JAYARAJ ANNAPACKIAM COLLEGE FOR WOMEN (AUTONOMOUS)

A Unit of the Sisters of St. Anne of Tiruchirappalli

Accredited with 'A' Grade (3rd Cycle) by NAAC

DST - FIST Supported College Since 2015

(Affiliated to Mother Teresa Women's University, Kodaikanal)

PERIYAKULAM – 625 601, THENI DT.
TAMIL NADU.

B.SC. COMPUTER SCIENCE

2017 - 2020

DEPARTMENT OF COMPUTER SCIENCE

PROGRAMME OUTCOMES - U.G.

PO. NO.	UPON COMPLETION OF THIS PROGRAMME THE STUDENTS WILL BE ABLE TO
1.	Think critically, evaluate analytically and apply the acquired knowledge of their discipline in related scenario.
2.	Formulate hypothesis, design experiments, use appropriate tools and interpret the results.
3.	Demonstrate the precise understanding of the principles and theories of their discipline through experiments.
4.	Enhance the communicative skills and gain confidence to disseminate knowledge through oral/verbal communications effectively at various situations.
5.	Identify the different roles in an organizational structure of the work place and carry out multiple roles in social responsibilities.
6.	Increase self-awareness, set and pursue meaningful goals, and develop positive personal qualities.

PROGRAM SPECIFIC OUTCOMES - U.G.

PSO	UPON COMPLETION OF THIS PROGRAMME THE STUDENTS WILL BE ABLE TO	PO MAPPED
PSO-1	Acquire the basic fundamental domain knowledge for developing effective computing solutions for Mathematics and Electronics.	PO -1 PO - 2 PO - 3
PSO-2	Develop the analytical mind, critical and logical thinking to apply mathematical foundations, algorithmic principles, and computing theories in the modeling and design of computer-aided systems for employability and entrepreneurship skills.	PO - 1 PO - 2 PO - 3 PO - 5 PO - 6
PSO-3	Create computing professionals through in-depth training in programming languages to cater the technological changes.	PO - 2 PO - 3
PSO-4	Develop leadership qualities, good communication on teams to accomplish shared computing design and evaluation or implementation goals through projects.	PO - 4 PO - 5 PO - 6
PSO-5	Inculcate the professional, ethical, legal knowledge on security and social issues with social responsibility.	PO - 2 PO - 5

UG COURSE PATTERN (2017 - 2020)

In response to the current realities and emerging trends that affect the future of our students, the curriculum is restructured. It provides ample choice of subjects of study to our students, based on weighted credit point system. In addition to the core courses in their respective discipline, the learners are offered a number of complementary job-oriented and skill based courses under Core-supportive and Extra Departmental Courses.

EXTRA CREDIT

At the end of the fourth semester, (in summer holidays) the students should undergo a mini project and viva will be conducted in the first week of the fifth semester. A student can earn 2 credits extra by doing a Mini Project and 2 credits by opting Self Study paper. They can acquire more credits by undergoing certificate courses offered by other disciplines. For Mini Project and Self Study paper, the pass and the credit will be indicated, but it will not be included for OPM.

PATTERN OF EVALUATION

For each paper there will be Continuous Internal Assessment (CIA) and Semester Examination (External). The Weightage ratio is

Paper	Internal	External	Total
Theory	40	60	100
Practical	50	50	100
Project	50	50	100
Mini Project	100	-	100
Skill Based Elective	100	-	100
Non - Major Elective	100	-	100

CIA COMPONENT

Project		Mini Project	
Review (2)	25	Presentation	20
Project Execution	10	Project Execution & Output	30
Record	10	Viva	30
Attendance	05	Report	20
Total	**50**	**Total**	**100**

NON MAJOR AND SKILL BASED ELECTIVES PRACTICALS

Component	Mark
Internal Test (2)	25
Lab Work	10
Record	10
Attendance	05
Total	**50**

B.Sc. COMPUTER SCIENCE

QUESTION PATTERN (INTERNAL)

Time: 2 Hours **Maximum Marks: 30**

PART A

I. Answer the following (Ten Questions) (10X1=10)

PART B

II. Answer ANY Two out of Four Questions. (2X5=10)

PART C

III. Answer the following (Either or Choice) (1X10=10)

QUESTION PATTERN (EXTERNAL)

Time: 3 Hours **Maximum Marks: 60**

PART A

I. Answer the following (Ten Questions) (10X1=10)

PART B

II. Answer ANY Four out of Six Questions (4X5=20)

PART C

III. Answer the following. (Either or Choice) (3X10=30)

SELF STUDY PAPER - QUESTION PATTERN (EXTERNAL)

Time: 3 Hours **Maximum Marks: 100**

PART A

I. Answer ANY Six out of Ten Questions. (6X5=30)

PART B

II. Answer ANY Five out of Eight Questions (5X8=40)

PART C

III. Answer Any Three out of Six Questions (3X10=30)

U.G. COURSE PATTERN (2017 - 2020)

Sem.	Part	Code	Title of the paper	Hours	Credits
I	I	17GT1GS01/ 17GH1GS01	Tamil – I/ Hindi	5	3
	II	17GE1GSA1/ 17GE1GSB1	English	5	3
	III	17CS1MC01	Programming in C	4	4
	III	17CS1MC02	Digital principles and Applications	2	1
	III	17CS1AC01	Mathematical Foundations for Computer Science	5	4
	III	17CS1CP01	Programming in C Lab	3	2
	III	17CS1CP02	Office Automation Lab	2	1
	IV	17VE1GS01	Value Education	2	2
		17AE1SK01	SBE - I Communication Skills	2	2
			Total	**30**	**22**
II	I	17GT2GS02/ 17GH2GS02	Tamil-II/ Hindi	5	3
	II	17GE2GSA2/ 17GE2GSB2	English	6	3
	III	17CS2MC03	Object Oriented Programming with C++	4	4
	III	17CS2MC04	Web Designing	2	1
	III	17CS2AC02	Computer Oriented Numerical Methods	5	4
	III	17CS2CP03	Object Oriented Programming - Lab	4	2
	III	17CS2CP04	Web Designing - Lab	2	1
	IV	17CS2SK02	SBE - II Design and Animation Lab** (Within the Department)	2	2
			Total	**30**	**20**
III	I	17GT3GS03/ 17GH3GS03	Tamil-III/ Hindi	5	3
	II	17GE3GSA3/ 17GE3GSB3	English	6	3
	III	17CS3MC05	Programming in JAVA	4	3
	III	17CS3MC06	Computer Organization and Architecture	4	3
	III	17CS3AC03	Optimization Techniques	4	3
	III	17CS3CP05	Programming in JAVA Lab	3+1	3
	IV	17ES3GS01	Environmental Studies	2	2
		17AE3SK03	SBE - III Computer Hardware Lab**	2	2
			Total	**30+1**	**22**

Sem.	Part	Code	Title of the paper	Hours	Credits
IV	I	17GT4GS04/ 17GH4GS04	Tamil-IV/ Hindi	5	4
	II	17GE4GSA4/ 17GE4GSB4	English	6	4
	III	17CS4MC07	Microprocessor	4	4
	III	17CS4AC04	Data and File Structures	5	4
	III	17CS4CE1A	Computer Graphics	4	3
	III	17CS4CE1B	Compiler Design		
	III	17CS4CP06	Microprocessor Lab	4	2
	IV	17CS4SK04	SBE - IV Design and Animation Lab**	2	2
			Total	**30**	**23**
V	III	17CS5MC08	Visual programming	5	5
	III	17CS5MC09	Database Management System (DBMS)	5	5
	III	17CS5MC10	Operating System	4	4
	III	17CS5CE2A	Software Engineering	4	3
	III	17CS5CE2B	Distributed Systems		
	III	17CS5CE2C	Parallel Processing		
	III	17CS5CE2D	Software Testing		
	III	17CS5CP07	Visual Programming Lab	5	3
	III	17CS5CP08	DBMS Lab	5	3
	IV	17AE5NE01/ 17NC5NE01	NME - I Aptitude Building - I/ Organization and Health Programme in NCC	2	2
		17CS5SS01	Self Study: Cloud Computing ##	--	2*
		17CS5MP01	Mini Project (Summer Holidays) #	--	1*
			Total	**30**	**25 +3**
VI	III	17CS6MC11	Computer Networks	5	5
	III	17CS6MC12	Data Mining	5	5
	III	17CS6MC13	Mobile Computing	4	4
	III	17CS6CE3A	Internet of Things	4	3
	III	17CS6CE3B	Information Security		
	III	17CS6CE3C	Big Data Techniques		
	III	17CS6CE3D	Artificial Intelligence		
	III	17CS6PR01	Project	10	6
	IV	17AE6NE02/ 17NC6NE02	NME - II Aptitude Building - II/National Integration and Personality Development	2	2
			Total	**30**	**25**
I-IV	V	17NP4GS01	NSS/NCC/P. Ed.	--	1
IV-V		17EX5GS01	Extension		2
			Total for all Semesters	**180+1**	**140+3**

* - Extra Credit ** - Practical Only # - Internal Only ## - External Only

SKILL BASED ELECTIVE

Sem.	Part	Code	Title of the Paper	Hours	Credits
I	IV	17AE1SK01	SBE - I Communication Skill	2	2
II	IV	17CS2SK02	SBE - II Design and Animation Lab (Within the Department)	2	2
III	IV	17AE3SK03	SBE - III Computer Hardware Lab	2	2
IV	IV	17CS4SK04	SBE - IV Design and Animation Lab (For Other Department)	2	2

PART - I Tamil - தற்கால இலக்கியம்

பருவம்: ஒன்று **நேரம்: 5**

குறியீடு: 17GT1GS01 **புள்ளி: 3**

நோக்கம்:

- ❖ தற்கால இலக்கியக் கவிஞர்களைப் பற்றி அறிந்து கொள்வர்.
- ❖ இலக்கிய வரலாற்றை அறிந்து கொள்வர்
- ❖ வாழ்க்கையில் ஏற்படும் துன்பங்களை அகற்றி, வெற்றி பெறும் வழிமுறைகளைத் தெரிந்து கொள்வர்.
- ❖ கட்டுரைகள் வழி பன்முகத் தகவல்களை அறிந்து கொள்வர்.
- ❖ எழுத்து இலக்கணங்களை அறிந்து கொள்வர்.

அலகு 1: மரபுக் கவிதை

1. பாரதியார் - செந்தமிழ் நாடு
2. பாரதிதாசன் - வாழ்வில் உயர்வு கொள்!
3. குவிமணி - ஒற்றுமையே உயிர் நிலை
4. நாமக்கல் கவிஞர் - தேறிய தெளிவு

அலகு 2: புதுக்கவிதை

1. நா.காமராசன் - கடல்
2. வைரமுத்து - நம்பிக்கை ஊன்றி நட
3. சிற்பி - மூல ஒலி
4. கோவை பழநிசாமி - பெண்மையே...

அலகு 3: உரைநடை

1. டாக்டர்.எம்.எஸ். உதயமூர்த்தி - வெற்றிக்கு முதல்படி

அலகு 4: கட்டுரைகள்

1. கண்டேன் கொள்ளிப் பிசாசை-பிலோ இருதயநாத்
2. சுய முன்னேற்றக் கட்டுரை-துளைகளில்லாப் புல்லாங்குழல்-வெ.இறையன்பு
3. அறிவியல் கட்டுரை-மருந்துகளிடம் எச்சரிக்கைமுனைவர் க. பூரணச்சந்திரன் (தொகுப்பாசிரியர்)
4. வரலாற்றுக் கட்டுரை-உழுதொழில் (ந.மு.வேங்கடசாமி நாட்டார்)
5. இலக்கியக் கட்டுரை-பாரதியார் போற்றும் புதுமைப் பெண் (நிர்மலா மோகன்)

அலகு 5: இலக்கணம், இலக்கிய வரலாறு

1. இலக்கணம்: - எழுத்தும், சொல்லும்

   எழுத்து - முதலெழுத்து, சார்பெழுத்து

   சொல் - பெயர்ச்சொல், வினைச்சொல், இடைச்சொல், உரிச்சொல்

2. எம். ஆர். அடைக்கலச்சாமி - இலக்கிய வரலாறு:

   (தற்கால இலக்கியம், மரபுக்கவிதை, புதுக்கவிதை, உரைநடை தொடர்பான இலக்கிய வரலாறு)

பாடநூல்கள்:

1. தொகுப்பாசிரியர் கவிஞர் பத்மதேவன் - 'பாரதியார் கவிதைகள் '
காளீஸ்வரி பதிப்பகம் சென்னை - 17
இரண்டாம் பதிப்பு 2009.

