BCA (BACHELOR OF COMPUTER APPLICATIONS) 2017 – 2018

Sl. No.	Semester	Category	Course code	Title of the Course	Maximum marks			Minimum marks for pass			Hours /week	Credits
					CIA	E.E	Total	CIA	E.E	Total		
1	I	Part I	17U1CAT1/H1	Tamil-I/Hindi –I	25	75	100	10	30	40	6	3
2		Part II	17U1CAE1	English-I	25	75	100	10	30	40	6	3
3		Core	17U1CAC1	Problem Solving and Programming Techniques	25	75	100	10	30	40	6	6
4		Core	17U1CACP1	Lab I C Programming	40	60	100	16	24	40	3	3
5		Allied	17U1CAMAA1	Numerical Analysis and Statistical methods	25	75	100	10	30	40	6	3
		Allied	17U2CAMAA2	Discrete Mathematics (NS)	-	-	-	-	-	-	3	-
6		ES	17U1CAES	Environment Studies	-	100	100	-	40	40	-	1
7	II	Part I	17U2CAT2/H2	Tamil-II/Hindi –II	25	75	100	10	30	40	6	3
8		Part II	17U2CAE2	English-II	25	75	100	10	30	40	6	3
9		Core	17U2CAC2	C++ and Data Structures	25	75	100	10	30	40	6	6
10		Core	17U2CACP2	Lab-II C++ Programming	40	60	100	16	24	40	3	3
11		Allied	17U2CAMAA2	Discrete Mathematics (NS)	25	75	100	10	30	40	3	4
12		Allied	17U2CAMAA3	Operation Research	25	75	100	10	30	40	5	3
13		VBE	17U2CAVE	Value Based Education	25	75	100	10	30	40	-	-
14		SBE	17U2CAS1	Skill Based Elective - New Media – 1	25	75	100	10	30	40	1	1
15	III	Part I	17U3CAT3/H3	Tamil-III/Hindi –III	25	75	100	10	30	40	6	3
16		Part II	17U3CAE3	English-III	25	75	100	10	30	40	6	3
17		Core	17U3CAC3	Java Programming	25	75	100	10	30	40	6	6
18		Core	17U3CACP3	Lab III Java Programming	25	75	100	10	30	40	3	3
19		Allied	17U3CABAA1	Organizational Behaviour	25	75	100	10	30	40	6	3
		Allied	17U4CABAAP2	Organizational Dynamics Training lab (NS)	-	-	-	-	-	-	3	-
20		GS	17U3CAGS	Gender Studies	-	100	100	-	40	40	-	-

Sl. No.	Semester	Category	Course code	Title of the Course	Maximum marks			Minimum marks for pass			Hours/week	Credits
					CIA	E.E	Total	CIA	E.E	Total		
21	IV	Part I	17U4CAT4/H4	Tamil-IV/Hindi –IV	25	75	100	10	30	40	6	3
22		Part II	17U4CAE4	English-IV	25	75	100	10	30	40	6	3
23		Core	17U4CAC4	DataBase Management System	25	75	100	10	30	40	6	6
24		Core-PL	17U4CACP4	Lab IV - DataBase Management System and Accounting Package	40	60	100	16	24	40	3	3
25		Allied	17U4CABAAP2	Organizational Dynamics Training lab	40	60	100	16	24	40	3	3
26		Allied	17U4CABAA3	Financial Accounting	40	60	100	16	24	40	5	4
27		SBE	17U4CAS2	Skill Based Elective - New Media – 2	25	75	100	10	30	40	1	1
28	V	Core	17U5CAC5	Operating System	25	75	100	10	30	40	6	6
29		Core	17U5CAC6	Computer Networks	25	75	100	10	30	40	5	6
30		Core	17U5CAC7	Cloud Computing	25	75	100	10	30	40	5	5
31		Core	17U5CACP5	Lab V- Operating System and Web Design	40	60	100	16	24	40	3	3
32		Major Elective-1	17U5CAEL1A 17U5CAEL1B	E-Business Management Information System	25	75	100	10	30	40	4	4
32		Major Elective-2	17U5CAEL2A 17U5CAEL2B	XML and Web Services Web Technology	25	75	100	10	30	40	4	3
33		SSD	17U5CASSD	Soft Skill Development	-	100	100	-	40	40	1	-
34		NME	17U5CANME	Internet basics	25	75	100	10	30	40	2	1
35	VI	Core	17U6CAC8	Distributed Programming using .net	25	75	100	10	30	40	5	6
36		Core	17U6CAC9	Software Engineering	25	75	100	10	30	40	5	5
37		Core	17U6CAC10	Data mining & Data Warehousing	25	75	100	10	30	40	6	6
38		Core	17U6CACP6	Lab VI - Distributed Programming using .net lab	40	60	100	16	24	40	3	3
39		Major Elective-3	17U6CAEL3A 17U6CAEL3B	Multimedia Mobile Applications	25	75	100	10	30	40	5	4
40		Major Elective-4	17U6CAEL4PA 17U6CAEL4PB	Multimedia lab Mobile Applications lab	40	60	100	16	24	40	4	3
42		GK	17U6CAGK	General Knowledge	-	100	100	-	40	40	1	-
43		CN	17U6CACN	Comprehensive test	-	100	100	-	40	40	1	1
				Extension Activity	-	-	-	-	-	-	-	1
				Total		4300					120	140

B.C.A. COMPUTER APPLICATIONS (2017 – 2018)

Paper Code	Total No. Of Papers	Total Marks	Total Credits	Classification
Part – I	**04**	**400**	**12**	√
Part – II	**04**	**400**	**12**	√
Part – III Core Allied Major Elective	16 06 04 **26**	1600 600 400 **2600**	76 20 14 **110**	√
Part – IV Environmental Studies Value based education Skill Based Elective Gender studies Non Major Elective Soft skill development G.K Comprehensive test	1 1 2 1 1 1 1 **1** **9**	100 100 200 100 100 100 100 **100** **900**	1 - 2 - 1 - - 1 **05**	√
Part – V	**Extension Activity**		**1**	X
Total	**43**	**4300**	**140**	√

**A.VEERIYA VANDAYAR MEMORIAL SRI PUSHPAM COLLEGE
(AUTONOMOUS),
POONDI, THANJAVUR DIST.**

Question Pattern for UG and PG Programmes for students to be admitted during 2017 – 2018 and afterwards.

Total Marks: 75

QUESTION PATTERN

**SECTION – A
(Question 1 to 10)**

10 x 2 = 20 Marks

1. Short Answer Questions.

2. Two Questions from each unit (All are answerable)

**SECTION – B
(Question 11 to 15)**

5 x 5 = 25 Marks

1. 5 Paragraph type questions with "either / or" type choice.

2. One question from each unit of the Syllabus.

3. Answer all the questions.

**SECTION – C
(Question 16 to 20)**

3 x 10 = 30 Marks

1. 5 Essay type questions – any three are answerable.

2. One questions from each unit of the Syllabus.

பருவம்	பாடக்குறியீடு	தாளின் பெயர்	பயிற்சியின் நேரம் /வாரம்	சிறப்பு மதிப்பீடு
I	17U1____T1	இக்கால இலக்கியம் (செய்யுள், உரைநடை, சிறுகதை, புதினம், நாடகம்,)	6	3

கூறு:1 செய்யுள்   **நேரம்: 18**

1. இராமலிங்க அடிகளார் - திருவருட்பா - இறைத் திருக்காட்சி —1—10

2. பாரதியார் - தேசியகீதம் : பாரத தேசம் — எங்கள் நாடு,

3. பாரதிதாசன் - புதிய உலகம்: உலக ஒற்றுமை —பேரிகை, தளைஅறு,
   மானுட சக்தி

4. பட்டுக்கோட்டை கல்யாண சுந்தரம் -காடு வெளையட்டும் பெண்ணெ ,

5. நாமக்கல் கவிஞர் - என்றுமுளதென்றமிழ் ,

6. கவிமணி : ஒற்றுமையே ,உயர்வு நிலை—நாட்டுக்குழைப்போம்

கூறு: 2 உரைநடை   **நேரம்: 18**
1. கேட்டிவி - இராகபாவம் (1 முதல் 15 வரை)
2. கேட்டிவி - பயணங்கள் தொடரும்

கூறு: 3 சிறுகதை   **நேரம்: 18**
1. கேட்டிவி - குரல் கொடுக்கும் வானம்பாடி (1 முதல் 10 வரை)
2. கேட்டிவி - மனோரஞ்சிதம் முழுவதும்

கூறு: 4 புதினம்   **நேரம்: 18**
1. கு.வெ.பாலசுப்பிரமணியம் —காளவாய்

கூறு: 5 நாடகம் , இலக்கிய வரலாறு   **நேரம்: 18**
1. கலைவாணன் — கு.சா.கிருஷ்ணமூர்த்தி(NCBH வெளியீடு)
2. சிறுகதை, புதினம், நாடகம், கவிதை, உரைநடை

பயன்கள்
    சமீபகால தமிழ் இலக்கியம் பற்றி தெரிந்து கொள்ளுதல்

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
I	17U1 _ E1	**PART – II** **PROSE, POETRY AND** **COMMUNICATION SKILLS**	6	3

Objective
> To initiate the Students to understand English through Prose, Poetry and Basic Communicative Grammar.

Unit – I
Shakespeare - Shall I compare thee to a Summer's Day?
John Milton – On His Blindness.
William Wordsworth – The Solitary Reaper
P.B.Shelley – Song to the Men of England.
Robert Frost – The Road not Taken
Nissim Ezekiel - Night of the Scorpion

Unit – II
1) The Running Rivulets of Man,
2) Parliament is Marking Time,
3) The Lady in Silver Coat,
4) Mr. Applebaum at Play.

Unit – III
1) The Feigning Brawl of an Imposter,
2) Thy Life Is My Lesson,
3) Solve The Gamble,
4) The Stoic Penalty.

Unit – IV
1) Nobility In Reasoning,
2) Malu the Frivolous Freak,
3) Bharath! Gird Up Your Loins!
4) Honesty is the Cream Of Chastity

Unit – V

Parts of Speech, Nouns, Pronouns, Conjunctions, Adjectives, Articles, Verbs, Adverbs, Interjection – sentence.

References Book:
A Melodious Harmony – Sri.KTV, Rajendra Publishing House, Poondi, 2017.
Flying Colours – Prof. K.Natarajan, New Century Book House (P) LTD., 2017.

Course Outcome
To initiate the Students to understand English through Prose, Poetry and Basic Communicative Grammar.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
I	**17U1CAC1**	**PROBLEM SOLVING AND PROGRAMMING TECHNIQUE**	**6**	**6**

COURSE OBJECTIVES:
- To understand the basic concepts of problem solving approaches and develop optimal program structure using conditional and iterative control structures and functions.
- To design, implement, test, and apply the basic C programming concepts.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces and describe the mechanics of parameter passing.

UNIT I INTRODUCTION TO COMPUTER PROBLEM SOLVING   Hrs 20

Introduction – The Problem Solving aspect – Top down design – Implementation of algorithm – Program Verification – The efficiency of algorithm – The analysis of algorithm.

UNIT II PROGRAMMING, ALGORITHMS AND FLOWCHARTS   Hrs15

Programs and Programming – building blocks for simple programs -Programming life cycle phases – pseudo code representation – flow charts - Algorithm - Programming Languages - compiler – Interpreter, Loader and Linker - Program execution – Classification of Programming Language - Structured Programming Concept.

