges of Conventional Systems - Intelligent data analysis Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools

UNIT II - STATISTICAL DATA ANALYSIS **12 Hours**

Parameter and Statistic- Sampling Distribution- Meaning-Standard Error and its uses.Tests of Significance- Null and Alternative Hypotheses. Type-I and Type-II Error- Critical Region and Level of Significance. One tailed and Two tailed Tests. Critical values or Significant values. Tests of Significance for Large Samples- Test of Significance for Single Proportion- Test of Significance for Difference of Proportions- Test of Significance for Single Mean- Test of Significance for Difference of Means.Chi-Square Distribution – Definition- Applications of Chi-Square Distribution- To test the goodness of fit.- To test the independence of Attributes.Student's" t" - Distribution-Definition- Applications of Student's "t" –Distribution- To test for Single Mean- To test for Difference of Means- Paired t-test for Difference of MeansF-Distribution- Definition- To Test for Equality of Two Population variances.Meaning of Resampling and its uses. Basic ideas of Randomization, Exact Test, Cross ValidationJacknife and Bootstrap. Prediction Error and its uses.

UNIT III - HADOOP **12 Hours**

History of Hadoop- The Hadoop Distributed File System – Components of Hadoop- Analyzing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS- Java interfaces to HDFS- How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution – Map Reduce Features

UNIT IV - HADOOP ENVIRONMENT **12 Hours**

Setting up a Hadoop Cluster - Cluster specification - Cluster Setup and Installation - Hadoop Configuration-Security in Hadoop - Administering Hadoop – HDFS - Monitoring-Maintenance

UNIT V - FRAMEWORKS **12 Hours**

Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper.

TEXT BOOKS:

1. Michael Berthold, David J. Hand, (2007), "Intelligent Data Analysis", Springer. (For Unit I to III)
2. Tom White (2012), " Hadoop:The Definitive Guide" Third Edition, O'reilly Media (For Unit IV to V)

REFERENCE BOOKS:

1. AnandRajaraman and Jeffrey David Ullman, (2012), "Mining of Massive Datasets", Cambridge University Press.
2. Viktor Mayer, Schonberger, Kenneth Cukier,(2013), "BIg Data : A Revolution That Will Transform How We Live, Work and Think",Houghton Mifflin Harcourt publishing company.

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

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

UNIT – II

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

UNIT –III

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

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

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

TEXT BOOK

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,.

REFERENCE BOOKS

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

DEPARTMENT OF COMPUTER SCIENCE
NON-MAJOR ELECTIVE PAPERS

Career Stream Title	Course Code	Course Title	L	T	P	Total L+T+P	C
Non-major Elective-I	UCS15E81	Office Automation	1	0	1	2	2
	UCS15E82	Internet Concepts					
	UCS15E83	HTML					
Non-major Elective-II	UCS15E84	Tally	1	0	1	2	2
	UCS15E85	SPSS					
	UCS15E86	DHTML					

Semester –III

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15E81	OFFICE AUTOMATION(Microsoft Based)	1	0	1	2	2

MS-WORD

a) Text Manipulation
- Change the font size and type
- Aligning and justification of Text
- Underlining the Text
- Indenting the Text
  - i) Prepare a Bio-data
  - ii) Prepare a Letter

b) Usages of Numbering, Bullets, Footer and Headers.
- Usages of Spell check and find and replace
  - i) Prepare a document in newspaper format
  - ii) Prepare a document with bullets, footers and Headers

c)Tables and manipulation
- Creation, Insertion, Deletion (Columns & Rows) and usage of Auto format.

d) Create a calender and Auto format it

e) Create a marksheet using table and find out the total marks.
  - i) Picture insertion and alignment

f) Prepare a greeting card

g) Creation of documents using templates
  - i) Creation of templates.
  - ii) Prepare a letter using and template
  - iii) Prepare a biodata using various kinds of templates

h) Mail Merge Concepts
  - i) Prepare an invitation to be sent to specific addresses, in the data source.

MS-EXCEL

CELL EDITING

i) Usage of formulate and Built – in – Functions
ii) Describe the types of functions
iii) File Manipulations
iv) Data sorting – Ascending and Descending (both numbers and alphabets)
v) Worksheet preparation
vi) Marklist preparation for a student
vii) Individual Pay Bill preparation
viii) Electricity Bill preparation
ix) Inventory Report preparation
x) Invoice Report preparation
xi) Drawing Graphs. 5

MS-POWERPOINT

a) Inserting Clip and Pictures
   Frame movements of the above

b) Create a slide show presentation for a seminar (choose your own topic)
   a) Enter the text in outline view
   b) Create Non-Bulleted and Bulleted body Text
   c) Apply the appropriate Text attributes.
   b) Insertion of New Slides

c) Preparation of Organization Charts

d) Create a slide preparation for an invitation
   a) Insert an object from a Bitmap file
   b) Enter the text in the slide view
   c) Apply appropriate text attribute
   d) Rotate the object to 45 degree (approximately)
   e) Apply shadow to the object

e) Preparation using wizards
   a) Usage of design templates

f) Create a slide show presentation to display percentage of marks in each semester for all students
   a) Use bar chart(X-axis: Semester, Y-axis: % marks)
   b) Use different presentation template and different transition effect for each slide.

g) Use different text attribute in each slide.