2. தொகுப்பு: கீர்த்தி - 'பாரதிதாசன் கவிதைகள்'
அருணா பப்ளிகேஷன்ஸ் சென்னை
முதல் பதிப்பு -2008.

3. கவிமணி - மலரும் மாலையும்
பூம்புகார் பதிப்பகம்,சென்னை.முதல்
பதிப்பு, 2002.

4. நாமக்கல் கவிஞர் - தமிழன் இதயம் கவிதைகள்'
முல்லை நிலையம்
சென்னை முதல் பதிப்பு - 2000

5. நா.காமராசன் - கருப்பு மலர்கள்,திருமகள் நிலையம்,
வெங்கட நாராயணா சாலை
தி.நகர்,சென்னை - 600 017
முதல் பதிப்பு - ஏப்ரல் - 1971

6. வைரமுத்து கவிதைகள் - 'திருமகள் நிலையம்',
16, வெங்கட்நாராயணா சாலை,
சென்னை - 17.
பத்தாம் பதிப்பு - 2009.

7. சிற்பி - சிற்பி கவிதைகள்
நியூ செஞ்சுரி புக் ஹவுஸ்
சென்னை. முதல் பதிப்பு - 2011.

8. கோவை பழநிசாமி - விளக்குகள் எரியாத வீதி
மனோண்மணி பதிப்பகம்,கோவை.
முதல் பதிப்பு - 2006

9. டாக்டர்.எம்.எஸ.உதயமூர்த்தி - வெற்றிக்கு முதல்படி
கங்கை புத்தக நிலையம்
சென்னை - 600041
முதல் பதிப்பு - 1993

10. வெ. இறையன்பு - ‘உள்ளொளிப் பயணம்’
நியூசெஞ்சுரி புக் ஹவுஸ்
சென்னை - 98
மூன்றாம் பதிப்பு - 2007

11. பூரணச்சந்திரன் - அறிவியல் கட்டுரைகள்
அறிவுப் பதிப்பகம்,சென்னை-600014
முதல் பதிப்பு - 2006

12. ந.மு. வேங்கடசாமிநாட்டார் - நாவலர் நாட்டார் தமிழ் உரைகள்
தமிழ் மண் பரிப்பகம், சென்னை-600017
முதல் பதிப்பு - 2007

13. முனைவர். நிர்மலா மோகன் - ‘இலக்கிய மலர்கள்’
மீனாட்சி புத்தக நிலையம், மதுரை - 1
முதல் பதிப்பு - 2004.

14. எம். ஆர். அடைக்கலச்சாமி - ‘இலக்கிய வரலாறு’
ராசி பதிப்பகம், சென்னை - 73.
41ஆம் பதிப்பு - 2011.

LANGUAGE THROUGH LITERATURE- I

STREAM -A

Semester: I **Hours: 5**

Code : 17GE1GSA1 **Credits: 3**

COURSE OUTCOMES:

- Develop and integrate the use of four language skills i.e. Reading, Listening, Speaking and Writing
- Analyze and interpret texts written in English, evaluating and assessing the results in written or oral arguments using appropriate support.
- Develop critical thinking capabilities.
- Become proficient in English for global competency.
- Improve and extend the communication strategies in the language.

UNIT I: PROSE **2 hours**

How to be a Doctor - Stephen Leacock

Fifteen Years - R.K. Narayan

UNIT II: POETRY **1 hour**

The Lotus - Toru Dutt

Solitude - Alexander Pope

Mending Wall - Robert Frost

UNIT III: SHORT STORY **1 hour**

The Model Millionaire - Oscar Wilde

Mrs. Packletide's Tiger - Saki

UNIT IV: ONE ACT PLAYS

Monkey's Paws - W.W. Jacobs

UNIT V: COMPOSITION AND GRAMMAR **1 hour**

One Word Substitutes

Foreign Words and Phrases

Jumbled Sentences

Reading Comprehension

Tenses, Articles.

COURSE BOOK:

- 'Limelight-1', SSK Publishers and Distributors, Chennai, 2016
- Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners.* Chennai: New Century Book House (P) Ltd, 2016. Print.

LANGUAGE THROUGH LITERATURE - I - 17GE1GSA1

QUESTION PATTERN

STREAM – A

Time: 3 hours		**Marks: 60**
I.	Choose the best answer (from units I & II)	10x1=10
II.	Answer any two of the following in a paragraph of 100 words each (two out of 4 from units I & II)	2x5=10
III.	Answer any two of the following in an essay of 300 words each (two out of 4 from units I, II, III & IV)	2x10=20
IV.	Rearrange the jumbled sentences (from Unit V)	5
V.	Give one word substitutes / foreign words for the following (from Unit V from the prescribed book)	5
VI.	Read the passage and answer the following questions. (from Unit V)	5
VII.	Fill in the blanks with suitable tenses and articles (from Unit V)	5

LANGUAGE THROUGH LITERATURE-I

STREAM – B

Semester: I **Hours: 5**

Code : 17GE1GSB1 **Credits: 3**

COURSE OUTCOMES

- Get exposed to a range of contexts where the language is used to meet a variety of real life communication needs.
- Learn good English to prosper in professional and personal lives
- Become proficient in English for global competency
- Enhance language through a task- based and learner- centric syllabus
- Carry out all the LSRW skills

UNIT I: PROSE 1 hour

Stephen Leacock	-	With the Photographer
Catherine Lim	-	Eggs
M.K. Gandhi	-	Voluntary Poverty

UNIT II: POETRY 1 hour

Alfred Noyes	-	The Highway Man
William Wordsworth	-	The Solitary Reaper
W.B. Yeats	-	The Ballad of Father Gilligan

UNIT III: SHORT STORY 1 hour

Guy de Maupassant	-	Simon's Papa
Lafcadio Hearn	-	The Living God

UNIT IV: COMMUNICATIVE EXPRESSIONS 1 hour

Greeting

Introducing

Seeking Permission

Expressing Gratitude

UNIT V: GRAMMAR & COMPOSITION 1 hour

Parts of speech (P.No. 1to6)

Articles (P.No. 67-71)

Letter Writing (Leave Application & Letter of Complaints)

BOOKS FOR REFERENCE:

- Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners.* Chennai: New Century Book House (P) Ltd, 2016. Print.
- G. Radhakrisna Pillai, and K. Rajeevan. *Spoken English for You.* Chennai: Emerald Publishers, 2012. Print.

LANGUAGE THROUGH LITERATURE – I – 17GE1GSB1

QUESTION PATTERN

Stream – B

Time: 3 hours **Marks: 60**

I.	Choose the best Answer (from units I & II)	10x1=10
II.	Answer any two of the following in a paragraph of 100 words each (two out of four from units I, II & III)	2x5=10
III.	Answer any two of the following in an essay of 300 words each (two out of four from units I, II, & III)	2x10=20
IV.	Matching the expressions. (from unit IV)	5
V.	1. Fill in the blanks. (from unit V - 5 marks for identification of Parts of Speech and 5 - marks for Articles)	10x1=10
	2. Letter writing (from unit V)	5

PROGRAMMING IN C

Semester: I **Hours: 4**

Code : 17CS1MC01 **Credits: 4**

COURSE OUTCOMES:

- Gain the fundamental knowledge of C programming language.
- Apply the concepts of decision making, branching and looping in C.
- Develop depth knowledge in arrays, strings and user defined functions.
- Compare and contrast structures and unions.
- Analyze pointers and file handling concepts in C.

UNIT I

Overview of C: History of C - Importance of C - Basic Structure of C Programs - **Constants, Variables and Data types :** Introduction - Character Set - C Tokens - Keywords and Identifiers - Constants - Variables - Data types - Declaration of Variables - Declaration of Storage Class- Assigning Values to Variables - Defining Symbolic Constants - Declaring a Variable as Constant - Declaring a Variable as Volatile - Overflow and Underflow of Data - **Operators and Expressions - Managing Input and Output Operations. (12 Hours)**

UNIT II

Decision Making and Branching - Introduction- Decision Making with IF statement - Simple IF statement - The IF …ELSE Statement - Nesting of IF…ELSE statements- The ELSE… IF Ladder - The Switch Statement -The?: Operator -The Goto Statement - **Decision Making and Looping** - Introduction - The WHILE Statement - The DO Statement - The FOR Statement - Jumps in Loops. **(12 Hours)**

UNIT III

Arrays: Introduction - One dimensional Arrays-declaration of One dimensional Arrays-Initialization of One dimensional Arrays - Two dimensional Arrays - Initializing Two dimensional Arrays - Multi dimensional Arrays -Dynamic Arrays - **Character Arrays and Strings - User Defined Functions. (12 Hours)**

UNIT IV

Structures and Unions : Introduction- Defining a structure - Declaring Structure Variables - Accessing Structure Members-Structure Initialization - Copying and Comparing Structure Variables - Operations on Individual Members - Arrays of Structures - Arrays Within Structures- Structures within Structures - Structures and Functions -Unions - Size of Structures - Bit Fields **(12 Hours)**

UNIT V

Pointers: Introduction - Understanding Pointers - Accessing the Address of a Variable - Declaring Pointer Variables - Initialization of Pointer Variables - Accessing a Variable Through its Pointer - Chain of Pointers - Pointer Expressions - Pointer Increments and Scale Factor - Pointers and Arrays - Pointers and Character Strings - Array of Pointers - **File Management in C** **(12 Hours)**

COURSE BOOK:

"Programming in ANSI C", E. Balagurusamy, Tata McGraw Hill Private Limited, New Delhi, Sixth Edition, 2012.

UNIT I : Chapters 1.1, 1.2, 1.8, 2 - 4	**Pages** (1 - 3, 12, 13, 22 - 111)
UNIT II : Chapters 5, 6.1 - 6.5	**Pages** (112 - 176)
UNIT III : Chapters 7.1 - 7.8, 8, 9	**Pages** (192 - 216, 237 - 323)
UNIT IV : Chapter 10	**Pages** (324 - 356)
UNIT V : Chapters 11.1 - 11.12, 12	**Pages** (357 - 375, 398 - 418)

BOOKS FOR REFERENCE:

1. "**Working With C"** - Yashavant Kanetkar, BPB Publication, B - 17, Connaught Place, New Delhi, 1994.
2. "**Programming with C**" - Byron S. Gottfried, Second Edition, Schaum's Outlines, Tata McGraw Hill Publishing Company Limited, 1998.

DIGITAL PRINCIPLES AND APPLICATIONS

Semester: I **Hours: 2**

Code : 17CS1MC02 **Credits: 1**

COURSE OUTCOMES:

- Analyze and synthesize combinational logic circuits
- Explain the working of multiplexer and de-multiplexer with different input and output values.
- Perform basic arithmetic calculations in binary, decimal and hexadecimal number system.
- Compare various types of Flipflops for data storage.
- Acquire knowledge on Registers and counters.

UNIT I

Digital Logic: Basic gates-NOT, OR, AND- Universal logic gates-NOR, NAND-AND, OR invert gates- Positive and negative logic. **Combinational logic circuits** Boolean Laws and Theorems - Sum of Products method - Truth table to Karnaugh Map - Pairs, Quads, and Octets - Karnaugh simplifications - Don‘t care condition-Products of sums method -products of sums simplification. **(6 Hours)**

UNIT II

Data Processing circuits: Multiplexers - Demultiplexers - 1 of 16 Decoder - BCD to decimal Decoders - seven segment Decoders - Encoders - Exclusive OR gates - parity Generators and Checkers- Magnitude Comparator. **(6 Hours)**

UNIT III

Number systems and codes: Binary Number System- Binary to decimal conversion - Decimal to binary conversion - Octal numbers - Hexadecimal numbers - The ASCII code - The Excess-3 code - The Gray code. **Arithmetic circuits:** Binary Addition - Binary Subtraction - Unsigned Binary Numbers - Sign magnitude Numbers - 2‘s complement Representation - 2‘s complement Arithmetic - Arithmetic Building Blocks - The Adder - subtracter. **(6 Hours)**

UNIT IV

Clocks and Timing circuits: Schmitt trigger - 555 Timer-Astable - 555 Timer-Monostable. **Flip-Flops:** RS FLIP FLOPS - Gated FLIP-FLOPS - Edge-triggered RS FLIP-FLOPS - Edge-triggered D FLIP - FLOPs - Edge-triggered JK FLIP-FLOPs - FLIP-FLOP Timing. **(6 Hours)**

UNIT V

Registers: Types of Regisers - Serial-In - Serial-Out - Serial-In - Parallel - Out - Parallel -In- Serial-Out - Parallel-In -Parallel-Out. **Counters:** Asynchronous Counters - Decoding Gates - Synchronous Counter - Changing the Counter Modulus - Decade counters. **(6 Hours)**

COURSE BOOK:

"Digital Principles and Applications", Albert Paul Malvino, Donald P.Leach, Gautam saha McGraw Hill 8th Edition.