UNIT III BASICS OF 'C', INPUT / OUTPUT & CONTROL STATEMENTS   Hrs 15

An overview of C - data types and sizes - declarations - variables - constants – Operators - Expressions - Storage classes - Program control structures - Loop control structures – C formatted Input/Output - Arrays - Strings.

UNIT IV   Hrs 20

Function - Function Arguments - Function prototype - Recursion - Structure – Unions – Bit Manipulations and Enumerations – Self-Referential Structures – Dynamic Memory Allocation.

UNIT V   Hrs 20

Pointers – Introduction – Pointer and Arrays – Pointers and Strings – Pointer and Structures – Pointers and Data structures- File processing.

REFERNCES:
1. E. Balagurusamy, 'Programming in ANSI C',Tata McGraw Hill. 4th Edition, 2008.
2. S. Kumaravel, 'C For You', TiSSL Publications, 2016.
3. Deitel & Deitel, "C How to program", Third Edition, Pearson Education Asia.
4. Yashavant Kanetkar, "Understanding Pointers in C", 4th Revised & Updated Edition, 2008, Bpb Publications
5. Cormen,Leiserson, Rivest, Stein, "Introduction to Algorithms", McGraw Hill , Publishers, 2002
6. Peter Norton, "Introduction to Computers", Sixth Edition, Tata McGraw Hill Publications, 2007.
7. How to solve it by computer, R.G.Dromey, Pearson Education, fifth edition, 2007.
8. "Study Material: MC7102 – Problem Solving and Programming" Anna University, - Chennai.

Course Outcome:
- To understand the basic concepts of problem solving approaches and develop optimal program structure using conditional and iterative control structures and functions.
- To design, implement, test, and apply the basic C programming concepts.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces and describe the mechanics of parameter passing.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	**17U1CACP1**	**Software Lab-I C Programming**	**3**	**3**

Objective

❖ To Understand programming techniques in C

C Programming

I Control structures

1. Fibonacci Series

2. Prime number

3. Quadratic equation–switch statement

4. NCR

II Arrays

5. Sorting

III Matrix

6. Addition and Subtraction

7. Multiplication

IV Using Structure and file

8. E.B. Bill

9. Pay Bill

10. Mark List

Course Outcome:
- To understand the basic concepts of problem solving approaches and develop optimal program structure using conditional and iterative control structures and functions.
- To design, implement, test, and apply the basic C programming concepts.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces and describe the mechanics of parameter passing.

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No.of Credits
I	**17U1CAMAA1**	**Allied – Numerical Analysis and Statistical Methods**	**6**	**3**

Unit I

Algebraic & Transcendental equations: Bisection Method – Iteration method – Newton Raphson Method – Finite differences – Newton's forward & backward difference interpolation formulae – Lagrange's interpolating polynomial.

Unit II

Solutions to simultaneous linear algebraic equations: Gauss Elimination Method – Gauss Jacobi & Gauss Seidal iterative methods – Simple problems only – Numerical differentiation: Newton's forward & backward difference formulae for derivatives – three-eighth rule (proof not needed).

Unit III

Numerical solution of ODE: Solution by Taylor Series Method – Euler's Method, Runge–Kutta method (4th order only) – Mine's Predictor Corrector Method – Adam's predictor Corrector Method.

Unit IV

Arithmetic Mean – Median – Mode – Standard Deviation – Variance of the combined series - Correlation and Regression – Properties of Simple correlation and regression coefficients - Simple Numerical Problems only.

Unit V

Distributions: Discrete & Continuous distributions: Binomial, Poisson, Normal distribution – Moments, mode and MGF only – Relation between Binomial and Normal distributions –Area property of normal distributions.

Text Book:
1. Numerical Methods, P. Kandasamy, K. Thilagavathy, K. Gunavathi, S. Chand,2007.
   Unit– I: Chapter 3(Sec. 3.1, 3.2, 3.4), Chapter 5(Sec. 5.1), Chapter 6(Sec. 6.2, 6.3),
            Chapter 8(Sec. 8.7)
   Unit – II: Chapter 4(Sec. 4.2, 4.8, 4.9), Chapter 9(Sec. 9.2, 9.3, 9.9, 9.13, 9.14)
   Unit – III: Chapter 11(Sec. 11.5, 11.9, 11.13, 11.17, 11.18)

2. Fundamentals of Mathematical Statistics, S.C. Gupta & V.K. Kapoor, Sultan Chand
   & sons, New Delhi, 2014.
    Unit – IV: Chapter 2 (Sec. 2.5 – 2.7, 2.13.4), Chapter – 10(Sec.10.2–10.4, 10.7),
            Chapter – 11(Sec.11.1–11.2.2)
    Unit – V: Chapter 8(8.4–8.4.1, 8.5, 8.5.2, 8.5.5),
            Chapter 9 (9.2, 9.2.1-9.2.3, 9.2.5, 9.2.11)

Reference:
  1. M.K.Jain., S.R.K.Iyengar and R.K. Jain. Numerical Methods for Scientific and Engineering Computation. New Age International Private Limited, 1999.
  2. C.E. Froberg. Introduction to Numerical Analysis, II Edn., Addison Wesley. 1979.

Course Outcome:
Understand and implement various concepts of numerical analysis and statistics to solve real life problems.

Semester	Subject Code	Title of the Paper	Hours of Teaching /Week	No. of Credits
I & II	**17U2CAMAA2**	**Allied-** **Discrete Mathematics(NS)**	**3+3**	**-**

Unit – I
Mathematical Logic : statements and notation – connectives – negation conjunction - disjunction – Statement formulas and truth tables - conditional and bi - conditional – well formed formulae - Tautologies – equivalence of formulae – duality law – disjunctive normal form – conjunctive Normal form.

Unit – II
Set Theory : Basic concepts – Notation – Inclusion and equality – Power set – some operations on sets – Venn diagrams – Some basic set identities – principle of specification – ordered pairs and n-tubles – Cartesian products.

Unit – III
Relations and ordering: relations – properties of binary relations – relation matrix – partition and covering of a set – equivalence relations – compatibility relations composition of binary relations – partial ordering – partially ordered set – **Functions:** Definition and introduction - composition – inverse function - binary and n-array operation.

Unit – IV
Graph: Graph - Sub-graphs – Walks, paths and Circuits – Connected graphs –. Euler graphs – operations on graphs – Hamiltonian paths and circuits – Traveling salesman problem.

Unit – V
Trees: trees – properties of trees – pendant vertices – distance and centers in a Tree- Rooted and Binary Trees – on counting trees – Spanning Trees – Fundamental circuits – Spanning Trees in a weighted graph – Shortest spanning tree: kruskal algorithm.

Text Book:
1. J.P.Tremblay, R.Manohar, "Discrete Mathematical structures with Applications to Computer Science" Tata McGraw Hill International, 2004.
   - Unit – I : Chapter 1 (Sec. 1.1 – 1.2.10, 1.3.1, 1.3.2)
   - Unit – II : Chapter 2 (Sec. 2.1)
   - Unit – III : Chapter 2 (Sec. 2.3, 2.4.1 – 2.4.4)

2. Narsing Deo "GRAPH THEORY with. Applications to Engineering and Computer Science". PHI. Private Ltd., 2014.
   - Unit – IV : Chapter 1, 2
   - Unit –V : Chapter 3

Reference:
1. Bernard Kolman & Robert C.Busby "Discrete Mathematical Structure for Computer Science" (Revised) PHI.
2. F. Hamary "Graph Theory" Addison Wesley Publishing Company

Course Outcome:
Describe useful standard library functions, create functions and declare parameters.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
II	17U2____T2	இடைக்கால இலக்கியம் – பயன்முறைத் தமிழ் –இலக்கண வரலாறு	6	3

கூறு: 1 நேரம்: 18

1. திருஞானசம்பந்தர் - தேவாரம் - கோளறு திருப்பதிகம்
2. திருநாவுக்கரசர் -தேவாரம் -தனித்திருக் குறுந்தொகை - மாசில்வீணையும் - 1—10 பதிகம்
3. சுந்தரர் -தேவாரம் - திருநொடித்தான்மலைப் பதிகம் —தானெனை முன்படைத்தான்
4. மாணிக்கவாசகர் - திருவாசகம் - திருப்பொன்னூசல்

கூறு: 2 நேரம்: 18

1. குலசேகராழ்வார்: திருவித்துவக்கோட்டம்மான் : 1—10 பாடல்கள்
2. நம்மாழ்வார் - திருவாய் மொழி -இரண்டாம்பத்து —1—10 பாடல்கள்
3. ஆண்டாள் - நாச்சியார் திருமொழி —வாரணமாயிரம் 1—10 பாடல்கள்
4. திருமங்கையாழ்வார் - சிறிய திருமொழி —1—10 பாடல்கள்

கூறு: 3 நேரம்: 18

1. திருமூலர் - திருமந்திரம் - அட்டாங்க யோகம் —1—10 பாடல்கள்
2. குமரகுருபரர் - மீனாட்சியம்மை பிள்ளைத் தமிழ்: வருகைபருவம்
3. திரிகூடராசப்பக் கவிராயர் - குற்றாலக் குறவஞ்சி - நாட்டு வளம்
4. வீரமாமுனிவர் - திருக்காவலூர்க் கலம்பகம் — முதல் 5 பாடல்கள்
5. குணங்குடி மஸ்தான் சாகிபு - ஆனந்தக் களிப்பு —முழுதும்

கூறு: 4 பயன்முறைத் தமிழ் நேரம்: 18

வாக்கிய அமைப்பு - புணர்ச்சி வகைகள் - வலிமிகும், வலி மிகா இடங்கள் - எழுத்துப்பிழை நீக்கம் லகர, எகர, மூகர வேறுபாடுகள் - சொற்களைப் பிரித்துப் பொருள் காணும் முறை - நிறுத்தற் குறியீடுகள் - சரியான தமிழ் வடிவம் அறிதல். சொல்லியல் - சொல் வகை - இலக்கண வகை - இலக்கிய வகை - பெயர்ச்சொல் - இடுகுறி - காரணம் - அறுபொருட் பெயர் (பொருள், இடம், காலம், சினை, குணம், தொழில்) - வினைச்சொல் - இடைச் சொல் - உரிச்சொல் - முற்று - எச்சம் - விகுதிகள் - இடைநிலை - தன்வினை - பிறவினை - தெரிநிலை வினை - குறிப்பு வினை-வழுவமைதி.

கூறு: 5 இலக்கண வரலாறு நேரம்: 18

இலக்கண வரலாறு - தமிழ்த் துறை வெளியீடு.

பயன்கள்

இடைக்கால தமிழ் இலக்கியம் பற்றி தெரிந்து கொள்ளுதல்

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
II	17U2 _ E2	**PART – II EXTENSIVE READERS AND COMMUNICATIVE SKILLS**	6	3

Objective
> ➢ To impart language and communicative skills through short stories, one act plays and communicative grammar

Unit – I
    Shakespeare – The Seven Stages of Man
    Long Fellow – A Psalm of Life
    Nissim Ezakiel - Enterprise
    William Wordsworth – The world is too much with us

Unit – II
    Anton Chekov – The Proposal
    J.B.Priestly - Mother's Day

Unit - III
    William Faulkner - A Rose for Emily
    P. Lankesh - Bread
    Katherine Mansfield - The Doll's House

Unit – IV
    Tense, Question Tag, Dialogue Writing, Paragraph Writing, Adjectives, Adverb

Unit – V
    Voices, Degrees of Comparison, Direct and Indirect

Book Prescribed:
    Unit I , II, III , Voices of vision in English (Vol. I & II), Board of Editors, Pavai Printers (P) Ltd., Chennai, 2016.
    Unit IV & V – Communicative grammar by the Department of English, Poondi, 2017.

