

### B.Sc. COMPUTER SCIENCE (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	<b>I</b>	Part I	17U1CST1/H1	Tamil-I/Hindi -I	25	75	100	10	30	40	6	3
2		Part II	17U1CSE1	English-I	25	75	100	10	30	40	6	3
3		Core	17U1CSC1	Problem Solving and Programming Techniques	25	75	100	10	30	40	6	6
4		Core	17U1CSCP1	Lab-I C Programming	40	60	100	16	24	40	3	3
5		Allied	17U1CSMAA1	Allied Mathematics I	25	75	100	10	30	40	6	3
		Allied	17U2CSMAA2	Discrete Mathematics (NS)	-	-	-	-	-	-	3	-
6		ES (SS)	17U1CSES	Environment Studies	-	100	100	-	40	40	-	1
7	<b>II</b>	Part I	17U2CST2/H2	Tamil-II/Hindi -II	25	75	100	10	30	40	6	3
8		Part II	17U2CSE2	English-II	25	75	100	10	30	40	6	3
9		Core	17U2CSC2	C++ and Data Structures	25	75	100	10	30	40	6	6
10		Core	17U2CSCP2	Lab-II C++ Programming	40	60	100	16	24	40	3	3
11		Allied	17U2CSMAA2	Discrete Mathematics (NS)	25	75	100	10	30	40	3	4
12		Allied	17U2CSMAA3	Allied Mathematics III	25	75	100	10	30	40	5	3
13		VBE	17U2CSVE	Value Based Education	25	75	100	10	30	40	-	-
14		SBE	17U2CSS1	Skill Based Elective - New Media - 1	25	75	100	10	30	40	1	1
15	<b>III</b>	Part I	17U3CST3/H3	Tamil-III/Hindi -III	25	75	100	10	30	40	6	3
16		Part II	17U3CSE3	English-III	25	75	100	10	30	40	6	3
17		Core	17U3CSC3	Java Programming	25	75	100	10	30	40	6	6
18		Core	17U3CSCP3	Lab-III Java Programming	40	60	100	16	24	40	3	3
19		Allied	17U3CSPHA1	Allied Physics I	25	75	100	10	30	40	6	4
		Allied	17U4CSPHAPL	Allied Physics Lab (NS)	-	-	-	-	-	-	3	-
20		GS	17U3CSGS	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	17U4CST4/H4	Tamil-IV/Hindi -IV	25	75	100	10	30	40	6	3
22		Part II	17U4CSE4	English-IV	25	75	100	10	30	40	6	3
23		Core	17U4CSC4	Database Management Systems	25	75	100	10	30	40	6	6
24		Core	17U4CSCP4	Lab-IV RDBMS	40	60	100	16	24	40	3	3
25		Allied	17U4CSPHA2	Allied Physics II	25	75	100	10	30	40	6	4
26		Allied	17U4CSPHAPL	Allied Physics Lab (NS)	40	60	100	16	24	40	2	2
27		SBE	17U4CSS2	Skill Based Elective-New Media – 2	25	75	100	10	30	40	1	1
28	V	Core	17U5CSC5	Distributed Programming using .net	25	75	100	10	30	40	6	6
29		Core	17U5CSC6	Data Mining and Data Warehousing	25	75	100	10	30	40	5	6
30		Core	17U5CSC7	Cloud Computing	25	75	100	10	30	40	4	5
31		Core	17U5CSCP5	Lab-V Distributed Programming using .net Lab	40	60	100	16	24	40	3	3
32		Elective-I	17U5CSEL1A 17U5CSEL1B	Computer Graphics Multimedia Technologies	25	75	100	10	30	40	4	4
33		Elective-II	17U5CSEL2A 17U5CSEL2B	Software Engineering UML Programming	25	75	100	10	30	40	4	3
34		NME	17U5CSNME	Non Major Elective- Internet basics	25	75	100	10	30	40	3	1
35	SSD	17U5CSSSD	Soft Skill Development	-	100	100	-	40	40	1	-	
36	VI	Core	17U6CSC8	Computer architecture and Microprocessor	25	75	100	10	30	40	5	5
37		Core	17U6CSC9	Data Communication Network	25	75	100	10	30	40	5	5
38		Core	17U6CSC10	Operating System	25	75	100	10	30	40	5	5
39		Core	17U6CSC11	Mobile Applications	25	75	100	10	30	40	5	5
40		Elective-I	17U6CSEL3A 17U6CSEL3B	Web Design Open Source Technology	25	75	100	10	30	40	4	4
41		Elective-II	17U6CSEL4PA 17U6CSEL4PB	Lab-VI Web Design & Mobile Lab Open Source Technology-Lab	40	60	100	16	24	40	4	3
42		CN	17U6CSCN	Comprehensive test	-	100	100	-	40	40	1	1
43		GK	17U6CSGK	General Knowledge	-	100	100	-	40	40	1	-
				<b>Extension Activities</b>	-	-	-	-	-	-	-	1
				<b>Total</b>			<b>4300</b>				<b>180</b>	<b>140</b>