Unit I : Chapters 2.1 to 2.4, 3.1 to 3.8

Unit II : Chapters 4.1 to 4.9

Unit III : Chapters 5.1 to 5.8, 6.1 to 6.8

Unit IV : Chapters 7.3 to 7.5, 8.1 to 8.6

Unit V : Chapters 9.1 to 9.5, 10.1 to 10.5

BOOKS FOR REFERENCE:

1. "Digital Logic and computer design", M. Morris Mano Prentice - Hall of India.
2. Digital System Principles and Application Ronald J.Tocci Prentice - Hall of India. 2007

MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE

Semester: I **Hours: 5**

Code : 17CS1AC01 **Credits: 4**

COURSE OUTCOMES:

- Formulate logic expressions for a variety of applications.
- Differentiate atomic and compound statements formulae.
- Explain the basic concepts of graph theory.
- Identity, formulate & solve computer science problems into mathematical logical statement.
- Apply the maximin - minimax principle to find the better solutions.

UNIT I

Matrix Algebra: Introduction - Matrix operations-inverse of a square matrix - Elementary operations and Rank of a matrix - Simultaneous Equations- Eigen values and Eigen Vectors. **(15 Hours)**

UNIT II

Logic: Introduction - TF statements - Connectives - Atomic and compound statements - Well Found Formula - Truth table of a formula-Tautology - Tautological implications and equivalence of formulae. **(15 Hours)**

UNIT III

Basic Concepts of Graph Theory - Basic Definitions - Paths, Reachability - Connectedness - Matrix Representation of Graphs - Trees. **(15 Hours)**

UNIT IV

Random Variables: Random Variables - Discrete Random Variable - Continuous Random Variables - Mathematical Expectations. **(15 Hours)**

UNIT V

Games and Strategies: Introduction- Two-Person Zero-Sum Games-Some Basic Terms-The Maximin - Minimax Principle-Games without Saddle Points-Mixed Strategies-Graphic Solution of 2 x n and m x 2 Games-Dominance Property.

(15 Hours)

COURSE BOOKS:

1. **"Discrete Mathematics",** Dr. M.K. Venkataraman, Dr. N. Sridharan, Dr. Chandra Sekaran, The National Publishing Company, 2000.

   Unit I : Chapter VI **Pages** (6.1 - 6.44)

   Unit II : Chapter IX (1-8) **Pages** (9.1 - 9.34)

2. **"Discrete Mathematical Structures with Applications to Computer Science",** J. P. Tremblay, R. Manohar, Tata McGraw - Hill Publishing Company Limited, New Delhi, 2001

   Unit III : Chapter 5 (5-1.1 to 5-1.4) **Pages** (468 - 501)

3. **"Statistics",** Dr. S. Arumugam & A. Thanga Pandi Issacc.

   Unit IV : Chapter 12 (12. 1 - 12.4) **Pages** (304 - 331)

4. **"Operations Research",** Kanti Swarup, P. K. Gupta, Man Mohan. Sultan Chand & Sons, New Delhi, Sixteenth Edition, 2012.

   Unit V : Chapter 17 (17.1 - 17.7) **Pages** (443 - 465)

BOOKS FOR REFERENCE: :

1. **"Discrete Mathematics and its Application",** Kenneth H. Rosen, McGraw-Hill International Editions, Fifth Edition, 2003
2. **"Elements of Discrete Mathematics",** C. L. Liu, Second Edition, McGraw-Hill International Editions, 1985.
3. **"Operations Research - Theory and Applications",** Dr. S. D. Sharma, Kedar Nath Ram Nath & Co., Eighth Edition, 1990.

PROGRAMMING IN C LAB

Semester: I **Hours: 3**

Code : 17CS1CP01 **Credits: 2**

COURSE OUTCOMES:

- Apply using basic concepts of C to solve simple problems.
- Design small applications using arrays and functions in C.
- Implement Structure and pointers in C programs for dealing with multiple data.
- Work with string functions in C.
- Develop small applications using files and pointer functions in C.

1. **Simple Programs**
   a) Sum, Product and Average of the given numbers.
   b) Count number of Occurrences of a digit.
2. **Number Checking**
   a) Prime
   b) Palindrome
   c) Armstrong
3. **Number Generation**
   a) Adam
   b) Fibonacci Numbers
4. **Program Using One Dimensional Array**
   a) Number Sorting
   b) Arranging Names in Alphabetical Order
5. **Program Using 2D Array**
   a) Matrix Addition, Subtraction
   b) Matrix Multiplication
6. **Program Using Function**
   a) Swapping of Two numbers using functions
   b) Finding a Factorial Value using Recursive function
7. **Library Maintenance using Structure**
8. **String Manipulation using Pointers without Predefined Function**
9. **Program Using Files**
   a) Employee Records Maintenance
   b) Mark Sheet Preparation using Sequential Files

OFFICE AUTOMATION LAB

Semester: I **Hours: 2**

Code : 17CS1CP02 **Credits: 1**

COURSE OUTCOMES:

- Apply basic design and formatting option in word document.
- Evaluate mathematical equations using functions in Ms-Excel.
- Analyze and present data in form of charts in Ms-Excel.
- Prepare legible Presentation of a subject in MS PowerPoint.
- Study and Work with email operations.

MS WORD

1. Text Formatting.
2. Table Creation and Manipulation.
3. Mail Merge.
4. Preparation of Advertisement using drawing tools.

MS EXCEL

1. Excel Functions (Statistical, Math & Trigonometry, Date and Time Functions)
2. Data filtering and Sorting
3. Mark Sheet , Pay-bill Preparations
4. Data Analysis using Chart

MS ACCESS

1. Database Creation - Employee Table, Student Table.
2. Mark Sheet Preparation using Student Table (Using Queries)
3. Payroll Processing Using Employee Table (Using Queries)
4. Forms and Reports Creation

MS POWERPOINT

1. Theme-based presentation with Animation Effects

MS OUTLOOK

1. Personalized e-mail & Account Creation
2. Sending mails with attachments

VALUE EDUCATION

Semester: I **Hours: 2**

Code : 17VE1GS01 **Credit: 2**

COURSE OUTCOMES:

- Develop positive attitude towards life
- Internalize human values and sense one's personal identity and growth
- Face challenges in life positively with a knowledge on life coping skills
- Uphold the dignity of women
- Contribute more for women development and women empowerment

UNIT I

Values in Life- Personal, Social, Values in love and marriage, Spiritual and Professional - Life values - societal concerns and challenges. **(6 Hours)**

UNIT II

Life oriented skills - Self identity - self - esteem, self - concept, self - acceptance - Positive thinking - Positive attitude - Time management **(6 Hours)**

UNIT III

Motivation - Goal setting - Goal, its focus and importance - Success - obstacles to success - overcoming obstacles - Problem solving - Decision making - decision making process. **(6 Hours)**

UNIT IV

Women in society - Sex differences and sexual discrimination in society traditional bases of sexual identity - Actual Difference between the sexes - Social consequences of women's employment in modern society. **(6 Hours)**

UNIT V

Women in the Indian society - Status of women in independent India - problems of women in modern India - Rights and protection given to women by the constitution of India - Strategies for the Protection of women's rights and Rehabilitation of Women - Future Prospects **(6 Hours)**

COURSE BOOK:

- Value Education: Course Material Prepared by the Department of Foundation Courses. JAC

BOOKS FOR REFERENCE:

1. Dr. Xavier Alpphonse S.J., *"We Shall Overcome" - A Text book on Life Coping Skills,* ICRDCE Publication, Chennai, 2011

2. அருள்நிதி ஆ.மு. தாமோதரன் முதுநிலை பேராசிரியர் - இயேசு காட்டும் யோகம். அன்பு நெறி வெளியீடு திண்டுக்கல்.

3. Dennis K. Kelly, ''Achieving Unlimited Success'', Indra Publishing House, Bhopal, 2009

4. Felix Koikara, SDB., ''Live Your Values''-Teacher's Guide, Don Bosco Youth Animation Centre, Ennore, Madras, 1990

5. Elizabeth B. Hurlock, 'Personality Development, TMH Publications, New Delhi, 2004.

CONTINUOUS INTERNAL ASSESSMENT

Components	Marks
Mid Semester	30
End Semester	30
Case Study Report	20
Book/Film Review	20
Total	**100**

QUESTION PATTERN (MID AND END SEMESTER EXAM)

Three essay type questions on any current issues or challenges facing society. [3x10=30]
{Issues and current trends related to women, national importance, societal, environment or value crisis among youth}

PORTIONS FOR INTERNAL TESTS:

I & II Units - Mid Semester

III, IV & V Units - End Semester

COMMUNICATION SKILLS

Semester: I **Hours: 2**

Code : 17AE1SK01 **Credits: 2**

COURSE OUT COMES:

- Develop the four language skills
- Prepare, organize and deliver an effective oral presentation.
- Create suitable situations for role play, debate and group discussion.
- Practice in writing resume and letters.
- Utilize the concept, methodology and components of an Interview

UNIT I - PERSONAL OMMUNICATION

Intra-Personal Communication

Inter-Personal Communication

UNIT II - COMMUNICATION IN AN EDUCATIONAL ENVIRONMENT

Letter Writing

Situational Conversations

Group Discussion

UNIT III - COMMUNICATION FOR CAREER

Facing Interviews

Team Work

UNIT IV- COMMUNICATION IN A GATHERING

Presentation Skills

UNIT V - PUBLIC SPEECH

Welcome Speech

Vote of Thanks

Felicitations

Feedback

COMMUNICATION SKILLS -17AE1SK01

QUESTION PATTERN

Time: 1 Hour **Marks: 30**

I.	Write short notes on any two of the following (From Unit - I, III & IV)	2x5=10
II.	Letter Writing. (From Unit-II)	1x5=5
III.	Situational Conversation/Group Discussion. (From Unit - II)	1x5=5
IV.	Welcome Speech/Vote of Thanks. (From Unit - V)	1x5=5
V.	Felicitations/Feedback. (From Unit - V)	1x5=5

PART - I Tamil

இடைக்கால இலக்கியம்

பருவம்: இரண்டு **நேரம் : 5**

குறியீடு: 17GT2GS02 **புள்ளி : 3**

நோக்கம்:

- ❖ சைவ, வைணவ அடியார்களின் பக்தியைப் பற்றி அறிந்து கொள்வர்.
- ❖ அடியார்களின் வழி இறைவனின் அருள் தன்மையைப் புரிந்து கொள்வர்.
- ❖ செய்யுள் எழுதும் முறையைக் கற்றுக் கொள்வர்.
- ❖ வெற்றிச்சிறப்பைப் போற்றும் முறையைத் தெரிந்து கொள்வர்.
- ❖ செய்யுள் வழி உரைநடையையும், புதின மரபையும் கற்றுக் கொள்வர்.

அலகு 1: சைவம்

1. திருஞானசம்பந்தர் - திருமாகறல்

1. காலையொடுதுந்துபிகள் ...
2. துஞ்சுநறு நீலமிருள்...

2. திருநாவுக்கரசர் - திருக்கொண்டீச்சரம்

1. வரைகிலேன் புலன்கள் ...
2. தொண்டனேன் பிறந்து ...

3. சுந்தரர் - திருக்காளத்தி

1. நீறார் மேனியனே...
2. தளிர் போல் மெல்லடியாள்...

4. மாணிக்கவாசகர் - திருவாசகம்

குயிற் பத்து

அலகு 2: வைணவம்:

1. மதுரகவியாழ்வார்- 'கண்ணினுண் சிறுத்தாம்பு' - 10 பாசுரங்கள்
2. குலசேகர ஆழ்வார் - பெருமாள் திருமொழி
   வித்துவக்கோட்டு அம்மானையே வேண்டி நிற்றல் (688 முதல் 697 வரை)

அலகு 3: சிற்றிலக்கியங்கள்

1. கலிங்கத்துப்பரணி - போர் பாடியது

1. அலைகடல் போல கிளம்பின படைகள். பா.எண். 405 - 407
2. தம் நிழலைக் கண்டு தாமே பயந்து ஓடினர். பா.எண். 451 - 455
3. கலிங்கம் வென்றான் கருணாகரன். பா.எண். 469 - 472

2. நந்திக் கலம்பகம்

1. முரசு அழைக்கிறது. பா.எண்.9
2. களிறைக் கண்டனர் கண்டபடி எண்ணினர். பா.எண். 18 - 20
3. புருவமேறினால் புவியே பணியும். பா.எண். 30

அலகு 4: நாவல்

சொப்பன பூமியில் - திலகவதி

அலகு 5:

இலக்கணம்: யாப்பின் உறுப்புக்கள்

இலக்கிய வரலாறு - பக்தி இலக்கியம், சிற்றிலக்கியம் தொடர்பான பகுதிகள்

நாவலின் தோற்றமும் வளர்ச்சியும்.