Course Outcome
    To impart language and communicative skills through short stories, one act plays and communicative grammar

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	**17U2CAC2**	**C++ and Data Structures**	**6**	**6**

Objective
- To Understand programming Techniques in C++
- To understand various data structures and their capabilities

UNIT-I   **Hrs 18**
Introduction to OOPs – Introduction to C++ - Programming constructs and Decision making – Arrays – Pointers – Functions.

UNIT-II   **Hrs 18**
Classes and Objects – Inheritance – Virtual functions and Polymorphism – Files and templates.

Unit III   **Hrs 1**8
Arrays records and pointers: Introduction - linear arrays – Representation of linear arrays in memory – Traversing linear arrays – Stack and Queues.

Unit IV   **Hrs 18**
Linked lists: Introduction- Insertion into a linked list: Insertion algorithm – Deletion from a linked list: Deletion algorithm

Unit V   **Hrs 18**
Trees: Binary trees – Representing Binary trees in memory – Traversing Binary trees: In order – Pre order – Post order.

References:
1.   "Object Oriented Programming with ANSI & Turbo C++", Ashok N.Kamthane, First, Indian print-2003, Pearson Education.
2.   E. Balagurusamy, 'Programming in ANSI C++',Tata McGraw Hill, Third Edition, 2005.
3.   Herbert schidt, "C++ The Complete Reference" , Tata McGraw Hill, Fourth Edition, 2003.
4.   Seymour Lipschutz and GA Vijayalakshmi pai "Data structures" , Tata McGraw Hill, 21st reprint 2012

Course Outcome:
- To Understand programming Techniques in C++
- To understand various data structures and their capabilities

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	**17U2CACP2**	**Software Lab-II C ++ PROGRAMMING LAB**	**3**	**3**

C++ PROGRAMMING WITH DATA STRUCTURES LAB

1. Create a simple program using class and object
2. Write a C++ program to illustrate the use of the following concepts
    i) Default   arguments and ii) Reference variable
3. Develop an object oriented to add two times. Assume that the time consists of the members hours, minutes and seconds. Use objects as arguments
4. Develop a C++ program to create two classes "class1' with data member number I and "class 2" with data member number 2. Develop inline functions to get values for data members and use friend function to add number 1 and number2.
5. Write a C++ program to define a class employee with data members with relevant details and calculate DA, MA, HRA net pay (DA = 71% of basic py,
    MA= 10, HRA = 0.5% of basic pay). Create arrays of objects for 10 employees.
6. Write a overload function to multiply two matrices and for multiplying all the elements of the matrix by a constant
7. Write a C++ program to read the following information from the keyboard.
    i) Reg. No.
    ii) Name of the Student
    iii) Mark 1
    iv) Mark 2
    v) Mark 3
    Use default, parameterized and copy constructor to initialize the objects and display the same.
8. Write a program in C++ using pointer for the following
    a) To copy the contents of one string to another string
    b) To concatenate the given two strings into a one string
9. Design a base class 'person' with data members empcode, name. Derive two classes "account" with data members pay and "admin" class with data member experience. The class "master" derives information from both "account" and "admin". Write a C++ program to create and display the information contained in "master" object using virtual functions
10. Write a C++ program using all types of inheritance
11. Write C++ program using own Manipulators (example setw, setfill etc.)
12. Write a program in C++ to read a file and to
    a) Display the contents of the file into the screen
    b) Display the number of characters and
    c) The number of line in the files
13. Write C++ program using command line arguments.

Course Outcome:
To understand Programming techniques in c++.

Semester	Subject Code	Title of the Paper	Hours of Teaching /Week	No. of Credits
I & II	**17U2CAMAA2**	**Allied-Discrete Mathematics(NS)**	**3+3**	**4**

Unit – I

Mathematical Logic : statements and notation – connectives – negation conjunction - disjunction – Statement formulas and truth tables - conditional and bi - conditional – well formed formulae - Tautologies – equivalence of formulae – duality law – disjunctive normal form – conjunctive Normal form.

Unit – II

Set Theory : Basic concepts – Notation – Inclusion and equality – Power set – some operations on sets – Venn diagrams – Some basic set identities – principle of specification – ordered pairs and n-tubles – Cartesian products.

Unit – III

Relations and ordering: relations – properties of binary relations – relation matrix – partition and covering of a set – equivalence relations – compatibility relations composition of binary relations – partial ordering – partially ordered set – **Functions:** Definition and introduction - composition – inverse function - binary and n-array operation.

Unit – IV

Graph: Graph - Sub-graphs – Walks, paths and Circuits – Connected graphs –. Euler graphs – operations on graphs – Hamiltonian paths and circuits – Traveling salesman problem.

Unit – V

Trees: trees – properties of trees – pendant vertices – distance and centers in a Tree- Rooted and Binary Trees – on counting trees – Spanning Trees – Fundamental circuits – Spanning Trees in a weighted graph – Shortest spanning tree: kruskal algorithm.

Text Book:
1. J.P.Tremblay, R.Manohar, "Discrete Mathematical structures with Applications to Computer Science" Tata McGraw Hill International, 2004.
   Unit – I   : Chapter 1 (Sec. 1.1 – 1.2.10, 1.3.1, 1.3.2)
   Unit – II   : Chapter 2 (Sec. 2.1)
   Unit – III   : Chapter 2 (Sec. 2.3, 2.4.1 – 2.4.4)

2. Narsing Deo "GRAPH THEORY with. Applications to Engineering and Computer Science". PHI. Private Ltd., 2014.
   Unit – IV   : Chapter 1, 2
   Unit –V   : Chapter 3

Reference:
1. Bernard Kolman & Robert C.Busby "Discrete Mathematical Structure for Computer Science" (Revised) PHI.
2. F. Hamary "Graph Theory" Addison Wesley Publishing Company

Course Outcome:
Describe useful standard library functions, create functions and declare parameters.

Semester	Subject Code	Title of the Paper	Hours of Teaching/ Week	No. of Credits
II	**17U2CAMAA3**	**Allied- Operation Research**	**5**	**3**

Unit I   **15 Hrs**

Operation Research: Introduction – Basics of OR & decision making – Role of Computers in OR – Linear programming formulations & graphical solution of two Variables – Canonical & standard forms of LPP.

Unit II   **15 Hrs**

Simplex Method : Simplex Method for <, =, > constraints – charne's method of penalties – Two phase Simplex method.

Unit III   **15 Hrs**

Transportation problem : Transportation algorithm – Degeneracy algorithm – Degeneracy in Transportation   Problem,   Unbalanced   transportation problem – assignment algorithm – unbalanced Assignment problem.

Unit IV   **15 Hrs**

Sequencing problem: Processing   of n   jobs   through   two machines – processing of n jobs through 3 machines – processing of two jobs through m machines.

Unit V   **15 Hrs**

Networks : Network – Fulkerson's   rule – measure   of   activity – PERT computation – CPM computation.

Text Book:
P.K. Gupta and Manmohan, Problems in Operations Research, Sultan Chand publishers, New Delhi, 2014.

Unit – I	:	Chapters 0, 1, 2, 3
Unit – II	:	Chapters 4, 5, 6
Unit – III	:	Chapters 15, 16
Unit – IV	:	Chapters 17
Unit – V	:	Chapters 27

Reference:
[1]   Prem kumar Gupta and D.S.Hira. Operations Research: An introduction: S.Chand and Co., Ltd., New Delhi.
[2]   Hamdy A.Taha, Operations Research (7th Edn.), McMillan Publishing Company, New Delhi. 1982.

Course Outcome:
This course introduces the concepts, models and problem solving techniques of optimization problems. To enable the students gain knowledge about various optimization techniques like linear programming, duality in linear programming and integer programming.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	**17U2CAS1**	**Skill Based Elective – I** **New Media – 1**	**1**	**1**

Hardware Installation:

System services and Troubleshooting- OS Installation – Driver Installation – Printer Installation – Software Installation **– Peripherals –** SMPS – RAM – Processor – Mother Board – Fan – Assembling Configurations

Open Office Exercises:

1. Search, generate, manipulate data using Open Office

2. Business Letter and official letter creation

3. Working with Pictures and formatting pictures

4. Working with tables and formatting tables

5. Mail merge

6. Excel files - Worksheets, Inserting, Deleting and Renaming Worksheets. Center the worksheet horizontally and vertically on the page.

7. Headings - Rows, Columns, Row /Column, Inserting and Deleting Rows and Columns. Changing Column Width and Row Height. Merging Cells, Cell range.

8. Format Cells - Fonts, Alignment, Warp Text, Text Orientation, Border and Shading.

9. Data and picture representation

10. Visualization graphs - 2D, 3D chart creation in presentation.

Course Outcome:
Develop self directed projects that synthesize creative, technical and critical approaches.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
III	17U3____T3	காப்பியங்கள், கட்டுரைகள், இலக்கிய வரலாறு	6	3

கூறு: 1   காப்பியங்கள் 1   நேரம்: 18

1. சிலப்பதிகாரம் - புகார்க் காண்டம்—மனையறம்படுத்த காதை

2. மணிமேகலை - ஆதிரை பிச்சையிட்ட காதை

3. சீவக சிந்தாமணி - மண்மகள் இலம்பகம்

4. கம்பராமாயணம் - மிதிலைக் காட்சிப் படலம்

கூறு: 2   காப்பியங்கள் 2   நேரம்: 18

1. பெரிய புராணம் -மெய்ப்பொருள் நாயனார் புராணம் —முழுதும்

2. அரிசந்திரபுராணம் —மயான காண்டம்

3. தேம்பாவணி - திருமணப் படலம்—1—10 பாடல்கள்

4. சீறாப்புராணம் -நபி அவதாரப் படலம் —1—10 பாடல்கள்

கூறு: 3   கட்டுரைத் தொகுப்பு   நேரம்: 18

கட்டுரைத் தொகுப்பு - தமிழ்த்துறை வெளியீடு

கூறு: 4   பொதுக்கட்டுரை, மொழிபெயர்ப்புப் பயிற்சி   நேரம்: 18

பயிற்சிக் கட்டுரைகளும் கடிதங்களும் -பாவை வெளியீடு

கட்டுரைப் பயிற்சி - 10 மதிப்பெண்

மொழிபெயர்ப்புப் பயிற்சி - 5 மதிப்பெண்

கலைச்சொல்லாக்கம்

கூறு: 5   நேரம்: 18

அ. இலக்கிய வரலாறு

பக்தி இலக்கியங்கள் - காப்பிய இலக்கியங்கள் - சிற்றிலக்கியங்கள்

பயன்கள்

தமிழ் இலக்கிய வரலாற்றினையும் அதன் முக்கியத்துவத்தையும் தெரிந்து கொள்ளுதல்

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
III	17U3 _ E3	**PART - II** **SHAKESPEARE, EXTENSIVE READERS AND COMMUNICATIVE SKILLS**	6	3

Objective
> ➢ To introduce the language of the world renowned dramatist and novelist to enhance the vocabulary and communicative skills of the learners.

Unit – I

Funeral Oration – Julius Caesar

Trial for a Pound of Flesh – The Merchant of Venice

Unit – II

He Kills Sleep – Macbeth

The gulling scene of malvalio – Twelfth Night

Unit – III

Romeo and Juliet

In Love is a "Midsummer Madness" – Tempest

Unit – IV

R.L. Stevenson – Treasure Island

Unit – V

Note making, Hints Developing, Expansion of Ideas and Proverbs, Clauses and sentence, Structure simple, Compound and Complex.