**B.Sc. COMPUTER SCIENCE (2017 – 2018)**

<b>Paper Code</b>	<b>Total No. Of Papers</b>	<b>Total Marks</b>	<b>Total Credits</b>	<b>Classification</b>
<b>Part – I</b>	<b>04</b>	<b>400</b>	<b>12</b>	√
<b>Part – II</b>	<b>04</b>	<b>400</b>	<b>12</b>	√
<b>Part – III</b>				
Core	16	1600	76	
Allied	06	600	20	√
Major Elective	04	400	14	
	<b>26</b>	<b>2600</b>	<b>110</b>	
<b>Part – IV</b>				
Environmental Studies	1	100	1	
Value based education	1	100	-	
Skill Based Elective	2	200	2	
Gender studies	1	100	-	√
Non Major Elective	1	100	1	
Soft skill development	1	100	-	
G.K.	1	100	-	
Comprehensive test	1		1	
	<b>9</b>	<b>900</b>	<b>5</b>	
<b>Part – V</b>	<b>Extension Activity</b>		<b>1</b>	X
<b>Total</b>	<b>43</b>	<b>4300</b>	<b>140</b>	√

**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.

B.Sc. Computer Science

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
I	17U1CST1	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

கு.வெ. பாலசுப்பிரமணியன் - காளவாய்

கூறு: 5 நாடகம் , இலக்கிய வரலாறு

நேரம்: 18

1. கலைவாணன் — கு.சா.கிருஷ்ணமூர்த்தி (NCBH வெளியீடு)
2. சிறுகதை, புதினம், நாடகம், கவிதை, உரைநடை

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
<b>I</b>	<b>17U1CSE1</b>	<b>PART – II ENGLISH PROSE, POETRY AND COMMUNICATION SKILLS</b>	<b>6</b>	<b>3</b>

**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.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>I</b>	<b>17U1CSC1</b>	<b>PROBLEM SOLVING AND PROGRAMMING TECHNIQUES</b>	<b>6</b>	<b>6</b>

**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.

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**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.

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**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.

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**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.

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**UNIT IV**

**Hrs 20**

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

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**UNIT V**

**Hrs 20**

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

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**REFERNCES:**

1. E. Balagurusamy, 'Programming in ANSI C',Tata McGraw Hill. 4<sup>th</sup> 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.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>I</b>	<b>17U1CSCP1</b>	<b>Software Lab-I C Programming</b>	<b>3</b>	<b>3</b>

**Objective**

- ❖ To Understand programming techniques in C

**C Programming**

**I Control structures 21**

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



Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	17U1CSMAA1	Allied Mathematics – I	6	3

**Objectives:**

- To introduce the basic concepts of summation of series, theory of equations, special types of matrices, trigonometry and calculus.

**UNIT-I**

**Algebra:** Binomial Theorem: some standard expansions – general term – expansion of rational fractions – approximations – summation of series - Exponential Theorem: results – summation of series - Logarithmic series: standard results.

**UNIT-II**

**Theory of Equations:** Fundamental theorem of algebra – symmetric function of the roots – formation of equations – Diminishing of roots – Reciprocal Equations: four types.

**UNIT-III**

**Matrices:** Rank of a Matrix – elementary transformations - Linear Equations: Homogeneous and Non- Homogeneous equations – Characteristic Roots and Vectors – Properties of eigen vector – Cayley-Hamilton theorem.

**UNIT-IV**

**Trigonometry:** Expansion in series – expansion of  $\cos^n\theta$  and  $\sin^n\theta$  – expansion of  $\cos n\theta$  and  $\sin n\theta$  – expansion of  $\sin\theta$ ,  $\cos\theta$  and  $\tan\theta$  - Hyperbolic Functions – relations connecting hyperbolic functions and circular functions – periods of hyperbolic function – Inverse hyperbolic functions.

**UNIT-V**

**Differential Calculus:** Curvature – radius of curvature in Cartesian – parametric form - Maxima and minima of a function of two variables – Lagrange's method of undetermined multipliers.

**Textbook:**

**Allied Mathematics, Paper-I, First Semester**, P. Kandasamy and K. Thilagavathy, S.Chand & Company Pvt. Ltd., New Delhi, 2014.

Unit I : Algebra: Chapter II, III, IV

Unit II : Theory of Equations: Chapter I, II.

Unit III: Matrices: Chapter II, III, IV.

Unit IV: Trigonometry: Chapter I, II.

Unit V : Differential Calculus Chapter IV, V.