பாடநூல்கள்:

1. தமிழ்த்துறை வெளியீடு - இடைக்கால இலக்கியம்,
   ஜெயராஜ் அன்னபாக்கியம் மகளிர் கல்லூரி, பெரியகுளம்
2. எம்.ஆர்.அடைக்கலசாமி - தமிழ் இலக்கிய வரலாறு, ராசி பதிப்பகம்,
   சென்னை - 73, 41 ஆம் பதிப்பு.
3. திலகவதி - சொப்பன பூமியில் , அம்ருதா பதிப்பகம், சக்தி நகர்,
   போரூர், சென்னை - 116, மூன்றாம் பதிப்பு - 200

LANGUAGE THROUGH LITERATURE - II

STREAM – A

Semester: II **Hours: 6**

Code : 17GE2GSA2 **Credits: 3**

COURSE OUTCOMES:

- Impart effective communication skills to the learners.
- Read and understand language and descriptions of topics from a variety of texts.
- Discuss and respond to the content of a text orally and in writing.
- Write effective and coherent paragraphs.
- Learn how to use the correct use of vocabulary.

UNIT I: PROSE **1 hour**

A.P.J Abdul Kalam	-	My Visions for India
A.J.Cronin	-	The Best Investment I Ever Made

UNIT II: POETRY **1 hour**

Rabindranath Tagore	-	Where the Mind is Without Fear
George Herbert	-	The Pulley

UNIT III: SHORT STORY **1 hour**

Guy de Maupassant	-	The Necklace
Leo Tolstoy	-	Little Girls Wiser than Men
R.K. Narayan	-	An Astrologer's Day

UNIT IV: ONE ACT PLAYS **1 hour**

Norman MckInnel	-	The Bishop's Candlesticks
G.B. Shaw	-	A Meeting in a Forest

UNIT V: GRAMMAR & CREATIVE WRITING **2 hours**

Concord

Active voice and Passive voice

Question Tag

Speech Writing

Advertisement Writing

Report Writing

COURSE BOOK::

- Limelight-2. SSK Publishers and Distributors, Chennai: 2016.
- Savarimuttu,J.S Rohan,G.Petricia Alphine Nirmala. English Grammar and usage – An ideal Companion For Advanced Learners .New Century Book House (P) Ltd, Chennai,2016.

LANGUAGE THROUGH LITERATURE- II - 17GE2GSA2

QUESTION PATTERN

STREAM – A

Time: 3 hours **Marks: 60**

I.	Choose the best answer (from units I & II)	10x1=10
II.	Answer any two of the following in a paragraph of 100 words each (two out of four from units I & II)	2x5=10
III.	Answer any two of the following in an essay of 300 words each (two out of four from units I, II, III & IV)	2x10=20
IV.	Fill in the blanks (from Concord)	2
V.	Rewrite the following sentences as directed (from Voice)	3
VI.	Add Question Tags for the following	5
VII.	Speech writing	5
VIII.	Advertisement writing (OR) Report writing	5

LANGUAGE THROUGH LITERATURE - II

STREAM -B

Semester: II **Hours: 6**

Code : 17GE2GSB2 **Credits: 3**

COURSE OUTCOMES

- Select texts, expose to a range of contexts where the language is used to meet a variety of real life and communication needs.
- equip the students in the relevant English language skills necessary for success in various competitive examination.
- train the students to use the language potentials in language skills
- Enhance language through a task- based and learner- centric syllabus
- Carry out all the LSRW skills

UNIT I: PROSE 2 hours

Jawaharlal Nehru - The Ganga

Bernard Shaw - How I became a public Speaker

UNIT II: POETRY 1 hour

John Masefield - Laugh and be Merry

Rupert Brooke - Menelaus and Helen

UNIT III: SHORT STORY 1 hour

Oscar Wilde - The Selfish Giant

H.H Munro (Saki) - The Story Teller

UNIT IV: COMMUNICATIVE EXPRESSIONS 1 hour

Offering Help

Apologizing

Making Suggestions

Expressing Likes and Dislikes

UNIT V: COMPOSITION AND GRAMMAR 1 hour

1. Comprehension
2. Tense
3. Concord

BOOKS FOR REFERENCE:

- Savarimuttu,J.S Rohan,G.Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion for Advanced Learners* .New Century Book House (P) Ltd, Chennai, 2016.

LANGUAGE THROUGH LITERATURE - II - 17GE2GSB2

QUESTION PATTERN

Stream-B

Time: 3 hours **Marks: 60**

I.	Choose the best Answer. (from Units I & II)	10 x1=10
II.	Answer any two of the following in a paragraph of 100 words each (two out of four from Units I, II & III)	2x5=10
III.	Answer any two of the following in an essay of 300 words each (two out of four from Units I, II & III)	2x10=20
IV.	Matching the expressions. (from Unit IV)	5
V.	a) Read the passage and answer the following questions. (from Unit V)	5
	b) Fill in the blanks with suitable tense. (from Unit V)	10

OBJECT ORIENTED PROGRAMMING WITH C++

Semester: II **Hours: 4**

Code : 17CS2MC03 **Credits: 4**

COURSE OUTCOMES:

- Outline the basic concept of object oriented programming.
- Discuss the concept of class, object, constructor and destructor.
- Predict the role of inheritance in building reusable Code.
- Analyze Polymorphism and file handling mechanism in C++.
- Handle the errors in a program using exception handling mechanism

UNIT I

Principles of Object Oriented Programming: A look at Procedure Oriented Programming - Object Oriented Programming Paradigm - Basic Concepts of Object Oriented Programming - Benefits of OOP. Object Oriented Languages - Applications of OOP. **Beginning with C++:** What is C++- Application of C++- A simple C++ Program- More C++ Statements- An Example with Class- Structure of C++ Program - Creating the Source File - Compiling and Linking- **Tokens, Expression and Control Structures:** Tokens - Keywords- Identifiers and Constants- Basic Data types- User Defined Data Types- Storage Classes - Derived Data Types- Symbolic Constants- Type Compatibility- Declaration of Variables- Dynamic Initialization of Variable - Reference Variable - Operator in C++ - Scope Resolution Operator - Member Dereferencing Operators- Memory Management Operators- Manipulators- Type Cast Operator - Expressions and Their Types - Special Assignment Expressions - Implicit Conversions - Operator Overloading - Operator Precedence - Control Structures. **(12 Hours)**

UNIT II

Functions in C++: Introduction- The main function-Function Prototyping - Call by Reference - Return by Reference - Inline Functions- Default Arguments - Const Arguments - Recursion - Function Overloading - Friend & Virtual Function -Math Library Functions. **Classes and Objects:** Specifying a Class- Defining Member Functions- Making an Outside Function Inline - Nesting of Member Functions - Private Member Functions - Arrays within a Class - Memory Allocation for Objects - Static Data Members - Static Member Functions - Arrays of Objects - Objects as Function Arguments - Friendly Functions - Returning Objects - Const Member Functions - Pointers to Members - Local Classes. **(12 Hours)**

UNIT III

Constructors and Destructors: Introduction - Constructors - Parameterized Constructors - Multiple Constructors in Class - Constructors with Default Arguments - Dynamic Initialization of Objects - Copy Constructor - Dynamic Constructor - Constructing Two-Dimensional Arrays - Const Objects - Destructors. **Operator Overloading and Type Conversions**: Defining Operator Overloading- Overloading Unary & Binary Operators - Overloading Binary Operators using Friends - Manipulation of Strings using operators - Rules for overloading operators - Type conversions. **Inheritance**: **Extending Classes:** Single Inheritance - Making a private member Inheritable - Multiple Inheritance - Multilevel Inheritance - Hierarchical Inheritance - Hybrid Inheritance - Virtual Base Class - Abstract Classes. Constructors in Derived Classes - Member Classes: Nesting of Classes. **(12 Hours)**

UNIT IV

Pointers Virtual Functions and Polymorphism: Introduction - Pointers - Pointers to Objects - this Pointer - Pointers to Derived Classes - Virtual Functions - Pure Virtual Functions - Virtual Constructors and Destructors. **Managing Console I/O Operations:** C++ Streams - C++ Stream Classes - Unformatted I/O Operations - Formatted Console Operations - Managing Output with Manipulators. **Working with Files :** Classes for File stream operations - Opening and Closing a file - Detecting End-of -File - More about Open(): File Modes - File Pointers and their Manipulations - Sequential Input and Output Operations - Updating a File: Random Access - Error Handling during File Operations - Command Line Arguments. **(12 Hours)**

UNIT V

Templates: Introduction - Class Templates - Class Templates with Multiple Parameters - Function Templates - Function Templates with Multiple Parameters. Overloading of Template Functions - Member Function Templates - Non-Type Template Arguments. **Exception Handling:** Basics of Exception Handling - Exception Handling Mechanism - Throwing Mechanism - Catching Mechanism - Rethrowing an Exception - Specifying Exceptions - Exceptions in Constructors and Destructors - Exceptions in Operator Overloaded Functions. **Manipulating Strings:** Creating (String) Objects - Manipulating String Objects - Relational Operations - String Characteristics - Accessing Characters in Strings - Comparing and Swapping. **(12 Hours)**

COURSE BOOK:

"Object Oriented Programming with C++", E. Balagurusamy, Tata Mc-Graw Hill, 6th Edition, 2013.

UNIT I	**:**	Chapters 1 - 3	**Pages** (4-68)
UNIT II	**:**	Chapters 4, 5	**Pages** (69-128)
UNIT III	**:**	Chapters 6 - 8	**Pages** (129-222)
UNIT IV	**:**	Chapters 9 - 11	**Pages** (223-318)
UNIT V	**:**	Chapters- 12, 13, 15	**Pages** (319-361, 386-400)

BOOKS FOR REFERENCE:

1. "**Programming with C++**", D. Ravichandran, Tata Mc-Graw Hill., 1999
2. "**Let us C++**", Yashvanth P. Kanetkar, 2nd Edition, BPB Publications, New Delhi., 2010

WEB DESIGNING

Semester: II **Hours: 2**

Code : 17CS2MC04 **Credits: 1**

COURSE OUTCOMES:

- Gain the fundamental knowledge of HTML tags.
- Create web pages using image, tables and frames.
- Explore the concepts of DHTML and text effects in creating web pages.
- Develop and enhance forms with Javascript
- Develop an interactive website using CSS and Javascript.

UNIT I

Get Your Feet with HTML: Understand HTML-Convert Text to HTML-Add comments to your HTML document-Text-Headings-Organize your content with Lists -Understand Hypertext and Links-Formatting Tags. **(6 Hours)**

UNIT II

Create Images, Tables and Frames: Image Tag - Anchor Tag - Enhance your presentation with Graphics-Creating Table-Understand Frames-Modify your Frames. Working with Buttons -Creating webpage using Tables, Frames and buttons. **(6 Hours)**

UNIT III

Learning DHTML Basics: Introducing DHTML - Creating a simple DHTML example - Understanding the DOM- Including DOM properties and DOM methods - Creating positionable elements (layers) - Responding to events - Finding and critiquing online DHTML resources - DHTML tips and tricks. **(6 Hours)**

UNIT IV

Working with Style Sheets: Introducing style sheets-Features -Syntax-External Style sheet-Internal Style Sheet-Inline styles-Multiple style sheet-Background-Font-Border-Outline-Margin-Padding-List-Table - Exploring DHTML text effects **(6 Hours)**

UNIT V

Working with JavaScript: Introducing JavaScript-Reviewing HTML and JavaScript used in DHTML- Controlling Styles with JavaScript - Enhancing Forms with JavaScript - Displaying Dynamic Fonts. **(6 Hours)**

COURSE BOOK:

"Web Designing", Sr. S. Jothi, Ms. P.Sathya, Acca Publications, 2015.

UNIT I : Pages (1-27)

UNIT II : Pages (28-56)

UNIT III : Pages (57-76)

UNIT IV : Pages (77-126)

UNIT V : Pages (127-151)

BOOKS FOR REFERENCE:

1. **"Web Technologies HTML, JavaScript, PHP, Java, JSP XML and AJAX"** Black Book, Kogent Learning Solutions Inc., Dreamtech Press, 2017.
2. **"Internet & World Wide Web How To Program",** P. J. Dietal, H. M. Deital, Fourth Edition, Pearson International Edition, 2013.
3. **"The Complete Reference HTML & XHTML"** Thomas A. Powell**,** Tata McGraw-Hill Publishing Company Limited, New Delhi, Edition, 4th Edition, 2004.
4. **"Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI",** Ivan Bayross, BPB Publications, New Delhi, 3rd Edition, 2009.