Book Prescribed:

Unit – I, II & III: Selected scenes from Shakespeare, Prof.K.Natarajan, Pavai Printers (p) Ltd., 2017.

Unit IV: Treasure Island Abridged by E.F. Dodd

Unit V: Communicative Grammar by Department of English, Poondi, 2017.

Course Outcome

To introduce the language of the world renowned dramatist and novelist to enhance the vocabulary and communicative skills of the learners.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
III	**17U3CAC3**	**JAVA PROGRAMMING**	**6**	**6**

Objective

❖ To understand Programming concepts in Java

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Unit I   **Hrs 18**

Object Oriented Fundamentals and Java Evolution: Object oriented programming – encapsulation – inheritance – polymorphism – java genesis – characteristics – java programming techniques – reserved words – identifiers – literals – operators– separators – variables – types – arrays – operator precedence**.**

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Unit II   **Hrs 18**

Flow Control And Classes: If – else – Break – switch – Return Statements – Looping – While – do while – For – Comma statements – Declaration – Object reference – Instance – variables – new operators – method declaration – method calling – this operators – Constructor – Method over loading – Inheritance – Super class – Dynamic method dispatch – Final – Static – Abstract classes.

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Unit III   **Hrs 18**

Packages and Interfaces: Packages – The package statement– Import statements – Interface statement – implement statement – Constructor – String creation – String concatenation – Character Extraction.

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Unit IV   **Hrs 18**

Exception Handling: Exception Handling Fundamentals – The java Thread model priorities – synchronization – Runnable – The synchronized statements – Dead lock – Thread API Summary.

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Unit V   **Hrs 18**

Abstract Windowing Tools & Applets: Events – listeners – Events handling methods – Inheritance hierarchy control classes – Labels – Layouts – Windows and frames – Menus – dialogs – Mouse events – Adaptor classes – Inner classes. Applets – HTML Applet Tag – Order of Applet Initialization.

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References:
1.   PATRICK NAUGHTON, "The JAVA Hant Book" , Tata MC_Graw Hill Publishers Company Pvt. Ltd, 1996.
2.   KENNY CHU – "The Complete Reference Java", Tata McGraw Hill Publishers company Pvt. Ltd, 1997.
3.   Herbert schildt, "The Complete Reference Java 2" , Tata McGraw Hill Publishers company Pvt. Ltd, Fifth Edition.

Course Outcome:
To understand Programming concepts in Java

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	**17U3CACP3**	**Software Lab – III** **Java Programming**	**3**	**3**

Objective

> ❖ To apply the features of the Java.
>
> ❖ To apply web technology concepts.

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Java Lab

1. Write a java program that will accept command line arguments and print the same in order (ascending & descending)
2. Write a java program that will print details about the current date, time, month, year, day of month & day of week
3. Write a java program
       a.test equality between two strings
       b.concatenate the two strings
       c.find the length of the string
       d.replace the 'i' in the string with'z'
       e.convert one of the string to upper & lowercase
4. Create an integer array to contain ten numbers. using random access file,write the array into a file called randl.dat.The program show read the contents of the rand.dat file backwards.Make use of try,catch & finally clauses
5. Create a subpackages called child whose base package is called parent.This should contain a class c1.class a contains a method   called disp() to display a message "Inside sub package child- c1 class",create a class called parenttest, which imports this subpackage and calls the disp() method of the c1 class.
6. Write a java program to accept parameters on the command lin. If there are no command line arguments entered, the program should   print error message and exit. The program should check if the first file exists and if it is an ordinary file. If it is so contents of the first file should be copied to the second file, In case the first parameter is a directory, print message accordingly and exit. Appropriate message should be displayed at all points.
7. Create applet to accept in integer as parameter and display name message as" Are You year old?" the age should be displayed in the blank space the default age should be 60.
8. Create applet to display string "I am in the center" in courier font, with size 30 and style bold and italic this text should be centered both horizontally and vertically.
9. Create an applet that lets the user adjust its background color, provided three scrollbars in your applet, one each for the three base colors red, green and blue.
10. Using html tag to create the college website (minimum 15 to 20 tag used)

Course Outcome:
*   To apply the features of the Java.
*   To apply web technology concepts.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No.of Credits
III	**17U3CABAA1**	**Allied – ORGANIZATIONAL BEHAVIOUR**	**6**	**3**

Objective
❖ To understand the concepts of organizational behaviour.

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UNIT 1   **Hrs 15**

Nature of Organizational Behaviour: Concept of Organization –concept of organization behaviour-challenges and opportunities for organizational behaviour – Applying OB knowledge to management practices.
Foundations of organizational Behaviour: Classical Approach **–** Neoclassical approach-modern approach-Organizational behaviour models.

UNIT II   **Hrs 15**

Nature of Human Behaviour: Concept of behaviour – Process of behaviour – Individual differences-Models of Man. **Personality:** Concept of Personality - Personality measurement. **Perception:** Concept of Perception-Interpersonal perception –Developing Perceptional Skills.

UNIT III   **Hrs 15**

Learning: Concept of Learning – Learning theories – Reinforcement-organizational behaviour modification-Learning organization-Knowledge management. **Interpersonal Behaviour:** Nature of Inter personal behaviour –Transactional Analysis. **Group Dynamics:** Concept of group dynamics-Formal groups-Informal group or organization – Group behaviour-Group decision making – Intergroup behaviour.

UNIT IV   **Hrs 15**

Power and Politics: Concept of Power -Politics. **Leadership:** Concept of Leadership – Leadership theories-Leadership styles – Leadership styles in Indian organizations- Contemporary issues in Leadership.

UNIT V   **Hrs 15**

Communication: Concept of Communication – Communication symbols-Communication network- Barriers in communication- Making communication effective-Communication pattern in Indian organization. **Conflict Management:** Concept of conflict**-** Individual level conflict –Group level conflict- Organizational level conflict-Managing conflict- Negotiation.

Text Book:
1. L.M.Prasad "Organizational Behaviour" Sultan Chand & Sons Educational Publishers, New Delhi, Fifth Edition 2011.

References:
1. Fred Luthans " Organizational Behaviour" McGraw Hill Publishers.
2. Huge J. Arnold, Daniel C.Feldman "Organizational Behaviour" McGraw Hill Publishers.
3. Stephen P.Robbins , Nancy Langton "Organizational Behaviour " Pearson Education series.

Course Outcome:
To understand the concepts of organizational behaviour.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III & IV	**17U4CABAAP2**	**Organizational Dynamics Training Lab (NS)**	**3+3**	**-**

Objective

- ❖ The course aims at providing practical experience for the complete personality development.

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1. Developing interpersonal behavior to know themselves – Goal setting, Time management.

2. Understanding group discussion.

3. Developing leadership attributes.

4. Improving communication.

5. Practicing controls.

6. Adopting to change management.

Course Outcome:
The course aims at providing practical experience for the complete personality development.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
IV	17U4___T4	சங்க இலக்கியம் – அற இலக்கியம் – செம்மொழி – இலக்கிய வரலாறு	6	3

கூறு: 1

நேரம்: 18

குறுந்தொகை
1. குறிஞ்சி - (பா.எ.:3) 2. முல்லை - (பா.எ.94)
3. மருதம் - (பா.எ.45) 4. நெய்தல் - (பா.எ.:49)
5. பாலை - (பா.எ.:41)

நற்றிணை
1. குறிஞ்சி - (பா.எ. 32) 2. முல்லை - (பா.எ. 81) 3. மருதம் - (பா.எ. 210)
4. நெய்தல் - (பா.எ. 226) 5. பாலை - (பா.எ.229)

கலித்தொகை
1. பாலை - (பா.எ. 6) 2. குறிஞ்சி - (பா.எ. 38)

அகநானூறு
1. குறிஞ்சி : - (பா.எ. 68) 2. மருதம் - (பா.எ. 86)

கூறு: 2

நேரம்: 18

ஐங்குறுநூறு
குறிஞ்சி - தோழிக்கு உரைத்த பத்து: பாடல் எண்கள் —111—120

புறநானூறு
பாடல் எண்கள் 8,17,20,95,141,159,184,186,188,206

பதிற்றுப்பத்து
ஏழாம் பத்து —பாடல் எண். 1

பரிபாடல்
எட்டாம் பாடல் : செவ்வேள்

கூறு: 3

நேரம்: 18

நெடுநல்வாடை முழுவதும்
திருக்குறள்: வான்சிறப்பு, பெருமை, காதற் சிறப்புரைத்தல்

கூறு: 4

நேரம்: 18

செம்மொழி வரலாறு
மொழி - விளக்கம் - மொழிக்குடும்பங்கள் - உலகச் செம்மொழிகள் - இந்தியச்
செம்மொழிகள் - செம்மொழித் தகுதிகள் - வரையறைகள் - வாழும் தமிழ்ச்செம்மொழி
- தொன்மை - தமிழின் சிறப்புகள் - தமிழ்ச் செம்மொழி நூல்கள்.

கூறு: 5

நேரம்: 18

அ. இலக்கிய வரலாறு
சங்க இலக்கியங்கள், பதினெண்கீழ்க்கணக்கு நூல்கள்

பயன்கள்
சங்க கால தமிழ் இலக்கியம் பற்றி தெரிந்து கொள்ளுதல்

Semester	Subject Code	Title of The Paper	Hours of Teaching/ Week	No. of Credits
IV	17U4 _ E4	**PART - II** **ENGLISH FOR COMPETITIVE EXAMINATIONS**	6	3

Objective
> ➢ To prepare the learners for competitive examinations and to know the fundamentals of practical communication.

Unit – I
Grammar – Number, Subject, Verb, Agreement, Articles, Sequence of Tenses, Common Errors.

Unit – II
Word Power - Idioms & Phrases, one word substitutes, Synonyms, Antonyms, Words we often confuse, foreign words & phrases, spelling.

Unit – III
Reading & Reasoning – Comprehension, Jumbled Sentences.

Unit - IV
Writing Skills – Paragraph, Precis Writing, Expansion of an idea, Report Writing, Essay, Letters, Reviews (Film & Book)

Unit – V
Speaking- Public speaking, Group Discussion, Interview, Spoken English.

Prescribed Text:
English for Competitive Examinations, by Ayothi, Trichy, 2017

Course Outcome
To prepare the learners for competitive examinations and to know the fundamentals of practical communication.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	**17U4CAC4**	**DATABASE MANAGEMENT SYSTEMS**	**6**	**6**

Objective:

To know about concepts and techniques to design DBMS.

Unit I   **Hrs 18**

Introduction: Purpose of data base systems- View of data-Data models-Database Users and Administrators-Database Languages-Database Architecture-E-R Model:Basic concepts-Design isssues-Constraints- Keys-ER-Diagrams-weak Entity set-Extented E-R features-Reduction to E-R schema

Unit II   **Hrs 18**

Relational model: structure – Relational Algebra: Fundamental, Additional & Extended operations Modification – View - Other Relational Database - Tuple Relational Calculcus -Domain Relational Calculus.

Unit III   **Hrs 18**

SQL-Basic Structure-Set operation-aggregate Functions- null values- nested sub queries-Derived Relations-view-modification of database-join relations-Advanced SQL-Embedded SQL-Advanced SQL Features.

Unit IV   **Hrs 18**

Advanced SQL: Domain Constraints-Referential integrity-assertion-Application Design and Development-triggers-RDB design-Decomposition using Functional Dependency-Normalization Units-F.D

Unit V   **Hrs 18**

Indexing & Hashing-Basic concepts -Ordered indices-B++ tree index files-B tree index files-Static Hashing-Multiple Key Access-Comparison of ordered indexing and hashing-index definition in SQL.