**References:**

1. **Algebra Volume I**, T.K.M. Pillay, T. Natarajan and K.S.Ganapathy, S. Viswanathan (Printers & Publishers) Pvt. Ltd.
2. **Calculus Volume I**, S. Narayanan and T.K. Manicavachagom Pillay, S. Viswanathan pvt. Ltd., 2014.
3. **Trigonometry**, Narayanan and T.K. Manicavachagom Pillay, S. Viswanathan pvt. Ltd., 2013.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>I &amp; II</b>	<b>17U2CSMAA2</b>	<b>Allied - Discrete Mathematics (NS)</b>	<b>3+3</b>	-

**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-tuples – 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

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
II	17U2CST2	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, ளகர, ழகர 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 - விசுதிகள் - இடைநிலை - தன்வினை - பிறவினை - தெரிநிலை வினை - குறிப்பு வினை-வழுவமைதி.

**கூறு: 5 இலக்கண வரலாறு**

**நேரம்: 18**

இலக்கண வரலாறு - தமிழ்த் துறை வெளியீடு.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
<b>II</b>	<b>17U2CSE2</b>	<b>PART – II ENGLISH EXTENSIVE READERS AND COMMUNICATIVE SKILLS</b>	<b>6</b>	<b>3</b>

**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.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>II</b>	<b>17U2CSC2</b>	<b>C++and Data Structures</b>	<b>6</b>	<b>6</b>

**Objective**

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

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**UNIT-I**

**Hrs18**

Introduction to OOPs – Introduction to C++ - Programming constructs and Decision making – Arrays – Pointers – Functions.

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**UNIT-II**

**Hrs18**

Classes and Objects – Inheritance – Virtual functions and Polymorphism – Files and templates.

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**Unit III**

**Hrs18**

Arrays records and pointers: Introduction - linear arrays – Representation of linear arrays in memory – Traversing linear arrays – Stack and Queues.

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**Unit IV**

**Hrs18**

Linked lists: Introduction- Insertion into a linked list: Insertion algorithm – Deletion from a linked list: Deletion algorithm

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**Unit V**

**Hrs18**

Trees: Binary trees – Representing Binary trees in memory – Traversing Binary trees: In order - Preorder – Post order.

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**Text Books:**

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, 21<sup>st</sup> reprint 2012

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>II</b>	<b>17U2CSCP2</b>	<b>Software Lab-II C ++ PROGRAMMING</b>	<b>3</b>	<b>3</b>

### **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 1 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 number 2.
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 pay, 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.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>I &amp; II</b>	<b>17U2CSMAA2</b>	<b>Allied - Discrete Mathematics (NS)</b>	<b>3+3</b>	<b>4</b>

**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-tuples – 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

Semester	Subject Code	Title of the Paper	Hours of Teaching /Week	No. of Credits
<b>II</b>	<b>17U2CSMAA3</b>	<b>Allied Mathematics-III</b>	<b>5</b>	<b>3</b>

**Objectives:**

- To study vector differentiation and vector integration with application.
- To study ordinary Differential equation and partial differential equation
- To study Fourier series and Laplace transforms.

**Unit – I : Differential Equation:**

Second order differential equation with constant coefficient of the types  $ay'' + by' + cy = e^{ax}, g(x), x^n, \sin ax, \& \cos ax$  only – solution of partial differentials of the form  $f(p, q) = 0; f(z, p, q) = 0; f(x, p, q) = 0; f(y, p, q) = 0; f(x, p) = g(Y, q); z = p x + qy + f(p, q)$  - Lagrange's method for solving  $P_p + Q_q = R$ .

**Unit – II: Laplace Transforms:**

Definition – Laplace Transform of functions  $e^{at}, \cos at, \sin at$  and  $t^n$  - First Shifting theorem – Laplace transforms of  $e^{at} \cos bt, e^{at} \sin bt, e^{at} \sinh bt, e^{at} \cosh bt, e^{at} t^n$  - Transforms of  $f'(t)$  and  $f''(t)$  – Inverse transforms relating to the above standard forms - solution of ordinary differential equation with constant coefficients (involving the above transforms)

**Unit –III Fourier Series:**

Definition – finding Fourier coefficients for the given periodic function with period  $2\pi$  - Even and odd functions – Properties - Half range series.

**Unit – IV Vector differentiation:**

Velocity and acceleration – scalar and vector fields – Divergence and curl- application – Laplace operator.

**Unit – V Vector integration:**

Application of Gauss and Stoke's theorems (no proof of the theorem).