COMPUTER ORIENTED NUMERICAL METHODS

Semester: II **Hours: 5**

Code : 17CS2AC02 **Credits: 4**

COURSE OUTCOMES:

- Apply numerical methods to solve a complex problems
- Locate the errors in numerical computation in solving a problem
- Find the value of a function Using Interpolation
- Explain the concepts of differentiation and Integration
- Describe different methods to find numerical solution to ordinary differential equations

UNIT I

Algebraic and Transcendental Equations: Introduction - Errors in Numerical Computation - Iteration Method - Bisection Method - Regular False Method - Newton-Raphson Method. **15 Hours**

UNIT II

Simultaneous Equations : Introduction - Simultaneous Equations - Back Substitution - Gauss Elimination Method - Calculation of Inverse of a Matrix - Crout's Method. **15 Hours**

UNIT III

Interpolation : Introduction - Newton's Interpolation Formulae - Central Difference Interpolation Formulae(only first 3 methods) - Lagrange's Interpolation Formulae - Divided Differences - Newton's Divided Differences Formulae-Inverse Interpolation. **15 Hours**

UNIT IV

Numerical Differentiation and Integration : Introduction - Derivatives using Newton's Forward Difference Formula - Derivatives using Newton's Backward Difference Formula - Derivatives using Central Difference Formula - Maxima and Minima of the Interpolating Polynomial - Numerical Integration - Newton-Cote's Quadrature formula - Trapezoidal Rule - Simpson's one third Rule - Simpson's three eight Rule - Weddle's Rule - Romberg's method. **15 Hours**

UNIT V

Numerical Solution of Ordinary Differential Equations : Introduction - Taylor's Series Method - Picard's Method - Euler's Method - Runge-Kutta Method.

15 Hours

COURSE BOOK:

1. **"Numerical Methods"** S. Arumugam and S. Thangapandi Issac, A. Soma Sundaram, Second Edition, SciTech Publications (India) Pvt Ltd. Chennai, 2002.

UNIT I	**:** Chapter 3: Sections 3.1 to 3.4,	**Pages:** (79-106)
UNIT II	**:** Chapter 4: Sections 4.1 to 4.6,	**Pages:** (112-133)
UNIT III	**:** Chapter 7: Sections 7.1 to 7.6	**Pages:** (202-259)
UNIT IV	**:** Chapter 8: Sections 8.1 to 8.5	**Pages:** (260-302)
UNIT V	**:** Chapter 10: Sections 10.1 to 10.4	**Pages:** (325 - 353)

BOOKS FOR REFERENCE:

1. **"Numerical Methods in Engineering & Science"**, Dr.B.S.Grewal, Khanna Publishers, Seventh Edition, July 2005.
2. **"Numerical Methods"**, Dr. A.Singaravelu, Meenakshi Agency.New Revised Edition 2009.

OBJECT ORIENTED PROGRAMMING LAB

Semester: II **Hours: 4**

Code : 17CS2CP03 **Credits: 2**

COURSE OUTCOMES:

- Apply object-oriented programming features to program design and implementation.
- Solve different programming concepts with functions, classes, to overload operators.
- Execute inheritance and Pointers using classes and templates.
- Develop program using Exception handling and file handling mechanisms.
- Choose and apply appropriate advanced object-oriented programming concepts in problem solving.

1. Simple programs in C++
2. Simple program with class and objects.
3. Adding two objects using function
4. Program using friend function and inline function
5. Program using Operator overloading
6. Program using Function overloading
7. Program using constructor, constructor overloading and destructor
8. Program using different types of inheritance.
9. Program using Inheritance with virtual base class.
10. Program using Inheritance with virtual functions.
11. Program to perform stack and queue operations
12. Program using files.
13. Program using Exception handling.
14. Program using Templates.

WEB DESIGNING LAB

Semester: II **Hours: 2**

Code : 17CS2CP04 **Credits: 1**

COURSE OUTCOMES:

- Design and implement basic HTML tags.
- Apply the knowledge of representation and description of web pages using hyper link and images.
- Develop dynamic website in HTML using appropriate tags.
- Create personal web pages using style sheets.
- Construct a dynamic website using JavaScript.

1. Working with Internet (Id Creation, Searching)
2. Simple Web Page using all Formatting
3. Web Page with Hyper Links and Images
4. Web Page with Lists
5. Web Page with Table
6. Web Page with Frames
7. Application Form - Resume Preparation using images
8. Dynamic Website Creation (College, Department)
9. Personal Webpage creation using Style Sheets
10. Webpage creation using JavaScript

DESIGN AND ANIMATION LAB

Semester: II **Hours: 2**

Code : 17CS2SK02 **Credits: 2**

COURSE OUTCOMES:

- Demonstrate the effective utilization of flash tool
- Exhibit the layer techniques for designing.
- Perform the various types of tweening
- Apply the various animation techniques to animate text and create symbols.
- Build an animated short story using various techniques

1. Working with Tools
2. Working with Panels
3. Creating symbols
4. Frame by frame animation
5. Motion Tweening
6. Shape Tweening
7. Animating Text
8. Working with multiple layers
9. Working with Guide layers
10. Working with Mask layers
11. Short story creation with multiple scenes

பொதுத்தமிழ் - காப்பிய இலக்கியம்

பருவம்: மூன்று **நேரம்: 5**

குறியீடு: 17GT3GS03 **புள்ளி: 3**

நோக்கம்:

- ❖ காப்பிய இலக்கியங்களின் சிறப்புக்களை அறிந்து கொள்வர்.
- ❖ ஐம்பெரும் காப்பியங்கள், பிறகாப்பியங்களின் பக்திச்சிறப்புக்களை உணர்ந்து கொள்வர்.
- ❖ அகப்புற இலக்கியச் செய்திகளை அறிந்து கொள்வர்.
- ❖ வணிகச் செய்திகளைத் தெரிந்து கொள்வர்.
- ❖ தமிழிலக்கியத்தில் காணலாகும் அறவியல், அறிவியல் செய்திகளைத் தெரிந்து கொள்வர்.

அலகு 1

சிலப்பதிகாரம்	-	ஊர்சூழ் வரி
மணிமேகலை	-	உலக அறவி புக்க காதை
சீவகசிந்தாமணி	-	முக்தி இலம்பகம் (185 - 189) 11 பாடல்கள் சீலம், தானம்

அலகு 2

கம்பராமாயணம்	-	கிட்கிந்தா காண்டம் - ஆறு செல் படலம் 10 பாடல்கள்
தேம்பாவணி	-	மகவருள் படலம் - சூசை கைகளில் குழந்தைநாதன்
சீறாப்புராணம்	-	பாந்தள் வதைப் படலம்

அலகு 3

பொருளிலக்கணம்	-	அகத்திணை, புறத்திணை
இலக்கிய வரலாறு	-	காப்பியம் தொடர்பான இலக்கிய வரலாறு

அலகு 4

வணிகத் தமிழ் - சங்க இலக்கியங்கள் உணர்த்தும் வணிகச் செய்திகள் பக்.75-84

வணிகக் கலைச் சொல்லாக்கம் - 50 சொற்கள்

அலகு 5

அறிவியல் தமிழ் - தமிழில் அறிவியல் - பக். 27 - 40

பாட நூல்:

தமிழ்த்துறை வெளியீடு, ஜெயராஜ் அன்னபாக்கியம் மகளிர் தன்னாட்சிக் கல்லூரி, பெரியகுளம்.

பார்வை நூல்கள்:

1 பா. சரவணன் (தொ.ஆ) - சிலப்பதிகாரம், சந்தியா பதிப்பகம், சென்னை-83, 2-ஆம் பதிப்பு - 1998.

2 இராம - லட்சுமணன் (தொ.ஆ) - மணிமேகலை, உமா பதிப்பகம், சென்னை-1, 2-ஆம் பதிப்பு - ஜனவரி - 1997.

3 திரு புலவர்.அரசு (உ.ஆ) - சீவகசிந்தாமணி, கழக வெளியீடு. 1967.

4 பேரா.அ.ச.ஞானசம்பந்தன் (ப.ஆ) - கம்பராமாயணம், நியூசெஞ்சுரி புக் ஹவுஸ், சென்னை - 98.

5 ந.ம.மரியஅருட்பிரகாசம் (உ.ஆ) - தேம்பாவணி, மாவிகா அச்சகம், நொபிலி வளாகம், கோ.புதூர், மதுரை.

6 செய்குதம்பி பாவலர் (உ.ஆ) - சீறாப்புராணம், யுனிவர்சல் பிரிண்டர்ஸ், வடக்கு உஸ்மான் சாலை, சென்னை - 1. டிசம்பர் - 2014.

7 ச. திருஞானசம்பந்தம் (தொ.ஆ) - யாப்பருங்கலக்காரிகை, கதிர் பதிப்பகம், திருவையாறு, முதற் பதிப்பு. 2007

8 எம்.ஆர். அடைக்கலசாமி - இலக்கிய வரலாறு, ராசி பதிப்பகம், முதற்பதிப்பு. 1960. சென்னை- 73.

9 மணவை முஸ்தபா - காலம் தேடும் தமிழ், மீரா பதிப்பகம், சென்னை-40. 1993.

10 பொ. மா. பழனிச்சாமி - இலக்கியக் கதிர், நியூ செஞ்சுரி புக்ஹவுஸ், சென்னை-40. முதற்பதிப்பு 2010.

11 நாராயண வேலுப் பிள்ளை - உரைநடைத் தமிழ் - ஐம்பெருங் காப்பியங்கள், நர்மதா பதிப்பகம், சென்னை - 1, முதற்பதிப்பு 1999.

LANGUAGE THROUGH LITERATURE - III

STREAM - A

Semester: III **Hours: 6**

Code : 17GE3GSA3 **Credits: 3**

COURSE OUTCOMES:

- Enhance critical thinking and writing.
- understand and appreciate poetry as a literary art
- Impart effective communication skills to the learners.
- Be familiar with various writers of prose, poetry and one-act plays.
- Strengthen their writing skill.

UNIT I: PROSE **30 Hours**

Indian Women	-	Dr. S. Radhakrishnan
India Through a Traveller's Eyes	-	Pearl S. Buck

UNIT II: POETRY **30 Hours**

Lochinvar	-	Sir Walter Scott
On His Blindness	-	John Milton
Time and Love	-	William Shakespeare

UNIT III: SHORT STORY **15 Hours**

After Twenty Years	-	O'Henry
The Tiger in the Tunnel	-	Ruskin Bond
Karma	-	Kushwant Singh

UNIT IV: ONE ACT PLAYS

Hijack	-	Charles Well

UNIT V: COMPOSITION AND GRAMMAR **15 Hours**

Direct and Indirect Speech

Degrees of Comparison

Punctuation

Interviewing

Resume Writing

E-mail Writing

COURSE BOOKS:

- 'Limelight-3', SSK Publishers and Distributors, Chennai, 2016.
- Savarimuttu,J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners.* Chennai: New Century Book House (P) Ltd, 2016. Print.

LANGUAGE THROUGH LITERATURE - III - 17GE3GSA3

QUESTION PATTERN

STREAM A

Time: 3 Hours **Marks: 60**

I. Choose the best answer 10x1=10

(From Unit I & II)

II. Answer any two of the following in a paragraph of 100 words each 2x5=10

(Two out of 4 from Unit I & II)

III. Answer any two of the following in an essay of 300 words each 2x10=20

(Two out of 4 from Unit I, II, III & IV)

IV. Rewrite as directed (From Unit V)

a) Direct/ Indirect speech. 2x1=2

b) Degrees of Comparison 3x1=3

V. Rewrite with right punctuation 5x1=5

(From Unit V)

VI. Answer the following (From Unit V) 2x5=10

1. Resume writing
2. Email writing

LANGUAGE THROUGH LITERATURE - III

STREAM B

Semester: III **Hours: 6**

Code : 17GE3GSB3 **Credits: 3**

COURSE OUTCOMES:

- Use language for aesthetic effect.
- Arrange and apply activities to improve their skills.
- Develop a positive attitude towards language learning.
- Bring out oral practice effectively.
- Interact and facilitate language learning process.