Text Books:

1. "Database System concepts", Abraham Silber Schatz, Henk F.Korth, S.Sudarsan, Fifth Edition, 2006, McGraw Hill.

General References:

1. Fred Mc Fadden, Jeffery A Hoffer, Mary B.prescott, "Modern Database Management", 5 Edition, Addison Wesley, 2000.
2. Elmasri, Navathe, "Fundamentals of Database System", Third Edition, Addison wesley, 2000.
3. Jefrey D.Ulman, Jenifer widomj, "A First Course in Database System", pearson Education Asia, 2001
4. Bipin c Desai, "An Introduction to Database System", Galgotia publications Pvt Limited, 2001.
5. Database System Concepts, C.J. Date. Seventh Edition, 1993.

Course Outcome:
To know about concepts and techniques to design DBMS.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	**17U4CACP4**	**Lab – IV** **DATABASE MANAGEMENT SYSTEM AND ACCOUNTING PACKAGE**	**3**	**3**

Objective

❖ To apply the concepts of RDBMS and solving accounting problems using accounting package.

1. Library information processing.

2. Students mark sheet processing.

3. Telephone directory maintenance.

4. Gas booking and delivering system.

5. Electricity bill processing.

6. Bank transaction (SB)

7. Pay roll processing.

8. Inventory.

9. Question database and conducting quiz.

10. Purchase order processing.

Accounting Package:

1. Journalising, Ledger posting.

2. Preparation of Trial Balance.

3. Preparation of Balance Sheet.

4. Preparation of cash Book.

Course Outcome:
To apply the concepts of RDBMS and solving accounting problems using accounting package.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III & IV	**17U4CABAAP2**	**Organizational Dynamics Training Lab**	**3+3**	**3**

Objective

> ❖ The course aims at providing practical experience for the complete personality development.

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1. Developing interpersonal behavior to know themselves – Goal setting, Time management.

2. Understanding group discussion.

3. Developing leadership attributes.

4. Improving communication.

5. Practicing controls.

6. Adopting to change management.

Course Outcome:
The course aims at providing practical experience for the complete personality development.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	**17U4CABAA3**	**Allied – FINANCIAL ACCOUNTING**	**5**	**4**

Objective

❖ To understand the design of computer architecture

UNIT – I:

Accounting – meaning – concepts and conventions – principles of Double entry – kinds of accounts – Journal = Ledger – Trial balance.

UNIT – II:

Subsidiary books – Purchase book – sales book – Purchase returns book – Bills Receivable Book – Bills payable book – Cash book – Rectification of errors.

UNIT – III:

Bills of exchange – Discounting – endorsement – sending bill for collection – noting of a bill – renewal of a bill – insolvency of acceptor.

UNIT – IV:

Bank Reconciliation statement – Depreciation –methods – straight line – diminishing balance – Depletion.

UNIT – V:

Final accounts – Trading account – Profit and Loss account – Balance sheet – adjustments.

Text Book:

1. Principles of Accountancy – N. Vinayakam. KL. Nagarajan – S. Chand.

Reference:

1. Advanced Accountancy – S.P. Jain and K.L. Narang – Kalyani Publishers.
2. Advanced Accountancy – R.L. Guptha and Radhaswamy, Sultan Chand and Sons.

Course Outcome:
To understand the design of computer architecture

Semester	Subject Code	Title of the Paper	Hours of Teaching/ Week	No. of Credits
IV	**17U4CAS2**	**Skill Based Elective – II NEW MEDIA - II**	**1**	**1**

Multimedia Tools Exercises:

1. Letterhead design

2. Newspaper Advertisement design

3. Invitation/Thank you card design

4. Brochure design

5. Newsletter design

6. Business Card and CD Cover design

7. 2D animation – Tweening (Motion & Shape)

8. Animation Button creation and events for the buttons

9. Video file editing , sub title addition

10. Audio dubbing and changing in a video

Course Outcome:
Evaluate the ethical and legal considerations surrounding the production and distribution of digital media.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**17U5CAC5**	**OPERATING SYSTEM**	**6**	**6**

Objective
  ❖ To know about design principles of Operating System.

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Unit I   **Hrs 18**
    Introduction and Process Concepts : Definition of OS – Early History – History of DOS and UNIX operating system – definition of process – process states – process state transition – Interrupt processing – Interrupt classes – context switching – semaphores – Deadlock and Indefinite postponement.

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Unit II   **Hrs 18**
    Storage Management: Real Storage: Real storage management strategies – Contiguous Vs non – contiguous storage allocation – Single user contiguous storage allocation – Fixed partition multiprogramming – Variable partition multiprogramming – Multiprogramming with storage swapping. **Virtual Storage:** Virtual storage management strategies– page replacement strategies– Working sets – Demand paging – Page size.

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Unit III   **Hrs 18**
    Processor Management: Job and Processor Scheduling: Preemptive Vs No preemptive scheduling – Priorities – Deadline scheduling – FIFO – RR – Quantum size – SJF – SRT – HRN.

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Unit IV   **Hrs 18**
    Device Management: Disk Performance Optimization: Operation of moving head disk storage – Need for disk scheduling – Seek optimization – FCFS – SSTF – SCAN – RAM Disks – optical disks.

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Unit V   **Hrs 18**
    Case Study: WINDOWS: Memory Management – Overlaying – Extended and Expanded memory – Memory allocation – File system and allocation method – Internal and External common Memory management commands – File management commands.

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Reference:
  1. H.M. Deital, "An introduction to operating system", Addison Wesley Second edition, 1998.
  2. *Andrew S.Tanenbaum "Modern Operating System" , Prentice – Hall of India, Second Edition, 1996.*

Course Outcome:
To know about design principles of Operating System.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
V	**17U5CAC6**	**COMPUTER NETWORKS**	**5**	**6**

Objective

- To know about various layers of computer network architecture.

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Unit I   **Hrs 18**

Introduction To Networks And Communication Media: Uses - Network Hardware - Net work software - Reference Models - Example Network - Network standardization. Basis for data communication - Transmission media - Wireless Transmission - Telephone system - Satellite Communication.

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Unit II   **Hrs 18**

The Data Link Layer: Data Link Layer design issues - Error Detection and Correction Methods - Elementary Data Link protocols - sliding Window protocols - Verification Methods Channel Allocation- Multiple Access protocols- IEEE 802 Standards.

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Unit III   **Hrs 18**

The Network Layer: Network Layer design issues - Routing algorithms- Congestion Control algorithms - Internetworking - Network Layer in Internet.

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Unit IV   **Hrs 18**

The Transport protocols: Transport Service - Transport protocols - Internet Transport protocols UDP-TCP-performance issues – User Datagram Protocol – Port Number – User Datagram Structure Application - **The Application Layer:** Application Layer design issues- Domain Names System

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Unit V   **Hrs 18**

Electronic Mail - word wide web - Multimedia - other Application- Network Security- Basic Cryptography-DES-RSA.

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Reference:

1. Andrews S.Tanenbaum, "Computer Network", prentice Hall of India private Limited,(4Edition),2003.

General Reference

1. Leon Garcia and Widjaja, "Communication Networks - Fundamental Concepts and key architecture", Tata McGraw Hill, 2001.

Course Outcome:
To know about various layers of computer network architecture.

Semester	Subject code	Title of the course	Hours of Teaching /Week	No. of Credits
V	**17U5CAC7**	**Cloud Computing**	**5**	**5**

OBJECTIVES
- ➢ To understand the basic concepts of Cloud Computing
- ➢ To learn the cloud services and developing cloud in different platforms
- ➢ To study the various applications of cloud

UNIT I   **Hrs:15**
          Cloud Computing Fundamentals: Learning Objectives – Preamble Motivation for Cloud Computing – The Need for Cloud Computing – Defining Cloud Computing – NIST Definition of Cloud Computing – Cloud Computing Is a Service – Cloud Computing Is a Platform – Principal of cloud Computing – Five Essential Characteristics – Four Cloud Deployment Models – Cloud Ecosystem – Requirement for Cloud Services – Cloud Application Benefits and Drawbacks. **Cloud Computing Architecture and Management:** Learning Objectives – Preamble -Introduction - Cloud Architecture – Layer 1 (User/Client Layer) – Layer 2 (Network Layer) Layer 3 (Cloud Management Layer) – Layer 4 (Hardware Resource Layer) – Anatomy of the Cloud – network Connectivity in Cloud Computing – Public Cloud Access Networking – Intracloud Networking for Public Cloud Services – Private Intracloud Networking – New Facets in Private Networks – Path for Internet Traffic – Applications on the Cloud – Managing the Cloud Infrastructure – Managing the Cloud Application – Migrating Application to Cloud – Phases of Cloud Migration – Approaches for Cloud Migration.

UNIT II   **Hrs : 15**
          Cloud Deployment Models: Learning Objectives – Preamble – Introduction – Private Cloud – Characteristics –Suitability – On-Premise Private Cloud – Issues – Outsourced Private Cloud – Issue – Advantages – Disadvantages – Public Cloud – Characteristics – Suitability – Issue – Advantages – Disadvantages –Hybrid Cloud – Characteristics- Suitability – Issue – Advantages – Disadvantages. **Cloud Service Models:** Learning Objectives – Preamble – Introduction – Infrastructure as a Service – Characteristics of IaaS – Suitability of IaaS – Pros and Cons of IaaS – Summary of IaaS Providers – Platform as a Service – Characteristics of PaaS - Suitability of PaaS – Pros and Cons of PaaS– Summary of PaaS Providers – Software as a Service – Characteristics of SaaS - Suitability of SaaS – Pros and Cons of SaaS – Summary of SaaS Providers.

UNIT III   **Hrs: 15**
          Technological Drivers for Cloud Computing: Learning Objectives – Preamble – Introduction. **SOA and Cloud:**   SOA and SOC – Benefits of SOA – Technologies Used by SOA – Similarities and Differences Between SOA and Cloud Computing – Similarities – Difference – How SOA Meets Cloud Computing – CCOA. **Virtualization:** Approaches in Virtualization – Full Virtualization – Para Virtualization – Hardware Assisted Virtualization – **Hypervisor and Its Role: Types of Virtualization:** OS Virtualization – Server Virtualization – Memory Virtualization – Storage Virtualization – Network Virtualization – Application Virtualization. **MultiCore Technology:** Multicore Processors and VM Scalability – MultiCore Technology and Parallelism in Cloud – Case Study. **Memory and Storage Technologies:** Cloud Storage Requirements – Virtualization Support Storage as a Service (STaaS) – Emerging Trends and Technologies in Cloud Storage. **Networking Technologies:** Network Requirements for Cloud –

Virtualization Support Usage of Virtual Networks – DCs and VPLS – SDN –MPLS Other Emerging Networking Trends and Technologies in cloud. **Web 2.0:** Characteristics of Web 2.0 – Difference between Web 1.0 and Web 2.0 – Application of Web 2.0– Social Media– Marketing – Education– Web 2.0 and Cloud Computing. **Web 3.0:** Components of Web 3.0 – Semantic Web – Web Services – Characteristics of Web 3.0 – Convergence of Cloud and Web 3.0 – Case Studies in Cloud and Web 3.0 – Connection Information Facebook – Search Optimization and Web Commerce: Best Buy – Understanding Text: Millward Brown. **Software Process Models for Cloud:** Types of Software Models– Waterfall Model– V Model Incremental Model– RAD Model – Agile Model – Iterative Model –Spiral Model.