**Text Book:**

Unit I	: Chapter 5 (Sec: 5.1 – 5.3)	Differential Equations – TKM Pillai
Unit II	: Chapter 5	Calculus Volume III – TKM Pillai
Unit III	: Chapter6 (Sec: 1 – 5)	Calculus Volume III – TKM Pillai
Unit IV	: Chapter IV	Vector Algebra & Analysis – TKM Pillai
Unit V	: Chapter VI	Vector Algebra & Analysis – TKM Pillai

**General References:**

1. Engineering Mathematics – A Singaravelu (Volume I & II)
2. Vector Calculus – K.Viswanathan and S.Selvaraj.
3. Ancillary Mathematics – P.R.Vittal, Morgam Publications.



*B.Sc. Computer Science*

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>II</b>	<b>17U2CSS1</b>	<b>Skill Based Elective – I New Media – 1</b>	<b>1</b>	<b>1</b>

**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.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
III	17U3CST3	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

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
<b>III</b>	<b>17U3CSE3</b>	<b>PART – II ENGLISH SHAKESPEARE, EXTENSIVE READERS AND COMMUNICATIVE SKILLS</b>	<b>6</b>	<b>3</b>

**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.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No.of Credits
<b>III</b>	<b>17U3CSC3</b>	<b>Java Programming</b>	<b>6</b>	<b>6</b>

**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. 2008.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No.of Credits
<b>III</b>	<b>17U3CSCP3</b>	<b>Software Lab – III Java Programming Lab</b>	<b>3</b>	<b>3</b>

**Objective**

❖ To apply the features of the Java.

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 basecolors,red,green,blue.
10. Using html tag to create the college website(minimum 15 to 20 tag used)

Semester	Subject Code	Title of the Paper	Hours of Teaching/week	No. of Credits
<b>III</b>	<b>17U3CSPA1</b>	<b>Allied Physics –I</b>	<b>6</b>	<b>4</b>

### **Unit I – Semiconductors Physics**

Semiconductor diode – Characteristics – Zener diode – Characteristics – Regulated power supply – Rectifiers – Transistors – CE characteristics – Field effect transistor – construction – characteristics – FET parameters measurement – SCR – Characteristics – SCR as a switch.

### **Unit – II Transistor Amplifiers**

Transistor biasing – R-C coupled amplifier – positive and negative feedback – feedback amplifier – current and voltage feedback – power amplifier – push pull amplifier – class A and class B and class C amplifier.

### **Unit – III Transistor oscillators**

General theory – feedback requirements for oscillators – Hartley, Colpitt and Phase shift oscillator – Multivibrators – Astable, Bistable and Monostable.

### **Unit – IV IC Fabrication**

Integrated circuit – advantages and disadvantages of IC – Scale of integration – Making monolithic IC – Fabrication of components on monolithic IC (Diodes – Transistors –Resistors – Capacitors) – IC packings – IC symbols.

### **Unit – V Linear Integrated Circuits**

Operational amplifier – Characteristics – Parameters – Applications – Summing – Integrating – Differentiating – Sin, Square, Triangular and Ramp Wave generation – Multi vibrators – Astable and Bistable – Schmitt trigger.

### **Books for study**

1. Integrated Electronics(Analog and digital circuits and systems), Jacob Millman and Christos C. Halkias, Tata McGraw Hill edition, New Dehli.
2. Electronic Devices and Circuits, Millman and Halkias.
3. Micro Electronics, Digital and Analog circuit and System – Jacob Mill man.

### **Books for Reference**

1. Principles of electronics,V.K. Mehtha and shalumehtha, S. Chand & Company Ltd.
2. Basic Electronics, B.L. Theraja

Semester	Subject Code	Title of the Paper	Hours of Teaching/ week	No. of Credits
<b>III &amp; IV</b>	<b>17U4CSPHAPL</b>	<b>Allied Physics Practical (NS)</b>	<b>3 +2</b>	<b>-</b>

### **List of Experiments**

1. Zener diode – Forward and Reverse Characteristics
2. R-C coupled amplifier – Study of frequency response
- 3.** Hartley oscillator – Determination of L
4. Colpitt's Oscillator – Determination of L
5. NAND and NOR – Universal gates
6. Logic gates – Truth table Verification
7. Demorgan's theorem verification
8. FET – amplifier
9. Emitter follower Amplifier
10. Astable Multivibrator using Transistor
11. AND, OR and, NOT Logic ,Circuits using – discrete components
12. Half and Full adder circuits
13. Half and Full Subtractor circuits.
14. Parallel Binary adder – IC 7483 function

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
IV	17U4CST4	சங்க இலக்கியம் - அறு 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



Semester	Subject Code	Title of The Paper	Hours of Teaching/ Week	No. of Credits
<b>IV</b>	<b>17U4CSE4</b>	<b>PART – II ENGLISH ENGLISH FOR COMPETITIVE EXAMINATIONS</b>	<b>6</b>	<b>3</b>

**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.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
<b>IV</b>	<b>17U4CSC4</b>	<b>Database Management Systems</b>	<b>6</b>	<b>6</b>

**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 issues-Constraints- Keys-ER-Diagrams-weak Entity set-Extended 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 Calculus -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. Jeffrey 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.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>IV</b>	<b>17U4CSCP4</b>	<b>Software Lab – IV RDBMS Lab</b>	<b>3</b>	<b>3</b>

**Objective**

❖ To apply RDBMS features through Oracle.