UNIT I: PROSE **30 Hours**

My Greatest Olympic Prize	-	Jesse Owens
When You Dread Failure	-	A. J. Cronin

UNIT II: POETRY **15 Hours**

Good Bye Party To Miss Pushpa T.S	-	Nissim Ezekiel
A Bird Came Down the Walk	-	Emily Dickson

UNIT III: ONE - ACT PLAY **15 Hours**

Bishop's Candle Sticks	-	Norman Mckinnel
Never Never Nest	-	Cedric Mount
The Pie and the Tart	-	Hugh Chesterton

UNIT IV: COMMUNICATION SKILLS **15 Hours**

CONVERSATIONS:

1. At a bank
2. In the library
3. Reservation status
4. At the sweet shop
5. At the poly clinic
6. On the bus

UNIT V: COMPOSITION **15 Hours**

1. Writing Advertisement
2. Story Completion

GRAMMAR

1. Question with answers 'Yes' or 'No'.
2. Active Voice & Passive Voice

BOOKS FOR REFERENCE:

1. Siva, Anthony, Dr. Gunasekaran. "Six One-Act Plays". Chennai: Pavai Publications, Royapettah, 2009.
2. Kaleem, Nafeesa. "Six One Act-Plays". Chennai: Anu Chitra Publications, West Mambalam, 1985.
3. Effective Communication in English. Board Of Editors, 2013.
4. Savarimuttu,J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners .* Chennai: New Century Book House (P) Ltd, 2016.Print.

LANGUAGE THROUGH LITERATURE - III - 17GE3GSB3

STREAM B

QUESTION PATTERN

Time: 3 Hours **Marks: 60**

1. Choose the best answer (from Unit I & II) 10 x1=10
2. Match the following (from Unit I based on vocabulary) 5 x 1=5
3. Answer any two of the following in a paragraph of 100 words each. 2 x 5=10

   (Two out of 4 from unit I, II &III)
4. Answer any two of the following in an essay of 300 words each 2 x 10=20

   (Two out of 4 from unit I, II &III)
5. Answer any one of the following questions. 5

   (One out of 3 from unit IV)
6. Answer any one of the following questions.(unit-V) 5

   a) Writing Advertisement

   Or

   b) Story Completion
7. Rewrite as directed: (unit-V)

   a) Questions with answers ' Yes'/ 'No'. 3X1=3

   b) Active Voice and Passive Voice. 2X1=2

PROGRAMMING IN JAVA

Semester: III **Hours: 4**

Code : 17CS3MC05 **Credits: 3**

COURSE OUTCOMES:

- Gain the knowledge on the concepts of Object oriented programming
- Construct the program using decision making, branching and looping statements.
- Achieve faster execution of Code by developing multithreaded programming
- Identify and fix errors in the Code using exception handling techniques
- Design and create the application using applet programming

UNIT I

Fundamentals of Object-Oriented Programming: Introduction- Object-Oriented Paradigm- Basic Concepts of OOP - Benefits of OOP - Applications of OOP - **Overview of Java Language:** Introduction - Simple Java Program - More of Java - An Application With Two Classes - Java Program Structure - Java Tokens - Java Statements - Implementing a Java Program - Java Virtual Machine - Command Line Arguments - Programming Style - **Constants, Variables and Data Types:** Introduction-Constants - Variables - Data Types - Declaration Of Variables - Giving Values To Variables - Scope of Variables - Symbolic Constants - Type Casting - Getting Values of Variables - Standard Default Values.

(12 Hours)

UNIT II

Operators and Expressions: Introduction-Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators - Increment And Decrement Operators - Conditional Operator - Bitwise Operators - Special Operators - Arithmetic Expressions - Evaluation of Expressions - Precedence of Arithmetic Operators - Type Conversions in Expressions - Operator Precedence and Associativity - Mathematical Functions- **Decision Making and Branching:** Introduction - Decision Making With If Statement - Simple If Statement - The If...Else Statement - Nesting Of If…Else Statement - The Else If Ladder - The Switch Statement - The ?: Operator - **Decision Making and Looping:** Introduction-While Statement - Do Statement - For Statement - Jumps in Loops - Labeled Loops. **(12 Hours)**

UNIT III

Classes, Objects and Methods: Introduction -Defining A Class - Fields Declaration - Methods Declaration - Creating Objects - Accessing Class Members - Constructors - Methods Overloading - Static Members - Nesting of Methods - Inheritance: Extending a class - Overriding Methods - Final Variables and methods - Final Classes - Finalizer Methods - Abstract Methods and Classes - Methods with Varargs - Visibility Control . **Arrays, Strings and Vectors:** Introduction -One-dimensional Arrays - Creating an Array - Two-dimensional Arrays - Strings - Vectors - Wrapper Classes - Enumerated Types - Annotations. **Interfaces: Multiple Inheritance:** Introduction - Defining Interfaces - Extending Interfaces - Implementing Interfaces - Accessing Interface Variables.

(12 Hours)

UNIT IV

Packages- Putting Classes Together: Introduction - Java API Packages - Using System Packages - Naming Conventions - Creating Packages - Accessing a Package - Using a Package - Adding a Class to a Package - Hiding Classes - Static Import. **Multithreaded Programming :** Introduction - Creating Threads - Extending the Thread Class - Stopping and Blocking a Thread - Life Cycle of a Thread - Using Thread Methods - Thread Exceptions - Thread Priority - Synchronization - Implementing the 'Runnable' Interface - Inter-Thread Communication. **Managing Errors and Exceptions:** Introduction - Types of Errors - Exceptions - Syntax of Exception Handling Code - Multiple Catch Statements - Using Finally Statement - throwing Our Own Exceptions - Improved Exception Handling in Java SE7- Using Exceptions for Debugging. **(12 Hours)**

UNIT V

Applet Programming: Introduction - How Applets Differ From Applications - Preparing to write Applets - Building Applet Code - Applet Life Cycle - Creating an Executable Applet - Designing a Web Page - Applet Tag - Adding Applet to HTML File - Running the Applet - More About Applet Tag - Passing Parameters to Applets - Aligning the Displaying - More about HTML Tags - Displaying Numerical Values - Getting Input from The User-Event Handling. **Managing Input/Output Files In Java:** Introduction -Concept of Streams - Stream Classes - Byte Stream Classes - Character Stream Classes - Using Streams - Other Useful I/O Classes - Using the File Class - Input/Output Exceptions - Creation of Files - Reading/Writing Characters - Reading/Writing Bytes - Handling Primitive Data Types - Concatenating and Buffering Files - Random Access Files - Interactive Input and output - Other Stream classes. **(12 Hours)**

COURSE BOOK:

"Programming With JAVA A Primer", E. Balagurusamy, Tata McGrawHill Publishing Company Limited New Delhi, Fifth Edition, 2015.

Unit I : Chapters: 1, 3, 4

Unit II : Chapters: 5, 6, 7

Unit III : Chapters: 8, 9, 10

Unit IV : Chapters: 11, 12, 13

Unit V : Chapters: 14, 16

BOOKS FOR REFERENCE:

1. **"The Complete reference Java 2"** Herbert Schildt, McGraw Hill Education (India) Private Ltd, Seventh Edition, 2013.
2. **"Java Programming Paradigms",** V. Vimala, S. Sunil Kumar, P.S. Smitha, Sree Magnus Publications, 2011.
3. **"Core Java Volume 1 Fundamentals"** Cay S. Horstmann, Gary Cornell, Dorling Kindersley (India) Pvt. Ltd. 2011.

COMPUTER ORGANIZATION AND ARCHITECTURE

Semester: III **Hours: 4**

Code : 17CS3MC06 **Credits: 3**

COURSE OUTCOMES:

- Identify the basics of computer organization
- Discuss micro-operations and their levels in the organization of a computer
- Examine the components of CPU and describe the processing of data.
- Discuss parallel processing with pipeline and vector processing
- State and assess memory hierarchy design and the different techniques of memory organization.

UNIT I

Basic Computer Organization and Design: Instruction Codes - Computer Registers-Computer Instructions - Instruction Cycle - Memory - Reference Instructions - Input-Output and Interrupt - Design of Basic Computer - Design of Accumulator logic. **Micro Programmed Control**: Control Memory - Address Sequencing - Micro Program Example - Design of Control Unit. **(12 Hours)**

UNIT II

The Register Level: Register Level components - Types - Operations - Multiplexers - Registers - Programmable Logic devices - Register Level Design. **The Processor Level:** Processor Level Components - Processor Level Design.

(12 Hours)

UNIT III

Central Processing Unit: Introduction - General Register Organization - Stack Organization - Instruction Formats - Addressing Modes - Data Transfer and Manipulation - Program Control - Reduced Instruction Set Computer (RISC). **Pipeline and Vector Processing:** Parallel Processing - Pipelining-Arithmetic Pipeline - Instruction Pipeline - Vector Processing - Array processors. **(12 Hours)**

UNIT IV

Communication Methods: Basic Concepts - Bus Control. **Parallel Processing:** Processor - Level Parallelism - Multiprocessors - Fault Tolerance. **(12 Hours)**

UNIT V

Input - Output Organization: Peripheral Devices - Input-Output Interface - Modes of Transfer - Priority Interrupt - Direct Memory Access. **Memory Organization:** Memory Hierarchy - Main Memory - Auxiliary Memory - Associative Memory - Cache Memory - Virtual Memory. **(12 Hours)**

COURSE BOOKS:

1. "**Computer System Architecture**", M. Morris Mano, III Edition, Prentice Hall of India Private Limited, New Delhi, 2011.

   Unit I : Chapters: 5, 7

   Unit III : Chapters: 8, 9

   Unit V : Chapters: 11.1-11.2, 11.4 -11.6 & 12

2. **"Computer Architecture and Organization"**, John P. Hayes, McGraw Hill International Editions, Third Edition, 1998.

   Unit II : Chapters: 2.2, 2.3

   Unit IV : Chapters: 7.1, 7.3

BOOKS FOR REFERENCE:

1. "**Computer Organization**", V. Carl Hamacher, Zvonko G. Vranesic, Safwat G. Zaky, Fifth Edition, Tata McGraw Hill Education, 2013.

2. **"The Essentials of Computer Organization and Architecture",** Lindanull, Julia Lobur, Fourth Edition, Jones & Bartlett Publishers, 2014.

OPTIMIZATION TECHNIQUES

Semester: III **Hours : 4**

Code : 17CS3AC03 **Credits: 3**

COURSE OUTCOMES:

- Solve minima / maxima problems into optimization framework and find out the solution.
- Explain simplex method to answer to the linear programming problem.
- Optimize LPP to solve optimization problem with artificial variables.
- Formulate the transportation problem to minimize the cost for scheduling.
- Work out PERT/CPM techniques in efficient scheduling of activities in network problem.

UNIT I

Operations Research-An Overview: Origin and development of OR - Nature and Features of OR - Scientific Method in OR - Modelling in Operation Research - General Solution Methods for OR Models - Methodology of Operations Research - Applications of OR - Opportunities and Shortcomings of Operations Research - **Linear Programming Problem Mathematical Formulation**: Introduction - Linear Programming Problem-Mathematical Formulation of the Problem - Illustration on Mathematical Formulation of LPPs - **Linear Programming Problem Graphical Solution**: Introduction - Graphical Solution Method. **(12 Hours)**

UNIT II

Linear Programming Simplex Method: Introduction - The Computational Procedure - Use of Artificial Variables - **Duality in Linear Programming:** Introduction - General Primal Dual Pair - Formulating a Dual Problem - Dual Simplex Method. **(12 Hours)**

UNIT III

The Transportation Problem: Introduction - LP Formulation of the Transportation Problem - Duality in Transportation Problem - The Transportation Table - Loops in Transportation Tables - Solution of a Transportation Problem - Finding an Initial Basic Feasible Solution - Test for Optimality-Degeneracy in Transportation Problem - Transportation Algorithm(MODI Method) - Stepping Stone Solution Method - Some Exceptional Cases - Time minimization Transportation Problem-Transshipment Problem. **(12 Hours)**

UNIT IV

Assignment Problem: Introduction - Mathematical Formulation of the Problem - Solution methods of Assignment Problem - Special Cases in Assignment Problem - A typical Assignment Problem - The Traveling Sales Man Problem. **(12 Hours)**

UNIT V

Network Scheduling By PERT/CPM: Introduction - Network: Basic Components - Logical Sequencing - Rules of Network Construction - Critical Path Analysis - Probability Considerations in PERT - Distinction between PERT and CPM.

(12 Hours)

COURSE BOOK:

1. "**Operations Research**", Kanti Swarup, P.K.Gupta, Man Mohan. Sultan Chad & Sons Publications, New Delhi, 2016.