UNIT IV   **Hrs:15**
        Pervasive Computing: How pervasive Computing Work? – How Pervasive Computing Helps Cloud Computing?. **Operating System:** Types of Operating Systems – Role of OS in Cloud Computing – Features of Cloud OS – Well-Defined and Abstracted Interfaces Support for Security at the Core – Managing Virtualized Workloads – Cloud OS Requirements – Cloud-Based OS. **Application Environment:** Need for Effective ADE – Application Development Methodologies – Distributed Development – Agile Development –Power of Cloud Computing in Application Development - Disadvantages of Desktop Development – Advantages of Application development in the cloud – Cloud Application Development platforms – Windows Azure- Google App Engine – Force.com – Manjrasoft Aneka – Cloud Computing APIs – Racksapce – IBM – Intel.

UNIT V   **Hrs: 15**
        Cloud Service Providers: Learning Objectives – Preamble – Introduction – EMC IT – Captiva Cloud Toolkit – Google – Cloud platform – Cloud Storage – Google Cloud Connect – Google Cloud Print – Google App Engine – Amazon Web Services – Amazon Elastic Compute Cloud – Amazon Simple Storage Service – Amazon Simple Queue Service - Microsoft Windows Azure – Microsoft Assessment And Planning Toolkit – Share Point – IBM – Cloud Models – IBM Smart Cloud – SAP Labs –Sales Cloud – Service Cloud: Knowledge as a Service- Rackspace – VMware – Manjrasoft – Aneka Platform.

Text Book:

        Essentials of CLOUD COMPUTING by K. Chandrasekaran, 2015, Taylor & Francis

Group, CRC Press

Course Outcome:
- To understand the basic concepts of Cloud Computing
- To learn the cloud services and developing cloud in different platforms
- To study the various applications of cloud

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
V	**17U5CACP5**	**Lab V–** **OPERATING SYSTEM AND WEB DESIGN**	**3**	**3**

Objective
❖ To apply O.S concepts using Linux Programming.
❖ To apply web technology concepts.

Operating System:

1. Write a shell program to create a menu for copy, edit, rename and delete a file.

2. Write a shell program to generate menu creation.

3. Write a shell program to prepare the E.B.Bill.

4. Write a LINUX program to for file handling.

5. Write a shell program for merging a file.

6. Write a LINUX program to find a given word in the specific file.

7. Write a shell program for file checking and formatting and difference between two files.

8. Write a shell program to perform sorting and unsorting the file name.

9. Write a shell program for sorting the file depends upon the primary key.

10. Write a LINUX program to find whether the given number is palindrome number or not.

11. Write a shell program for counting words, lines and characters in a file.

12. Write a LINUX program to convert the Upper case to lowercase and lowercase to Uppercase.

13. Write a shell program to generate a Fibonacci series.

14. Write a LINUX program to find out the sum of digits.

15. Write a shell program to generate the use of pipeline and tree command.

16. Write a shell program to demonstrate the use of grep command.

17. Write a LINUX program   for finding whether the number is Armstrong or not.

18. Write a program to find the given number is prime or not.

19. Write a shell program for various type of list using menu creation.

Web Design:

➢ Create a web page with all types of cascading style sheets.

➢ Create a form for Student information. Write JavaScript code to find Total, Average, Result and Grade.

➢ Create a form for Employee information. Write JavaScript code to find DA, HRA, PF, TAX, Gross pay, Deduction and Net pay.

➢ Using JavaScript perform Form Validation with Limit Login Attempts.

➢ Write a PHP script to display the values entered into a Web form that contains:

i.One text input field ii. One text area iii. One hidden field

iv.One password field v. One selection list vi.Two radio buttons Two checkboxes.

➢ Create a calculator script that allows the user to submit two numbers and Choose an operation to perform on them (addition, multiplication, Division, subtraction).

➢ Write a program in PHP for admin interface to add and delete users Using MySQL.

➢ Create an authentication script that checks a username and password. If the user input matches an entry in the database, present the user with a special message. Otherwise, re-present the login form to the user.

➢ Create a database with three fields: email (up to 70 characters), message (up to 250 characters), and date (an integer that contains a Unix timestamp). Build a script to allow users to populate the database.

➢ Create a script that displays the information from the database. Use regular expressions to extract email addresses from a file. Add Them to an array and output the result to the browser.

➢ Write a program in PHP to upload file using form control.

Course Outcome:
- To apply O.S concepts using Linux Programming.
- To apply web technology concepts.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
V	**17U5CAEL1A**	**Major Elective - I E-BUSINESS**	**4**	**4**

Objective:

To understand the use of Internet for business processes.

Unit-I   **Hrs 12**

Linking Today's Business with Tomorrow's Technology –Defining e-Business: Structural Transformation-Challenging Traditional Definitions of Value-Engineering the End-to-End value stream-Business webs-Harvesting the partnerships-Business Core competencies-Creating the New Techno enterprises: Integrate, Integrate, Integrate-Needed: A new Generation of E-Business Leaders-Trends driving e-Business-Customer-Oriented Trends-e-Service-Organizational Trends-General Technology Trends-What these 20 trends have in common

Unit-II   **Hrs 12**

e-Business pattern :The structural foundation-The e-Channel pattern-The click –and-Brick pattern-The e-portal pattern-The e-Market marker pattern-The pure-E" Digital Products" Pattern-The race to create novel e-Business designs-Step1:self-Diagnosis-Step2:Reverse the value chain –Step3:Choose a focus-Step4 Executive flawlessly –Lessons from e-Business design.

Unit-III   **Hrs 12**

Trends driving e-Business Architecture –Problem caused by Lack of integration –The New era of cross-functional apps-e-Business architecture -Integrated application frameworks.

Unit-IV   **Hrs 12**

The Basics of customer relationship management-The New CRM architecture: Organizing around the customer-Integration requirements of the Next-Generation CRM infrastructure-Next generation CRM trends-A roadmap for managers-The basics of selling –chain management-Business forces driving the needed for selling-Chain management-Technology forces driving the needed for selling-Chain management-Technology forces driving the need for selling-Chain management-The Universal business problem: Managing the order acquisition process-Elements of selling –chain infrastructure –he Basics of enterprise resource planning-ERP decision=Enterprise Architecture planning-ERP use in the real world: Three case studies-ERP implementation: Catching the bull by the horns –ERP architecture and toolkit Evaluation.

Unit-V   **Hrs 12**

Roadmap to moving your company into e-Business-Setting the stage for e-Blueprint planning-Basics phases of e-Blueprint planning-Communicate, communicate, communicate-The serious of e-Business blueprint planning.

Text Book:

1. E-Business 2.0 Roadmap for success-Ravi Kalakota and Marcia Robinson –Pearson education- Low price edition.

Course Outcome:
* To understand the use of Internet for business processes.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
V	**17U5CAEL1B**	**Major Elective –I** **MANAGEMENT INFORMATION SYSTEM**	**4**	**4**

Objective

❖ To know about various information systems required to design MIS.

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Unit I   **Hrs 12**

Introduction To Information System: why Study Information System - Why Business Need Information technology- Fundamentals of Information System - Overview of Information Systems.

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Unit II   **Hrs 12**

Solving Business problems with Information System: System Approach to problem Solving - Developing Information System Solution - Technical Foundations of Data Base Management.

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Unit III   **Hrs 12**

Information System For Strategic Advantage: - Fundamentals of Strategic Advantage - Strategic Application and Issues In It; Managing IT: Enterprise and Management.

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Unit IV   **Hrs 12**

Business Applications of Information Technology: The Internet and Electronic Commerce - Fundamentals of Electronic Commerce - Information System for Business Operations: Business Information System - Transaction processing System.

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Unit V   **Hrs 12**

Information System for Managerial Decision Support: Decision Support Systems-Artificial Intelligence Technology in Business - Managing IT-planning for business Change with IT–Implementing Business change with IT.

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Reference:

1. "Management Information System", James A.O' Brein, Fourth Edition, Galgotia publications, 1999.

General Reference:

1. "Management Information System", Gordon B. Davis Margre the H.Olson, Mc Graw Hill, 3rd Reprint 2000.

Course Outcome:

To know about various information systems required to design MIS.

Semester	Subject code	Title of the course	Hours of Teaching /Week	No. of Credits
V	**17U5CAEL2A**	**Major Elective – II** **XML and Web Services**	**4**	**3**

Objective

> ❖ To understand the basic concepts of XML Programming.

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Unit I   **Hrs 12**

The XML Galaxy -Introduction-No-Predefined Tags-Document Structure-Markup Lan-guage History. Application of XML: Document Application-Data Application-Companion Standard: XML Namespaces-Style sheet-DOM and SAX- XLink and XPointer. XML Soft-ware: XML Browser-XML Editor-XML Parsers-XSL Processor.

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Unit II   **Hrs 12**

The XML Syntax-A first Look at the XML Syntax-Advanced Topics-Four Common Er-rors-Xml Editors- Three Applications of XML

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Unit III   **Hrs 12**

XML Schemas-The DTD Syntax-Well-Formed and Valid Documents-Relationship be-tween the DTD and the Document-Entities and Notation-Notations-Designing DTD's-Designing DTD's from an object Model.

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Unit IV   **Hrs 12**

Namespaces- The problem Namespaces Solves-URIS-Namespaces and DTD-Application of Namespaces-XSL Transformation-Basic XSLT-Supporting a different Me-dium-Advanced XSLT.

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Unit V   **Hrs 12**

XSL Formatting Object and Cascading Style sheet: The Basics of CSS-Flow Objects and Boxes-CSS Property Values-The Parsers and DOM-The Parser and the Application-Document Object Model-DOM in Application-SAX.

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Book for Study:
1. Benoit Marchal, "*XML BY EXAMPLE*", Prentice Hall of India Pvt Ltd, New Delhi. ISBN 978-8120316645.

Books for Reference:
1. David Hunter, Jeff Rafter, Joe Fawcett, "*Beginning XML*" Fourth Edition, Wrox Publications, ISBN: 978-047011487

Course Outcome:
• To understand the basic concepts of XML Programming.

Semester	Subject Code	Title of the course	Hours of Teaching / Week	No. of Credits
V	**17U5CAEL2B**	**Major Elective – II** **WEB TECHNOLOGY**	**4**	**3**

Objective

o   To understand the basic concepts of HTML
o   To give insight for JavaScript
o   To imbibe the programming concepts of PHP
o   To imbibe the necessary knowledge of the tools useful for creating dynamic website

Unit I   **Hrs 12**
        HTML: Basic HTML, The Document body, Text, Hyperlinks, Adding more formatting, Lists, Tables, Using colors and images, Images, Multimedia objects, Frames, Forms-towards interactivity, Cascading Style Sheets: Introduction, Using styles: Simple exam-ples, Defining your own styles, Properties and values in styles.

Unit II   **Hrs 12**
        Client Side Scripting : JavaScript: JavaScript—The basics, Variables, String manipula-tion, Mathematical functions, Statements, Operators, Arrays, Functions- Data and ob-jects in java script, Regular expressions, Exception Handling, Built in objects, Events. Dynamic HTML with Java Script: Data validation, Opening a new window, Messages and Confirmations, The status bar, writing to a different frame, Rollover buttons, Mov-ing images, multiple pages in a single download, A text-only menu system, Floating logos.

Unit-III   **Hrs 12**
        Server Side Scripting: PHP: PHP Introduction – syntax of PHP - Variables – Constants - PHP operators – Flow of controls – PHP looping – Arrays . PHP Functions – PHP and Object Oriented Programming – PHP access specifiers.

Unit-IV   **Hrs 12**
        PHP cookie – Session – Server variables – header() – Code reuse functions. PHP files – Introduction – Testing files – Accessing files – Functions for Directories.