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.

Semester	Subject Code	Title of the Paper	Hours of Teaching/week	No. of Credits
<b>IV</b>	<b>17U4CSPA2</b>	<b>Allied Physics – II</b>	<b>6</b>	<b>4</b>

**Unit – I Number Systems**

Decimal Binary, Octal, Hexadecimal Number systems – conversions from one system to another – counting in binary system – binary addition, Subtraction ,multiplication and division - Negative number representations – 1’s and 2’s complement notation – Real numbers representation – BCD – ASCII – Excess 3 codes – Digital Logic Circuits – RTL – D TL – DCTL – TTL – ECL circuits.

**Unit – II Boolean Algebra and combinational logic circuits**

Fundamental concepts of Boolean Algebra – Evaluation of logical expressions – Basic laws of Boolean Algebra – Demorgan’s theorem – verification – NAND and NOR as a Universal building block.

**Unit – III Flip Flops and Sequential Logic Circuits**

RS – T – D – JK – JK-M/S flip flops – Binary counters - (Mod 3,5,6,7,8) – Ripple counter – Parallel counter – race problem – series and parallel combination counter – Binary decade counter – Ring counter – Up down counter – Shift register – Left shift – Right shift operations.

**Unit – IV Digital Arithmetic Circuits**

Exclusive OR gate – Half adder – Full adder – Parallel binary adder – Half and Full subtractors – 8421 adder – Parallel Binary Adder/ Subtract or using 2’s complement – BCD Adder.

**Unit -V D/A and A/D Converters**

D/A Converter – Binary Weighted resistor network – Binary ladder – accuracy and resolution. A/D converter – Simultaneous conversion – counter type methods – Dual slope A/D converter –Voltage to frequency converters – A/D Converter using V to F conversion.

**Books for study**

1. Digital Principles and application – A.P Malvino and Donald P.Leach, Tata Mc Graw Hill Publishing Company, New Delhi 1976.
2. Digital Computer Electronics - A.P Malvino.

**Book for Reference**

1. Introduction to Integrated Electronics (Digital and Analog) by V.Vijayendran, S.Viswanathan (printers & Publishers), PVT LTD.

Semester	Subject Code	Title of the Paper	Hours of Teaching/week	No. of Credits
<b>III &amp; IV</b>	<b>17U4CSPHAPL</b>	<b>Allied Physics Practical (NS)</b>	<b>3+2</b>	<b>2</b>

**List of Experiments**

1. Zener diode – Forward and Reverse Characteristics
2. R-C coupled amplifier – Study of frequency response
3. Hartley oscillator – Determination of L
4. Colpitt's Oscillator – Determination of L
5. NAND and NOR – Universal gates
6. Logic gates – Truth table Verification
7. Demorgan's theorem verification
8. FET – amplifier
9. Emitter follower Amplifier
10. Astable Multivibrator using Transistor
11. AND, OR and, NOT Logic ,Circuits using – discrete components
12. Half and Full adder circuits
13. Half and Full Subtractor circuits.
14. Parallel Binary adder – IC 7483 function

Semester	Subject Code	Title of the Paper	Hours of Teaching/ Week	No. of Credits
<b>IV</b>	<b>17U4CSS2</b>	<b>Skill Based Elective – II NEW MEDIA-II</b>	<b>1</b>	<b>1</b>

**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

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
<b>V</b>	<b>17U5CSC5</b>	<b>Distributed Programming using .net</b>	<b>6</b>	<b>6</b>

**Objective:**

- 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.

**Unit – I**

**Hrs 20**

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:**

**Hrs 25**

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:**

**Hrs 20**

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

**Unit – IV:**

**Hrs 25**

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 20**

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 Publish-ers and Distributors Pvt. Ltd
6. Dave Mercer, "**ASP.NET – A Beginners Guide**", Tata McGraw Hill Publications Pvt. Ltd.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
<b>V</b>	<b>17U5CSC6</b>	<b>Data Mining and Data Warehousing</b>	<b>5</b>	<b>6</b>

**Objective**

- ❖ To know about the architecture and application areas of Data ware housing and Mining.
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**UNIT I**

**Hrs 18**

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 18**

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 18**

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 18**

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

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**UNIT**

**Hrs 18**

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 Wesley, Pearson Education Asia Pvt. Ltd, 2000.