   UNIT I : Chapters : 1(1.2 -1.5, 1.7-1.8, 1.10, 1.11), 2(2.1- 2.4), 3(3.1, 3.2).

   UNIT II : Chapters : 4 (4.1, 4.3, 4.4), 5(5.1- 5.3, 5.9).

   UNIT III : Chapters : 10 (10.1-10.2, 10.4-10.6, 10.8-10.10, 10.12-10.17).

   UNIT IV : Chapters : 11(11.1-11.5, 11.7).

   UNIT V : Chapters : 25 (25.1-25.4, 25.6-25.8).

BOOKS FOR REFERENCE:

1. **"Operation Research -An Introduction"**, Hamdy A.Taha, 6th edition, PHI., New Delhi-1997
2. **"Linear Programming"**, S. Arumugam and A. Thangapandi Issac, New Gamma Publishing House, Palayamkottai, 2015

PROGRAMMING IN JAVA LAB

Semester: III **Hours: 3+1**

Code : 17CS3CP05 **Credits: 3**

COURSE OUTCOMES:

- Design simple Java programs to demonstrate the OOPs concepts
- Develop programs using inheritances and interfaces in JAVA
- Explain and implement the packages in real time applications
- Write Java programs using multithreading and solving errors with exception handling mechanisms
- Design and develop applet program in Java

1. Programs using simple class

a. Number Checking (Prime, Perfect, Palindrome, Armstrong, Adam)
b. Number Generation(Prime, Perfect, Palindrome, Fibonacci)

2. Programs using Arrays and control structures

a. Number Sorting and Searching
b. Matrix Manipulation (Addition, Subtraction, Multiplication and Transpose)
c. Stack and Queue operations.

3. Programs using Constructors and Method overloading

a. Electricity Bill preparation
b. Complex Number operation

4. Programs using String Methods

a. String Sorting and Searching
b. Program using string methods

5. Programs using Inheritance

a. Staff information System
b. Railway Reservation.

6. Programs using Package & Interface

a. Bank transaction
b. Mark Sheet Processing
c. Employee Details using Interface

7. Programs using Exception Handling and Threads

a. Programs using built in and user defined Exceptions
b. Program using Multithreading

8. Programs using Files

a. Counting no of lines, words and characters in a file
b. CIA record preparation for 'n' students.

9. Programs using Applet and AWT components

a. Scientific Calculator
b. Programs using all AWT components.

ENVIRONMENTAL STUDIES

Semester: III **Hours: 2**

Code : 17ES3GS01 **Credits: 2**

COURSE OUTCOMES:

- Recall the components of our planet earth.
- Elucidate and understand the importance of Natural resources.
- Summarise the energy status of the environment.
- Acquire knowledge on the conservation of our environment.
- Analyse the significance of water and climate towards sustainable development.

UNIT I: MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, scope and importance - Need for public awareness **(2 Hours)**

UNIT II: NATURAL RESOURCES

Classification of Resources: Renewable and non - renewable resources - Forest resources, water resources, mineral resources, food resources, energy resources, Land resources - associated problems; Role of an individual in conservation of natural resources - Equitable use of sources for sustainable life styles. **(8 Hours)**

UNIT III: ECOSYSTEMS

Concept of an ecosystem - Structure and function of an ecosystem - producers, consumers and decomposers - Energy flow in the ecosystem - Food chains, food webs and ecological pyramids - Introduction, types, characteristic features, structure and function of the following Eco system: Forest, grass land, desert and aquatic. **(6 Hours)**

UNIT IV: ENVIRONMENTAL POLLUTION

Definition, Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards, Solid waste management, Role of an individual in prevention of pollution.

(8 Hours)

UNIT V: SOCIAL ISSUES AND THE ENVIRONMENTS

From unsustainable to sustainable development - Urban problems related to energy Water conservation, rain water harvesting, water shed management, Resettlement and rehabilitation of people, its problem and concerns, case studies, Environmental ethics, Climate change, global warming, acid rain and ozone layer depletion, nuclear accidents and holocaust, case studies. Waste land reclamation. Environmental protection act, air act, water act, wild life protection act.

(6 Hours)

FIELD WORK

Visit to local area to document environmental assets- river/forest/ grassland/hill/ mountain.

COURSE BOOK:

Murugeshan, R., (2007). Environmental science and Engineering, Millenium publication, Madurai.

UNIT I : Section - 1.1 & 1.2

UNIT II : Section - 1.3 to 1.37

UNIT III : Section - 2.1 to 2.7 & 2.10 to 2.27

UNIT IV : Section - 3.1 to 3.37

UNIT V : Section - 4.1 to 4.17

Note: Tamil Version for Tamil Literature and History Tamil Medium Students.

COMPUTER HARDWARE LAB (Stream A1)

Semester: III **Hours: 2**

Code : 17AE3SK03 **Credits: 2**

COURSE OUTCOMES:

- Identify the components of the motherboard.
- Perform system administration tasks and evaluate different storage medias
- Learn to connect other peripheral devices such as scanner, printer, web cam and cell phones.
- Handle system related problems and methods of troubleshooting
- Install the operating system and other application software

1. Identification of Computer Parts and Connectors
2. Installing the Motherboard, CPU and Heat sinks
3. Installing RAM and Connecting the Power Supply
4. Installing Hard Drive, Optical Drives
5. Installing and configuring Scanner, Web Cam, Cell Phones
6. Installing Printer, Servicing and Troubleshooting
7. Understanding BIOS and Boot Orders
8. Preparing Hard disk to install OS
9. Install Chipset Drivers
10. Installing Application Softwares
11. Connecting Peripheral Devices
12. Assembling and disassembling of Laptop
13. Understanding Networks

பொதுத்தமிழ் - பழந்தமிழ் இலக்கியம்

பருவம்: நான்கு **நேரம்: 5**

குறியீடு: 17GT4GS04 **புள்ளி: 4**

நோக்கம்:

- ❖ பழந்தமிழ் இலக்கிய வளங்களை அறிந்து கொள்வர்.
- ❖ பழந்தமிழ் இலக்கியங்களின் சமூகநிலையைப் புரிந்து கொள்வர்.
- ❖ பழந்தமிழ் இலக்கியத்தின் தனித்தன்மையை அறிந்து கொள்வர்.
- ❖ பழந்தமிழ் இலக்கியத்தில் காணப்படும் நயங்களைத் தெரிந்து கொள்வர்.
- ❖ பழந்தமிழ் இலக்கிய ஆசிரியர்களை அடையாளம் காண்பர்.

அலகு 1: சங்க இலக்கியங்கள் - எட்டுத்தொகை

1. நற்றிணை (2 பாடல்கள்)

"சுரும்புண விரிந்த கருங்கால்..." - குறிஞ்சி

"தொல்கவின் தொலையத்..." - பாலை

2. குறுந்தொகை (4 பாடல்கள்)

"மாசறக் கழீஇய..." - குறிஞ்சி
"ஐயவி யன்ன சிறுவீ..." - மருதம்
"கடும்புனல் தொடுத்த..." - நெய்தல்
"முட்டு வேன்கொல்.." - பாலை

3. கலித்தொகை (1 பாடல்)

"வேங்கை தொலைத்த வெறிபொறி....."- குறிஞ்சிக்கலி தோழிகூற்று

4. அகநானூறு (2 பாடல்கள்)

"வயங்கு வெள்....." குறிஞ்சி

'கார்பயம் பொழிந்த....." முல்லை

5. புறநானூறு (2 பாடல்கள்)

"கழிந்தது பொழிந்தென....."

"பன்மீன் இமைக்கும்....."

அலகு 2: பத்துப்பாட்டு

முல்லைப்பாட்டு முழுவதும்

அலகு 3: நீதி நூல்கள்

1. திருக்குறள் : அறத்துப்பால் - பொறையுடைமை, அழுக்காறாமை

2. நாலடியார் : அறத்துப்பால்

துறவு: "விளக்குப்புக....."

ஈகை: "இல்லா விடத்தும்....."

அலகு 4: இலக்கணம்

வல்லெழுத்து மிகும் இடம், மிகா இடம்

இலக்கிய வரலாறு

சங்க காலம், சங்கம் மருவிய காலம் தொடர்பான இலக்கிய வரலாறு.

அலகு 5: வணிகத்தமிழ் -அறிவியல் தமிழ்

கடல் நாகரிகம் - கடல் வாணிபம் - பக்: 233-241

உடல் அறிவியல் - பக்: 75-88

பாடநூல் :

தமிழ்த்துறை வெளியீடு, ஜெயராஜ் அன்னபாக்கியம் மகளிர் கல்லூரி. பெரியகுளம்.

பார்வைநூல்கள்:

1. வ.த. இராமசுப்பிரமணியம் (உ.ஆ) - நற்றிணை, திருமகள் நிலையம், சென்னை-17. முதற்பதிப்பு - 2009.
2. புலவர் துரைஇராசாராம் (உ.ஆ) - குறுந்தொகை, முதற்பதிப்பு 2008. திருமகள் நிலையம், சென்னை - 17.
3. முனைவர்.அ.விசுவநாதன் (உ.ஆ) - கலித்தொகை, நியூசெஞ்சுரி புக்ஹவுஸ், சென்னை - 98. முதற்பதிப்பு 2007.
4. வ.த. இராமசுப்பிரமணியம் (உ.ஆ) - அகநானூறு, திருமகள் நிலையம், சென்னை -17. முதற்பதிப்பு 2009.
5. வ.த. இராமசுப்பிரமணியம் (உ.ஆ) - புறநானூறு, திருமகள் நிலையம், சென்னை - 17. முதற்பதிப்பு 2008.
6. முனைவர்.இரா.மோகன் (உ.ஆ) - பத்துப்பாட்டு, பாவைபிரிண்டர்ஸ், சென்னை 14, முதற்பதிப்பு - 2004.
7. எஸ். கௌமாரீஸ்வரி (ப.ஆ) - திருக்குறள் பரிமேலழகர் உரை சாரதா பதிப்பகம், சென்னை - 600 014, முதற்பதிப்பு - 2002.
8. எஸ். கௌமாரீஸ்வரி (ப.ஆ) - பதினெண்கீழ்க்கணக்கு நூல்கள் சாரதா பதிப்பகம், சென்னை - 14, முதற்பதிப்பு - மார்ச் - 2009.
9. எம்மார். அடைக்கலசாமி - தமிழ் இலக்கிய வரலாறு ராசிபதிப்பகம், சென்னை - 73, பதிப்பு 35. 2002.
10. மாத்தளை சோமு - வியக்கவைக்கும் தமிழர் அறிவியல், உதகம், திருச்சி முதற்பதிப்பு 2005.
11. மணவை முஸ்தபா - காலம் தேடும் தமிழ், மீரா பதிப்பகம், சென்னை - 40, 1993.

LANGUAGE THROUGH LITERATURE - IV

STREAM A

Semester: IV **Hours: 6**

Code : 17GE4GSA4 **Credits: 4**

COURSE OUTCOMES:

- Employ knowledge of literary traditions to produce imaginative writing
- Analyze and interpret literature
- Develop their English language skills continuously
- Develop their appreciation for the purpose and pleasure of poetry and drama
- Conduct self-evaluation about their own language learning processes

UNIT I: PROSE **30 Hours**

1. Character is Destiny - S.Radhakrishnan
2. Why the Sea is Salt - Great Legends

UNIT II: POETRY **30 Hours**

1. La Belle Dame Sans Merci - John Keats
2. The Last Ride Together - Robert Browning.
3. Goodbye Party for Miss. Puspha T.S - Nissim Ezekiel

UNIT III: SHORT STORY **15 Hours**

1. Valiant Vicky - Flora Annie Steel
2. The Conjurer's Revenge - Stephen Leacock

UNIT IV: ONE ACT PLAYS

1. Mother's Day - J.B. Priestly
2. The Game of Chess - Kenneth Sawyer Goodman

UNIT V: WRITING SKILLS **15 Hours**

1. Minutes Writing
2. Book Review
3. Essay Writing
4. Prepositions
5. Conjunction

COURSE BOOKS:

1. Limelight - 4 (An Anthology of Prose, Short Story and One Act Plays)
2. Savarimuttu,J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners.* Chennai: New Century Book House (P) Ltd, 2016.Print.