Unit-V   **Hrs 12**
        MySQL Database: Need for Database – MySQL Database, Insert, Query, Fetch Array, Select, Order by, Joins, Update, Delete, Groupby functions, Data Formats- Case Studies.

Books for Study:

1. N.P Gopalan,J.Akilandeswari, "Web Technology" A Developer's Perspective, Prentice Hall of India Private Limited, New Delhi, 2008.

2. K.Meena, R.Sivakumar and A.B.Karthick Anand Babu, "Web Programming Using PHP and MySQL", Himalaya Publishing House, First Edition 2012.ISBN: 978-9350515815.

Books for Reference:

1.   Robin Nixon, "**Learning PHP, MySQL & JavaScript With jouery, CSS & HTML5**" O'Reilly Media, Fourth edition, December 2014, ISBN:978-1-491-91866-1.

2.   David R. Brooks, "**An Introduction to HTML and JavaScript for Scientists and**

Engineers", Springer-Verlag London Limited 2007, ISBN-13: 978-1-84628-656-.

Course Outcome:
- To understand the basic concepts of HTML
- To give insight for JavaScript
- To imbibe the programming concepts of PHP
- To imbibe the necessary knowledge of the tools useful for creating dynamic website

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
V	**17U5CANME**	**Non Major Elective INTERNET BASICS**	**2**	**1**

Unit I:

   World Wide Web: Working procedure of web pages, web browsers, Markup languages, Hypertext, URL, Image map, interactive forms, Web host servers, websites with databases, TELNET-FTP and downloading files-Searching the internet-Push technology.

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Unit II:

   Intranet and Internet shopping: working of intranets and workgroup software-internet shopping. **Internet Safeguard:** working procedure of firewalls, viruses, cookies, web tracking-cryptography, privacy, digital certificates, parental controls.

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Text Book:

1.   Preston Gralla, "How the Internet Works", Millinium Edition, Techmedia.

Course Outcome:
Describe connections that need to be made in order to access the internet.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
V	**17U5CASSD**	**SOFT SKILLS DEVELOPMENT**	**1**	**-**

Unit : I

Proficiency in English – Group Discussion - Interview – Presentation Skills – Percentage and its application – Error Correction.

Unit : II

Communication Skills – Art of Listening, Art of Reading, Art of Writing. Corporate Skill – Time Management, Stress Management.

Text Books

1. Meena K and Ayothi (2013) A Book on Development of Soft Skills (Soft. Skills: A Road Map to Success) P.R. Publishers & Distributors, No. B -20 & 21 V.M.M. Complex, Chatiram Bus Stand, Tiruchirappalli – 620002.
2. Hariharan S, Sundararajan N and Shanmugapriya S.P. (2010) Soft Skills, MJP Pubglishers, Chennai – 600 005.

References

1. Alex K (2012) Soft Skills – Know yourself & Know the world, S.Chand & Company LTD. Ram Nagar, New Delhi – 110 055.

2. Martin Avis, Effective Time Management Skills for everyone, Avis Consultancy, London.

Course Outcome:
Developing organizational behavior and employment skills to the employment organizations

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
VI	**17U6CAC8**	**Distributed Programming using .net**	**5**	**6**

Objective:
- o To an introduce the .NET architecture and its applications.
- o To learn features of C# , ASP.NET and ADO.NET programming.
- o To develop an applications in the .NET platform.

Unit – I

Hrs18

Introduction to .NET: .NET Framework, Components of .NET Framework, Visual Studio .NET IDE- Introduction to Visual Basic .NET- Console Applications, Data Types – Operators- Flow of Controls.

Unit – II:

Hrs18

Introduction to C# .NET - Features of C#, similarities and Differences between C# and VB- similarities and Differences between C# – Classes and Objects in C#– Operators, Types and Variables in C#- Selective and Iterative flow of Controls.

Unit – III:

Hrs18

Advanced Features of C#: Arrays – Indexers and Collections – Inheritance – Properties – Abstract Properties - Polymorphism – Attributes – Structs - Exceptions – Delegates and Events.

Unit – IV:

Hrs18

ADO.NET and its components – Database project in VB.NET , Structured Query Language – Navigate database with VB.NET – Database coding with Oracle and SQL server- **ASP.NET:** Introduction – Components – Web pages – Server Controls – Validation Controls – Data Binding – Arraylist object - Hashtable object

Unit V:

Hrs 18

XML files – Repeater Controls – Master Pages – Themes – Database Connection – Case study with Web services.

Books for Study:

1. K.Meena, R.Sivakumar and A.B.Karthick Anand Babu, "Dot NET Technologies", Himalaya Publishing House, First Edition 2016.
2. Stephen C. Perry, Atul Khate, Joseph Mayo, "***Essentials of .Net and Related Technologies: With a focus on C#, XML, Asp.NET and ADO.NET"***, First Edition, Pearson Education., 2009.
3. Matt Telles, Kogent Solutions Inc.Telles, "***C# 2005Programming, Black Book",*** Dreamtech Press, 2007.
4. Schildt, Herbert, ***"C#: The Complete Reference"***, Second Edition, McGraw-Hill, 2008.
5. Kevin Hoffman & Jeff Gabriel, ***"Professional .NET Framework"*** Shorff Publishers and Distributors Pvt. Ltd
6. Dave Mercer, ***"ASP.NET–A Beginners Guide"***, Tata McGraw Hill Publications Pvt. Ltd.

Course Outcome:
- To an introduce the .NET architecture and its applications.
- To learn features of C# , ASP.NET and ADO.NET programming.
- To develop an applications in the .NET platform.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
VI	**17U6CAC9**	**SOFTWARE ENGINEERING**	**5**	**5**

Objective

❖ To understand various phases in developing a Software.

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Unit I

Hrs 18

Introduction to Software Engineering: introduction-some definitions-some size factor-Total effort devoted to software-distribution of effort-project size categories-how programmer spend their time-quality and productivity factors-managerial issues **Planning a software project: Introduction** –defining the problem-goals and requirements-developing solution strategy-planning the development process-the phased life Cycle Model-Milestones, documents and Reviews-the cost model –The prototype life Cycle Model-Successive Versions planning an organizational structures-project structures - project Format/Functional Format/Matrix Format-programming Team structure.

Unit II

Hrs 18

Software Cost Estimation: Introduction software cost factor-programmer Ability –product complexity-product size-Available Time –Required level of Reliability-Level of technology-**Software cost estimation Techniques-**Expert Judgment-Delphi cost estimation-work breakdown structures-algorithmic cost models-staffing Level Estimation-Estimating software Maintenance costs.-**software Requirements Definition**-The Software Requirement specification-Formal specification Techniques-Relational Notations-implicit Equations /Recurrence Relations/Algebraic Axioms/Regular Expressions-state oriented Notations-Decision Tables/Event Tables

Unit III

Hrs 18

Software Design: Introduction-Fundamental design concepts-Abstraction-Information hiding-structure-modularity-concurrency-verification-Aesthetics-Modules and Modularization Criteria- design Notation-data flow diagrams-structure charts-HIPO Diagrams-procedure templates-pseudo code-structured flow charts-structured English-Design Tables-Design Techniques-Stepwise Refinement- Level of Abstractions-structured design-integrated top- down development-Jackson structured programming-summary of design techniques-detail design considerations-Real-time and distributed system design-test plans-Milestones, walkthroughs and inspection-design guidelines.

Unit IV

Hrs 18

Implementation Issues-introduction- structured coding techniques-single entry, single Exit Constructs-Efficiency considerations –Violations of single entry, single – data encapsulations-the go to statement-Recursions-coding style-standard and guidelines-documentation guidelines-supporting documents-internal documentations.

Unit V

Hrs 18

Verification and Validation Techniques-introduction-quality assurance - walkthroughs and inspections - walkthroughs - inspections-static analysis - Symbolic Execution-unit Testing and Debugging-unit testing – Debugging - system testing-integration testing-acceptance testing -Formal Verification-input - output Assertions-weakest preconditions structural induction.

References:

1. Richard E.Fairley, "Software Engineering Concepts", McGraw-Hill Book Company-1985.

2. Roger Pressman, "Software Enginering", Sixth Edition,McGraw-Hill Book Company, 2005.

Course Outcome:
To understand various phases in developing a Software.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
VI	**17U6CAC10**	**Data Mining and Data ware housing**	**6**	**6**

Objective

❖ To know about the architecture and application areas of Data ware housing and Mining.

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UNIT I   **Hrs 20**

Introduction – data mining –data mining functionalities – classification of data mining systems – data mining task primitives- integration of a Data mining system with a database or data warehouse system – Descriptive Data Summarization -Data processing - Data cleaning – data integration and transformation - data reduction- data discretization and concept of hierarchy generation.

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UNIT II   **Hrs 25**

Data ware housing and OLAP Technology - A Multidimensional Data Model - data warehouse architecture - Data Warehouse implementation- from data warehousing of data mining.

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UNIT III   **Hrs 25**

Classification and Prediction- what is classification? What is Prediction? -Issues regarding classification and Prediction - classification by decision Tree Induction.

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UNIT IV   **Hrs 20**

Cluster analysis - Types of Cluster Analysis Partitioning Methods - Hierarchical methods -Density based methods.

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UNIT V   **Hrs 20**

Applications and Trends in data mining- data mining Application , Social Impacts of Data mining -Trends in data mining - Data mining system Products and research Prototypes

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References:

1. "Data Mining concepts and techniques", Jiawei Han and Micheline Kamber, Second Edition, Morgan Kaufman Publishers - 2006.

2. "Data Ware housing in the Real World", Sam Anahory and Dennis Murray, Addition Wesely, Pearson Education Asia Pvt. Ltd, 2000.

Course Outcome:
To know about the architecture and application areas of Data ware housing and Mining.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
VI	**17U6CACP6**	**Lab - VI Distributed Programming using .net LAB**	**3**	**3**

Objectives:

> ➤ To develop an application using C#, ADO.net and ASP.net

.NET lab

1. Working with call backs and delegates in C#

2. Code access security with C#.

3. Creating a Windows Service with C#

4. Interacting with a Windows Service with C#

5. Using Reflection in C#

6. Sending Mail and SMTP Mail and C#

7. Perform String Manipulation with the String Builder and String Classes and C#:

8. Using the System .Net Web Client to Retrieve or Upload Data with C#

9. Reader/Writer Class and C#

10. Working with Page and forms using ASP .Net.

11. Data Sources access through ADO.Net,

12. Working with Data readers , Transactions

Course Outcome:
To develop an application using C#, ADO.net and ASP.net

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
VI	**17U6CAEL3A**	**Major Elective - III** **MULTIMEDIA**	**5**	**4**

Objective

> ❖ To know about design principles of multimedia system.

Unit I   **Hrs 15**

Multimedia Overview: Introduction, Multimedia presentation and production, characteristics of a multimedia presentation, Multiple media, Utilities of multisensory perception, Hardware and software requirements, Uses of multimedia, Promotion of multimedia based contents, steps for creating multimedia presentation. Visual Display Systems: Introduction, cathode Ray Tube (CRT), Video Adapter Card, Video Adapter cable, Liquid Crystal Display (LCD), Plasma Display Panel (PDP).

Unit II   **Hrs 15**

Text: Introduction, Types of Text, Unicode Standard, Font, Insertion of Text, Text compression, File Formats. Image: Introduction, Image Types, Seeing colors, color models, Basic steps for Image processing, Scanner, Digital camera, Interface Standards, Image processing software, File formats, Image output on monitor, Image output on printer.