Semester	Subject code	Title of the course	Hours of Teaching/Week	No.of Credits
V	17U5CSC7	Cloud Computing	4	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 12

**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 12

**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 12

**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 12**

**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 12**

**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

Semester	Subject code	Title of the course	Hours of Teaching / Week	No.of Credits
<b>V</b>	<b>17U5CSCP5</b>	<b>Software Lab -V Distributed Programming using .net</b>	<b>3</b>	<b>3</b>

**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

Semester	Subject code	Title of the course	Hours of Teaching/Week	No.of Credits
V	17U5CSEL1A	Major Elective-I COMPUTER GRAPHICS	4	4

**Objective**

- ❖ To understand concepts and techniques in Graphics.

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**Unit I**

**Hrs 12**

Introduction to computer graphics and applications: Display devices – Raster scan and random scan systems – Input Devices – Hard Copy Device - Graphics Software and functions, Software standards, PHIGS workstation.

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**Unit II**

**Hrs 12**

Output Primitives: Line-drawing, circle generating, ellipse-generating algorithms – Filled-Area primitives – Fill area functions , Cell array - character generation.

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**Unit III**

**Hrs 12**

Attributes of output primitives: Line, curve, color and gray scale level, area-fill, character, text, marker and Bundled attributes – Inquiry function – Antialiasing techniques.

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**Unit IV**

**Hrs 12**

Geometric Transformations and Viewing : Basic transformations – Homogeneous coordinates – Composite transformations – Reflection and shear – Window-to-View Port transformation – Viewing functions – Point, line, Polygon, curve, text, exterior clipping operations.

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**Unit V**

**Hrs 12**

GUI and Input Methods : The User Dialogue – Graphical input devices – Input functions – Interactive Picture – Construction Techniques – Virtual Reality Environments.

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**General References:**

1. Donald Hearn and M.Pauline Baker, "Computer Graphics, C version", Second edition Reprint 2003, Pearson Education.

Unit I Chapters : 1,2

Unit II Chapters : 3

Unit III Chapters: 4

Unit IV Chapters : 5,6

Unit V Chapters : 8

2. Fundamentals of Interactive compute Graphics, J.D. Foley, A.VAN DAM, 1982 by Addition – wesley Publishing company.
3. Procedural Elements for computer Graphics, David F.Rogers 1985, McGraw Hill.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No.of Credits
<b>V</b>	<b>17U5CSEL1B</b>	<b>Major Elective–I Multimedia Technologies</b>	<b>4</b>	<b>4</b>

### Objective

- ❖ To know about design principles of multimedia system.

### Unit I

**Hrs 12**

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 12**

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 12**

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.

### Unit IV

**Hrs 12**

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 12**

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.

### References:

#### 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

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
V	17U5CSEL2A	<b>Major Elective – II Software Engineering</b>	4	3

**Objective**

- ❖ To understand various phases in developing a Software.

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**Unit I**

**Hrs 12**

**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.

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**Unit II**

**Hrs 12**

**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.

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**Unit III**

**Hrs 12**

**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.

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**Unit IV**

**Hrs 12**

**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.

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**Unit V**

**Hrs 12**

**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.

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**Reference:**

1. Richard E.Fairley, "Software Engineering Concepts", McGraw-Hill Book Company-1985.
2. Roger Pressman, "Software Engineering", Sixth Edition, McGraw-Hill Book Company, 2005.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No.of Credits
<b>V</b>	<b>17U5CSEL2B</b>	<b>Major Elective - II UML Programming</b>	<b>4</b>	<b>3</b>

**Course Objectives**

- To understand the basic concepts of UML Programming

**UNIT I**

**Hrs 12**

Principles of Modeling-OO Modeling-Introducing the UML-basic Structural Modeling: Classes-Relationships-Common Mechanism-Diagrams-Class Diagrams.

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**UNIT II**

**Hrs12**

Advanced Structural Modeling: Advanced Classes-Relationships-Interfaces, types and roles-Packages-Object Diagrams.

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**UNIT III**

**Hrs 12**

Basic Behavioral Modeling: Interactions-Use cases-Use case Diagram-Interaction Dia-gram-Activity Diagrams.

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**UNIT IV**

**Hrs 12**

Advanced Behavioral Modeling: Events and Signals- State Machines- Processes and threads- Time and Space – State Chart Diagrams.

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**UNIT V**

**Hrs 12**

Architectural Modeling: Components – Deployment- Components Diagram – Deploy-ment Diagrams – Systems and Models.

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**Book for Study:**

1. Grady Booch, James Rumbaugh, Ivar Jacobson, "**The Unified Modeling Lan- guage**", Addison-Wesley Ltd, ISBN: 0321267974, 9780321267979.