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15E82	INTERNET CONCEPTS	1	0	1	2	2

OBJECTIVES

1. To explain the theoretical concepts of Internet Concept
2. To explain the application in Internet

UNIT I

Introduction: Definition of Internet – History of Internet – Internet service providers – ISDN Service – Direct ISP Service through leased line – Modem – Cable Modem.

UNIT II

Internet tools – Search Engines – web browser – Internet Protocol (IP) – IP addresses – Types of Internet addressing – Transmission Control Protocol (TCP)

UNIT III

How does the Internet work – Intranet & Extranet – Internet Infrastructure - Applications of Internet – HTTP – SMTP – TFTP – RIP – IMAP – POP – IMAP Vs POP – FTP.

UNIT IV

Introduction to HTML: What is HTML – Basic Tags of HTML – HTML Tag – TITLE Tag – BODY Tag: Formatting of Text: Headers – Formatting Tags: BOLD, ITALICS, UNDERLINE, PARAGRAPH, TT, STRIKETHROUGH, EM, BR and HR tags – PRE Tag – FONT Tag – Special Characters – Working with Images – META Tag.

UNIT V

Links – Anchor tag - Lists – Unordered Lists – Ordered Lists – Definition Lists; Tables – TABLE, TR and TD Tags – Cell Spacing and Cell Padding – Colspan and Rowspan; Frames: Frameset – FRAME Tag – Frame inside other frames – NOFRAMES Tag; Forms: FORM and INPUT Tag – Text Box – Radio Button – Check box – SELECT Tag and Pull Down Lists: Hidden – Submit and Rest; Some Special Tags: COLGROUP – THREAD, TBODY, TFOOT - _blank, _self, _parent, _top – IFRAME – LABEL – Attribute for<select>-textarea

TEXT BOOK:

1. Ramesh Bangia,(2005), "Internet and Web Design", Firewall Media. Unit (I – V)

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15E83	HTML	1	0	1	2	2

1. Develop a HTML document, which displays your name as <h1> heading and displays any four of your friends. Each of your friend's names must appear as hot text. When you click your friend's name, it must open another HTML document, which tells about your friend.
2. Write names of several countries in a paragraph and store it as an HTML document, world.html. Each country name must be a hot text. When you click India (for example), it must open india.html and it should provide a brief introduction about India.
3. Design a HTML document describing you. Assign a suitable background design and background color and a text color.
4. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.
5. Develop complete set of web pages to describe you skills in various areas using HTML.
6. Develop a web site to publish your family and the details of each member-using HTML.
7. Develop a HTML document to display a Registration Form for an intercollegiate function.
8. Develop a HTML document to design Alumni Registration form of your college.

9. Create a HTML table with rows and columns and split them using Rowspan and Colspan.
10. Create a web page in the format of front page of a news paper using Text links. Align the text with colors

SEMESTER-IV

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15E84	**TALLY**	**1**	**0**	**1**	**2**	**2**

1. Creating a new company
2. Creation of essential ledgers
3. Capital account
4. Purchase account
5. Sales account
6. Direct expenses
7. Cash account
8. Profit & Loss account
9. Debtors account
10. Creditors account
11. Creation of inventory
12. Stock group Unit of measure Stock item
13. Creation of ledger
    Single ledgers
    Multiple ledgers
14. Voucher posting
15. sales order
16. Making actual sales
17. Purchase order
18. Making actual purchase
19. Returns accounting for receipts and payments
20. Reports

TEXT BOOK

1.Palanivel.S,(2008), " Tally Accounting Software", II Edition, Margham Publications.

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15E85	**SPSS - STATISTICAL PACKAGE FOR SOCIAL SCIENCES**	**1**	**0**	**1**	**2**	**2**

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

TEXT BOOKS

1. Vijay Gupta , (1999), "SPSS for Beginners", Published by VJBooks Inc.

REFERENCE BOOK

1. Melanie C. Page, Sanford L. Braver and David P. MacKinnon, Lawrence Erlbaum Associates , "Levine's Guide to SPSS for Analysis of Variance", 2nd Edition, Mahwah publisher, New Jersey, London.

Course Code	Course Title	L	T	P	Total of L+T+P	C
UCS15E86	**DHTML and XML**	**1**	**0**	**1**	**2**	**2**

UNIT - I

Intro, DHTML coding, examples, Pong Program, Database Design - Normalization Readings, Pong

UNIT - II

Normalization, Database Design, ASP and SQL examples, XML, DOM and XSL, Database examples- Normalization practice - XML resume with DOM, XSL

UNIT - III

Normalization and XML review, Intro to Java, Basic applet IO, control structures, methods, tracing the runtime stack - Applet In, Applet Out, Km to miles - Read and write code examples

UNIT - IV

2 dim arrays, OOP, multiple classes, inheritance and polymorphism, arrays of classes - Magic Square Rollodex

UNIT - V

Final, Programming help, Data Structures, Dynamic Memory, Recursion

TEXT BOOK

1. Robert B. Mellor Franklin, (2003) , " DHTML: Learning by Example", Beedle& Associates, Incorporated.Unit (I – V)

REFERENCE BOOK

1. Williamson, (2001), "Xml: The Complete Reference",Tata McGraw-Hill Education.