Unit III   **Hrs 15**

Audio: Introduction, Fundamentals Characteristics of sound, Elements of Audio systems, Microphone, Amplifier, Loudspeaker, Audio mixer, Musical Instrument Digital Interface(MIDI),MIDI messages, MIDI connections, Sound card, Audio File format and CODECs, Software Audio Players, Audio Recording Systems, Audio and multimedia, Audio Processing software.

Unit IV   **Hrs 15**

Video: Introduction, Analog video camera, Transmission of video signals, Video signal format, Digital video, Digital Video Standards, PC Video, Video File Format and CODECs, Video editing, Video editing software.

Unit V   **Hrs 15**

Animation: Introduction, uses of animation, key frames and Tweening, Types of animation, Computer Assisted Animation, Creating movements, Principle of animation, some Techniques of Animation, Animation on the web, 3D Animation, Special Effects, Creating Animation, Rendering algorithms, Animation software.

Text Book:

Principles of Multimedia by Ranjan Parekh- the Tata McGraw Hill companies,Sixth Reprint 2008.
Chapters:
UNIT I: Chapter 1-1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9
               Chapter 3-3.1, 3.2, 3.3, 3.4, 3.5, 3.6
UNIT II: Chapter 4-4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7
               Chapter 5-5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.13, 5.14, 5.15, 5.16
UNIT III: Chapter 7-7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 7.11, 7.14,
               7.15, 7.19, 7.22(Up to 7.22.10), 7.23(up to 7.23.2), 7.24, 7.26, 7.28
UNIT IV: Chapter 8-8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.10(up to 8.10.4), 8.11, 8.12
UNIT V: Chapter 9-9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 9.11, 9.13,
               9.14, 9.15, 9.16

Reference:
Multimedia System Design by Prabhat K.Andleigh and Kiran Thakar-PHI-2008

Course Outcome:
- To know about design principles of multimedia system.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
VI	**17U6CAEL3B**	**Major Elective – III Mobile Applications**	**5**	**4**

Objectives:
- To provide thorough introduction to Android.
- To learn the basic concepts of Android Development tools and Life cycle.
- To impart knowledge about user interfaces
- To have an exposure about databases and content providers
- To understand the principles of graphics, messaging, sound , video and publishing the application

Unit – I **Hrs 18**

Android Introduction: An Open Platform for Mobile Development – Native Android ap-plications – Android SDK features – Evolution- development of android for mobile – Development framework

Unit – **II** **Hrs 18**

Android application development: installation – Creating application – Types of Appli-cations – Android development tools. Creating Applications and activities: Application Manifest file – Manifest editor – Externalizing the resources – Android application life cycle – Android application class- android activities

Unit – **III** **Hrs 18**

Building user interfaces: Fundamental UI Design – Layouts – Fragments – Widget Tool box – Creating new views

Unit – **IV** **Hrs 18**

Introducing adapters - Databases and content providers: Android databases – working with SQLite databases – Creating content providers – Native android content providers - Introducing the Action Bar – Creating and Using Menus and Action bar action items

Unit – V

Introducing Dialogs – Introducing notifications - signing and publishing application.

Books for Study
1. Reto Meier, **"Professional Android 4 Application Development"**, WROX Publication – Wiley – India, 2012

Books for Reference:
1. Pradeep Kothari &Kogent Learning Solutions Inc, **"Android Application Devel-opment Black Book"**, Dreamtech Press, Edition 2014,
2. W.FrankAbleson, RobiSen, Chris King, C.Enrique Ortiz, **"Android in Action"**, Manning Publications Co,Third Edition, ISBN 9781617290508
3. Lauren Darcey, Shane Conder, **"SAMS Teach Yourself Android Application Development in 24 Hours"**, Second edition.

Course Outcome:

- To provide thorough introduction to Android.
- To learn the basic concepts of Android Development tools and Life cycle.
- To impart knowledge about user interfaces
- To have an exposure about databases and content providers
- To understand the principles of graphics, messaging, sound , video and publishing the application

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
VI	**17U6CAEL4PA**	**Major Elective – IV MULTIMEDIA LAB**	**4**	**3**

1. Creating a sample Image

2. Editing existing image's brightness, mode, color and add and edit layer style

3. Stitch and Edit two images into single image. Use selection tools Lasso tool, Clone stamp

4. Study about timeline concepts. Insert text, image, use scaling rotation alignment

5. Study masking concepts. Use audio in the movie.

6. Add buttons, menus, and actions to the movie.

7. Export movie, Use multiple scenes.

8. Insert text, image, and sprite to the movie.

9. Add effects to the text(predefined and user defined)

10. Create simple 3D animation and export

Course Outcome:

- Building mobile applications.
- Availing variety of mobile brands and models for testing objectives in same location.
- Pushing the innovation in mobile applications.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
VI	**17U6CAEL4PB**	**Major Elective – IV** **Mobile Applications LAB**	**4**	**3**

Mobile:

1. Layouts

2. Views

3. Events

4. Files

5. Preferences

6. Notifications

7. Programs using SQlite

8. Audio and Video Applications

Course Outcome:
- Building mobile applications.
- Availing variety of mobile brands and models for testing objectives in same location.
- Pushing the innovation in mobile applications.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
		Core Option - E – LEARNING MANAGEMENT	**6**	**6**

COURSE OBJECTIVES
- Learn the basics of E-Learning concepts.
- Learn the content development techniques.

UNIT I

INTRODUCTION - Introduction – Training and Learning, Understanding e- learning, components and models of e- learning, Advocacy of e-learning –benefits, learning styles, criteria for choosing, - Applications of E-learning.

UNIT II

CONCEPTS and DESIGN - E-Learning Strategy, the essential elements of e-learning strategy, Quality assuring e-learning, suppliers and resources, virtual learning environments, authoring tools, e-assessment, Learning Design Issues – purpose, general principles, designing live e-learning, designing self managed learning.

UNIT III

APPLICATIONS - Moodle 2.0 E-Learning Course Development – Features, Architecture, Installation and Configuring Site.

UNIT IV

COURSE MANAGEMENT - Creating – Categories, Courses, Adding Static Course Material – Links, Pages, Moodle HTML Editor, Media Files, Interacting with Lessons and Assignments – Evaluating Students – Quizzes and Feedback.

UNIT V

ENHANCEMENT - Adding Social Activities - Chat, Forum, Ratings, Blocks – Types, Activities, Courses, HTML, Online Users – Features for Teachers.

REFERENCE BOOKS:
1. Delivering E-Learning: A complete Strategy for Design, Application and Assessment, Kenneth Fee, Kogan page, 2009.
2. Designing Successful e-Learning, Michael Allen, Pfeiffer Publication, 2007.
3. Moodle 2.0 E-learning Course Development, William Rice, PACKT, 2011.
    Moodle 2.0 First Look, Mary Cooch, 2010.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
		Core Option – COLLABORATIVE WEB DESIGN	**6**	**6**

COURSE OBJECTIVES

- Understand JOOMLA and become familiar with Extensions.
- Learn the concept of web applications for group discussion.

UNIT I
INTRODUCTION - History of Joomla - Content management system – Joomlasphere – Domain names - Usability – Joomla Installation – Database creation – Uploading- Web installation- Configuration – Steps – Global option – User and Media – Smart search.

UNIT II
CONTENT CREATION - Defining and managing content in web site using joomla - Working with Media Manager - Menus and Menu Items – Types – Parameters – Articles- Categories – Layouts – Integration – Permissions.

UNIT III
EXTENSIONS - Components – Content- Web links – News feed – Contacts – Search - Polls – Modules – Plugins – Languages – Adding extensions – Popular Extensions.

UNIT IV   TEMPLATES - Basics of Joomla Templates – Design Styling and CSS – Customizing the Default Template Beez – Beez color schemes - Adding logo – Create own Joomla template with basic template structure.

UNIT V
PRACTICAL APPLICATIONS - Basic Planning of Business Sites, Education Sites and Group Sites - E-commerce Web Sites – Joomla for NGOs – NPOs – Groups –Clubs – Organizations – Education - Case Studies – Education Web Site.

REFERENCE BOOKS:

1. Jennifer Marriott, Elin Waring, "The Official Joomla! ", Pearson Education, Second Edition, 2013.
2. Themas A. Powell, "The Complete Reference – Web Design", Tata McGraw Hill, Third Edition, 2003.
3. Ashley Friedlein, "Web Project Management", Morgan Kaufmann Publishers, 2001.
4. H. M. Deitel, P. J. Deitel, A. B. Goldberg, "Internet and World Wide Web – How to Program", Third Edition, Pearson Education 2004.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
		Core Option - Java Stream Corporate Skills Requirement- Level-I Basics of Programming	**6**	**6**

Objective:

➢ *Understanding of Programming concepts, UI, different approaches, Testing & debugging, SDLC & UML*

Session 1 : Introduction to Programming

Session 2 : Introduction to Computer Programs

Session 3 : Basic Programming Concepts

Session 4 : Introduction to Developing a User Interface

Session 5 : Programming Approaches

Session 6 : Code Optimization Techniques

Session 7 : Testing and Debugging

Session 8 : Introduction to the SDLC and UML

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
		Core Option - Java Stream Corporate Skills Requirement- Level-II - Problem Solving & Java	**6**	**6**

Objective:

➢ *Should learn OOP concepts, Basics of Java, jdk, jre, jvm, datatypes, variables & operators, class, objects, functions, constructors, static, this, array of primitive types – Programs to iterate, searching & sorting*

Session 1: IT Application Overview and Features

Session 2 : Need of Programming and Introduction to OOP approach

Session 3 : Introduction to Java, JVM & JDK

Session 4 : Operators and Variables in Java

Session 5 : Introduction to class in Java, access specifiers, this and static in Java

Session 6 : Java Library, Packages, Use of import

Session 7 : Conditional Operations

Session 8 : Basic Iterations and Arrays

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
		Core Option - Java Stream Corporate Skills Requirement- Level-III - Problem Solving & Information Management	**6**	**6**

Objective:

➢ *Should be aware of String class & diff between StringBuffer and StringBuilder, usage of enum, inheritance concepts & related keywords such as super, extends, protected, abstract and interface, exception handling and keywords like try, catch, throw, throws & finally, custom exceptions, collection framework – List, Set and Map and usage of Comparator & Comparable – File read / wirte operations & properties – Understanding & usage of RDBMS – JDBC Programming*

     Session 1 : String, StringBuffer, StringBuilder and Enum

     Session 2 : Inheritance and Polymorphism

     Session 3 : Exception Handling

     Session 4 : Class Relationships

     Session 5 : Generics and Collections

     Session 6 : File I/O

     Session 7 : Introduction to Database, Normalization, DDL & DML

     Session 8 : DRL, DCL, TCL, Joins and Subqueries

     Session 9 : Primary key Generation Techniques

     Session 10 : Introduction to XML

     Session 11: JDBC

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
		Core Option - Java Stream Corporate Skills Requirement-Level-IV - Web Application	**6**	**6**

Objective:

➢ *Learning HTML tags & CSS, Designing of Web pages using notepad++ & Eclipse, learning concepts of JavaScript, understanding of Server concepts, container, web components and deployment descriptor, working of Servlet, request & reponse, implementation of Session management, context config, JSP tags, implementations of implicit objects and Exceptions*

   Session 1 : Designing Web Pages Part 1 (HTML & CSS)

   Session 2 : Creating UI using Notepad++

   Session 3 : Static Web Project in Eclipse

   Session 4 : Static Web Project in Eclipse

   Session 5 : JavaScript

   Session 6 : Web Applications Basics

   Session 7 : Introduction to Servlets and web XML

   Session 8 : RequestDispatcher and SendRedirect

   Session 9 : Introduction to Data and Service Layer

   Session 10 : Session Management

   Session 11 : JSP