**Book for Reference:**

1. Simon Bennett, John Skelton, Ken Lunn, "**Schaum's Outline of UML**", McGraw-Hill Professional, Second Edition, ISBN-13: 978-0077107413.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>V</b>	<b>17U5CSNME</b>	<b>Non Major Elective INTERNET BASICS</b>	<b>2</b>	<b>1</b>

**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.



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Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
<b>V</b>	<b>17U5CSSSD</b>	<b>SOFT SKILLS DEVELOPMENT</b>	<b>1</b>	<b>-</b>

**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.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>VI</b>	<b>17U6CSC8</b>	<b>Computer architecture and Microprocessor</b>	<b>5</b>	<b>5</b>

**Objective**

- ❖ To understand the programming techniques in Microprocessors.

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**Unit I**

**Hrs 18**

Basic Computer organization and Design: Instruction codes – Computer Instructions – Timing and Control – Instruction cycle – input/output and interrupt.

Central Processor unit: General Register organization – stack organization – instruction format – Addressing modes – data transfer and manipulation – program control.

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**Unit II**

**Hrs 18**

Input – output organization: Peripheral device – I/O interface – asynchronous data transfer – direct memory access – input output processor – priority interrupt.

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**Unit III**

**Hrs 18**

Memory Organization: Main memory – Auxiliary memory – Associative memory – Cache memory – Virtual memory .

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**Unit IV**

**Hrs 18**

Microprocessor architecture and microcomputer systems – 8085 Microprocessor Architecture and Memory Interfacing – Interfacing I/O devices – Introduction to 8085 instructions.

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**Unit V**

**Hrs 18**

Interrupts– Interfacing data converters - General Purpose Programmable Peripheral Devices: Interfacing keyboard and seven segment display– 8255 A Programmable peripheral interface - 8259 A Programmable interrupt controller.

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**Text Book:**

1. Computer System Architecture, M.Morris Mano, Third Edition, Prentice Hall of India, 2002.
2. Microprocessors Architecture , Programming and Application with the 8085, Ramesh S.Gaonkar , Fifth Edition, Penram International Publishing, 2010.

**Reference:**

1. Digital Computer Fundamentals – Thomas C.Bartee. 6<sup>th</sup> Edition, 2005.
2. Computer Organization and Programming – C.W. Gean.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
<b>VI</b>	<b>17U6CSC9</b>	<b>Data Communication Networks</b>	<b>5</b>	<b>5</b>

**Objective**

- ❖ To understand various layers and protocols for networks.

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**Unit I**

**Hrs 18**

Introduction: Data communication – Networks – protocols and standards – topology – Transmission mode – Categories of network – Transmission media.

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**Unit II**

**Hrs 18**

The OSI model – Digital Data Transmission – DTE – DCE interface – multiplexing – Error detection and correction.

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**Unit III**

**Hrs 18**

Data link controls – Flow control – Error control – Data link protocols – Asynchronous protocols – synchronous protocols.

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**Unit IV**

**Hrs 18**

Local Area Network – Metropolitan Area Network – Circuit Switching – Packet Switching – Message Switching – Network Layer – Integrated services Digital Network – ISDN Services – Broadband ISDN - Networking and Internetworking Devices

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**Unit V**

**Hrs 18**

Transport Layer–Upper OSI Layers– TCP/IP.

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**Reference:**

1. Introduction to Data Communication Networking – Tata McGraw Hill Edition.  
Author: Behrouz. Ferouzan.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No.of Credits
<b>VI</b>	<b>17U6CSC10</b>	<b>Operating Systems</b>	<b>5</b>	<b>5</b>

**Objective**

- ❖ To know about design principles of Operating System with different cases.

**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. **Distributed Computing:** Classification of sequential and parallel processing – Array processors – Dataflow computers – Multiprocessing – Fault tolerance.

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**Unit IV**

**Hrs 18**

**Device and Information Management:** Disk Performance Optimization: Operation of moving head disk storage – Need for disk scheduling – Seek optimization – FCFS – SSTF – SCAN – RAM Disks – optical disks. **File and Database Systems:** File system – Function – Organization – Allocating and freeing space – File descriptor – Access control matrix.

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**Unit V**

**Hrs 18**

**Case Studies: 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. **UNIX:** Processes in UNIX – Memory management – I/O systems – File systems and allocation method – semaphores – command systems.

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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.

Semester	Subject Code	Title of the course	Hours of Teaching / Week	No. of Credits
<b>VI</b>	<b>17U6CSC11</b>	<b>Mobile Applications</b>	<b>5</b>	<b>5</b>

**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:15**

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

**Hrs:15**

**Unit - II**

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

**Hrs:15**

**Unit - III**

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

**Hrs:15**

**Unit - IV**

Introducing adapters - Databases and content providers: Android databases – working with SQLite databases – Creating content providers – Native android content providers

**Unit - V**

**Hrs:15**

Introducing the Action Bar – Creating and Using Menus and Action bar action items – 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 Development Black Book”**, Dreamtech Press, Edition 2014, ISBN: 978 – 93 – 5119 – 409 – 5
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.

Semester	Subject Code	Title of the course	Hours of Teaching / Week	No. of Credits
<b>VI</b>	<b>17U6CSEL3A</b>	<b>Major Elective–II WEB DESIGN</b>	<b>4</b>	<b>4</b>

### Objective

- 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
- It also introduces the client server technology by integrating the technologies of HTML,Java Script, PHP and MySQL

### Unit I

**Hrs 15**

**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 examples, Defining your own styles, Properties and values in styles.

### Unit II

**Hrs 15**

**Client Side Scripting : JavaScript:**JavaScript—The basics, Variables, String manipulation, Mathematical functions, Statements, Operators, Arrays, Functions- Data and objects 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 15**

**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 15**

PHP cookie – Session – Server variables – header() – Code reuse functions. PHP files – Introduction – Testing files – Accessing files – Functions for Directories - MySQL Database: Need for Database – MySQL Database, Insert, Query, Fetch Array.

### Unit-V

**Hrs 15**

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, 2012 First Edition.

### Books for Reference:

1. Robin Nixon, "**Learning PHP, MySQL & JavaScript With jQuery, 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-.

Semester	Subject Code	Title of the course	Hours of Teaching / Week	No. of Credits
<b>VI</b>	<b>17U6CSEL3B</b>	<b>Major Elective – III OPEN SOURCE TECHNOLOGY</b>	<b>4</b>	<b>4</b>

**Objective**

- ❖ To know about the techniques and concepts of Open source technology.

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**Unit I**

**Hrs 12**

Introduction: shell programming: shell - pipes and redirection - shell as a programming language - shell Syntax.

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**Unit II**

**Hrs 12**

Working with Files: File structure - Library functions - Low - level File Access - The standard I/O Library - File & Directory Maintenance.

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**Unit III**

**Hrs 12**

Reading from & Writing to the Terminal - Terminal Structure - Terminal output - Debugging: Types of error - General debugging Techniques.

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**Unit IV**

**Hrs 12**

Process management: Process structure - Starting new process - Signals - Threads - Thread attributes - Canceling a Thread.

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**Unit V**

**Hrs 12**

Internet programming: CGI: Form elements - Sending information to the WWW server - Returning HTML to the client.

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**Reference:**

1. Beginning LINUX programming-Neil Mathew & Richard Stones- Shroff Publications & Distributors Pvt Ltd., 1999.Chapters: Only relevant topics from chapters 1-3, 5, 9, 10 – 11 & 20.

**General References:**

1. Professional LINUX Microprogramming - Richard Stones& Neil Mathew, 2008.
2. [WWW.advacedlinuxprogramming.com](http://WWW.advacedlinuxprogramming.com)
3. WWW tdlp.Com4.WWW.stk.org.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>VI</b>	<b>17U6CSEL4PA</b>	<b>Major Elective - IV Web Design &amp; Mobile Lab</b>	<b>4</b>	<b>3</b>

**Objective**

- ❖ To provide in depth programming practical knowledge in Web Technology and Mobile Lab

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**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.

**Mobile:**

1. Layouts
2. Views
3. Events
4. Files
5. Preferences
6. Notifications
7. Programs using Solite
8. Audio and Video Applications



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Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
<b>VI</b>	<b>17U6CSEL4PB</b>	<b>Major Elective - IV Open Source Technology Lab</b>	<b>4</b>	<b>3</b>

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 PHP program that adds products that are selected from a web page to a shopping cart.
  12. Write a PHP program to access the data stored in a mysql table.
  13. Write a PHP program interface to create a database and to insert a table into it.
  14. Write a PHP program using classes to create a table.
  15. Write a PHP program to upload a file to the server.
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Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
		<b>Core Option - E – LEARNING MANAGEMENT</b>	<b>6</b>	<b>6</b>

**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
		<b>Core Option - COLLABORATIVE WEB DESIGN</b>	<b>6</b>	<b>6</b>

**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.
- 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
		<b>Core Option - Java Stream Corporate Skills Requirement- Level-I Basics of Programming</b>	<b>6</b>	<b>6</b>

**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
		<b>Core Option - Java Stream Corporate Skills Requirement- Level-II - Problem Solving &amp; Java</b>	<b>6</b>	<b>6</b>

**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
		<b>Core Option - Java Stream Corporate Skills Requirement-Level-III - Problem Solving &amp; Information Management</b>	<b>6</b>	<b>6</b>

**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 / write 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
		<b>Core Option - Java Stream Corporate Skills Requirement- Level-IV - Web Application</b>	<b>6</b>	<b>6</b>

**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 & response, 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