LANGUAGE THROUGH LITERATURE - IV-17GE4GSA4

STREAM A

QUESTION PATTERN

Time: 3 Hours **Marks: 60**

I. Choose the best answer 10X1=10

(From Unit I and II)

II. Answer any two of the following in a Paragraph of 100 words each. 2X5=10

(Two out of four from Unit I, & II)

III. Answer any two of the following in an essay of 300 words each. 2X10=20

(Two out of four from Unit I , II, III & IV)

IV. Answer any two of the following questions from unit V 2x5=10

1. Minutes Writing
2. Book Review
3. Essay Writing

V. Fill in the blanks.

1. Prepositions 5x1=5
2. Conjunction 5x1=5

LANGUAGE THROUGH LITERATURE - IV

STREAM B

Semester: IV **Hours: 6**

Code : 17GE4GSB4 **Credits: 4**

COURSE OUTCOMES:

- Read and understand language and description of topics from a variety of texts.
- Write describing impressions, feelings and experiences and to write about familiar topics.
- Understand familiar topics and be able to understand speech on a variety of subjects such as work, school, leisure and the main points when listening to current affairs.
- Talk about familiar topics and to give explanations and reasons for opinions, past actions and future plans.
- Understand and apply in everyday contexts, including the use of nouns, adjectives, verbs, prepositions, tenses, sentence structure and phrases.

UNIT I: PROSE **30 Hours**

1. C. Rajagopalachari - First Anniversary of Gandhiji's Death
2. J.C. Hill - Good Manners
3. James Thurber - University Days

UNIT II: POETRY **15 Hours**

1. Sarojini Naidu - Conquest
2. D.H. Lawrence - Money Madness
3. Robert Frost - Mending Wall

UNIT III: DRAMA **15 Hours**

Select Scenes from ''The Merchant of Venice'' by William Shakespeare.

1. The Opening Scene
2. The Casket Scene
3. The Trial Scene

UNIT IV: GRAMMAR **15 Hours**

1. Question Tag
2. Negative Sentences

UNIT V: COMMUNICATION SKILLS **15 Hours**

Information Transfer and E Language Communication

COURSE BOOKS:

1. ''Variety of English for Effective Communication'' - Book IV - Ed. Dr. A. Shanmugakani, Madurai: Manimekala Publishing House, 2012.
2. Savarimuttu, J.S Rohan, and Petricia Alphine Nirmala. *English Grammar and usage – An ideal Companion For Advanced Learners.* Chennai: New Century Book House (P) Ltd, 2016. Print.

LANGUAGE THROUGH LITERATURE - IV - 17GE4GSB4

STREAM B

QUESTION PATTERN

Time: 3 Hours **Marks: 60**

I. Choose the best answer 10x1=10

(From Unit I and II)

II. Match the Following 5x1=5

(Vocabulary items from Unit I)

III. Answer any two of the following in a Paragraph of 100 words each. 2x5=10

(Two out of four from Unit I, II & III)

IV. Answer any two of the following in an essay of 300 words each 2x10=20

(Two out of four from Unit I, II & III)

V. Rewrite the following as directed. (From Unit IV)

1. Question Tag 2x1=2
2. Negative Sentences 3x1=3

VI. Answer the following questions 2x5=10

(From unit V)

a) Interpreting charts and making observations.

b) Reading passage and putting the information in graphic form.

MICROPROCESSOR

Semester: IV **Hours: 4**

Code : 17CS4MC07 **Credits: 4**

COURSE OUTCOMES:

- Gain the knowledge on Microprocessors.
- Analyze the Architecture and develop low level programs on the microprocessor 8086.
- Evaluate the techniques for faster execution of instruction and enhance the performances of microprocessor.
- Elucidate memory interfacing and its impact on computer organization.
- Understand multiprocessor applications and to generate Delay subroutine by using loop counter.

UNIT I

Evaluation of Microprocessors - Single Chip Micro Computer - Embedded microprocessors - Memory - Buses - Processing Speed of a Processor - Operating System - Types of Microprocessors - Micro processor Applications. **(12 Hours)**

UNIT II

Register Organization of 8086 - Architecture - Signal Descriptions of 8086 - Physical Memory Organization - General Bus Organization - I/O Addressing Capability - Special Processor Activities - Minimum Mode 8086 System and Timings - Maximum mode 8086 System and Timings - The Processor 8088.

(12 Hours)

UNIT III

Machine Language Instruction Formats- Addressing Modes of 8086 - Instruction Set of 8086/8088 - Assembler Directives and Operators - Do's and Don'ts while using Instructions. **(12 Hours)**

UNIT IV

Semiconductor Memory Interfacing - Dynamic RAM Interfacing - Interfacing I/O Ports- PIO 8255[Programmable Input-Output Port]- Modes of Operation of 8255 - Interfacing Analog to Digital Data Converters - Interfacing Digital to Analog Converters - Stepper Motor Interfacing. **(12 Hours)**

UNIT V

Microprocessor Applications - Delay Subroutines - 7 segment LED Displays - Microprocessor - Based Protective Relays - Measurement of Electrical Quantities Microprocessor based Traffic Control. **(12 Hours)**

COURSE BOOKS:

1. **"Fundamentals of Microprocessors and Microcontrollers"**, Badri Ram - Fourth Revised and Enlarged Edition - Dhanpat Rai and Sons - 2016.

   Unit I : Chapters: 1.2, 1.5, 1.6, 1.9, 1.10, 1.11, 1.16, 1.29

   Unit V : Chapters: 9.2, 9.3, 9.4, 9.5, 9.8

2. **"Advanced Microprocessors and Peripheral - Architectures, Architecture, Programming and Interfacing"**, A.K. Ray & K. M. Bhurchandi, TATA McGraw Hill, Second Edition, 2013.

   Unit II : Chapters: 1

   Unit III : Chapters: 2

   Unit IV : Chapters: 5

BOOKS FOR REFERENCE:

1. "**Microprocessor Architecture, Programming and Applications with 8085/8080A**", R. S. Gaonkar, Wiley Eastern Limited, 2013.
2. "**Introduction to Microprocessor**", A. Mathur, third Edition,TATA McGraw-Hill publishing Co. Ltd., 2012.

DATA AND FILE STRUCTURES

Semester: IV **Hours: 5**

Code : 17CS4AC04 **Credits: 4**

COURSE OUTCOMES:

- Identify the appropriate data structures and algorithms for the problems
- Compare and contrast linear and non-linear data structures such as stacks, queues and trees
- Discuss and implement various types of hash and indexed random access file structures.
- Represent the flow of computation to understand the problem clearly.
- Apply various types of Sorting and searching algorithms according to the situation.

UNIT I

INTRODUCTION: Basic Concepts: Pseudocode - Algorithm Header - Purpose, Conditions And Return - Statement Numbers - Variables - Statement Constructs - The Abstract Data Type - Atomic and Composite Data - Data Type - Data Structure - Abstract Data Type - Big-O Notation - Standard Measures of Efficiency - Big-O Analysis Examples. **Recursion:** Factorial - A Case Study - Recursion Defined - Iterative Solution - Recursive Solution - Designing Recursive Algorithms - The Design Methodology - Limitations Of Recursion - Design Implementation - Reverse Keyboard Input - Recursive Examples - Greatest Common Divisor - Fibonacci Numbers - Prefix To Postfix Conversion - The Towers Of Hanoi.

(15 Hours)

UNIT II

LINEAR LISTS: Stacks: Basic Stack Operations - Push - Pop - Stack Top - Stack Linked List - Data Structure - Stack Algorithms. **Queues:** Queue Operations - Enqueue - Dequeue - Queue Front - Queue Rear - Queue Example - Queue Linked List Design - Data Structure - Queue Algorithms. **General Linear Lists:** Basic Operations - Insertion - Deletion - Retrieval - Traversal. **NON LINEAR LISTS: Introduction to Trees** - Basic Tree Concepts - Terminology - User Representation - Binary Trees - Properties - Binary Tree Traversals - Expression Trees - Huffman Code - General Trees - Insertions into General Trees - General Tree Deletions - Changing a General Tree to a Binary Tree. **(15 Hours)**

UNIT III

Binary Search Trees: Basic Concepts - BST Operations - Traversals - Searches - Insertion - Deletion. **AVL Search Trees:** AVL Tree Basic Concepts - AVL Tree Balance Factor - Balancing Trees - AVL Tree Implementations - Insert into AVL Tree - Rotate Algorithms - AVL Tree Delete Algorithm - Adjusting the Balance Factors. **(15 Hours)**

UNIT IV

HEAPS: Basic Concepts - Definition - Maintenance Operations - Heap Implementation - Algorithm. **Graphs:** Basic Concepts - Operations - Insert Vertex - Delete Vertex - Add Edge-Delete Edge - Find Vertex - Traverse Graph - Graph Storage Structures - Adjacency Matrix-Adjacency List - Graph Algorithms - Create Graph - Insert Vertex - Delete Vertex - Insert Arc - Delete Arc - Retrieve Vertex - Depth-first Traversal - Breadth-first Traversal - Destroy Graph. **Networks:** Minimum Spanning Tree. **(15 Hours)**

UNIT V

SORTING AND SEARCHING: Sorting: Sort Concepts-Sort Order - Sort Stability - Sort Efficiency - Passes - Sorts and ADTs - Selection Sorts - Straight Selection Sort - Heap Sort - Selection Sort Efficiency - Selection Sort Implementation - Insertions Sorts - Straight Insertion Sort - Shell Sort - Insertion Sort Efficiency - Insertion Sort Implementation - Exchange Sorts - Bubble Sort - Quick Sort - Exchange Sort Efficiency - Exchange Sort Implementation. **Searching:** List Searches - Sequential Search - Variations On Sequential - Searches - Binary Search - Analyzing Search Algorithms - Hashed List Searches - Basic Concepts - Hashing Methods - One Hashing Algorithm. **(15 Hours)**

COURSE BOOK:

"DATA STRUCTURES A Pseudocode Approach with C", Richard F.Gilberg and Behrouz A.Forouzan, second edition, Cengage Learning India Pvt. Ltd., 2016.

UNIT 1: Chapters: **1** (1.1, 1.2, 1.6), **2** (2.1 - 2.3)

UNIT 2: Chapters: **3** (3.1, 3.2) **4** (4.1- 4.2) **5** (5.1) **6** (6.1 - 6.3)

UNIT 3: Chapters: **7** (7.1 - 7.2) **8** (8.1, 8.2)

UNIT 4: Chapters: **9** (9.1, 9.2) **11**(11.1-11.4,11.6)

UNIT 5: Chapters: **12** (12.1-12.4) **13** (13.1, 13.3)

BOOKS FOR REFERENCE:

1. **"DATA STRUCTURES made simple"**, Prof. Satish Jain, Shashi singh, BPB Publications India, 2006.
2. **"Data Structures,** Seymour Lipchutz, Tata McGraw-hill Indian adapted edition, 2006.

COMPUTER GRAPHICS

Semester: IV **Hours: 4**

Code : 17CS4CE1A **Credits: 3**

COURSE OUTCOMES:

- Gain the knowledge of Graphics Systems.
- Implement various algorithms to scan and the basic output primitives, transformations.
- Describe the techniques of clipping, two dimensional graphics and two dimensional transformations.
- Illustrate two Dimensional viewing and projections.
- Design an application of computer animation with virtual reality.

UNIT I

A Survey of Computer Graphics: Computer-Aided design - Presentation Graphics - Computer Art - Entertainment - Education and Training - Visualization - Image Processing - Graphical user Interface. **Overview of Graphics Systems:** Video Display Devices - Raster Scan Systems - Random Scan Systems - Graphics Monitors and Workstations - Input devices - Hardcopy Devices - Graphics Software. **(12 Hours)**

UNIT II

Output Primitives: Points and Lines - Line Drawing Algorithms - Loading the Frame Buffer - Line Function - Circle Generating Algorithms - Ellipse Generating Algorithms - Other Curves - Parallel Curve Algorithms - Curve Functions - Pixel Addressing - Filled - Area Primitives - Fill-Area Functions - Cell Array - Character Generation. **(12 Hours)**

UNIT III

Attributes of Output Primitives: Line Attributes - Curve Attributes - Color and Grayscale Levels - Area Fill Attributes - Character Attributes - Bundled Attributes - Inquiry Functions - Antialiasing**. Two-Dimensional Geometric Transformations:** Basic Transformations. - Matrix Representations and Homogeneous Coordinates - Composite Transformations - Other Transformations - Transformations Between Coordinate Systems - Affine Transformations - Transformation Functions - Raster Methods for Transformations. **(12 Hours)**

UNIT IV

Two-Dimensional Viewing : The Viewing Pipeline - Viewing Coordinate Reference Frame - Window-to-View Port Coordinate Transformation - Two Dimensional Viewing Functions - Clipping Operations - Point Clipping - Line Clipping - Polygon Clipping - Curve Clipping - Text Clipping - Exterior Clipping. **Structures and Hierarchical Modeling:** Structure Concepts - Editing Structures - Basic Modeling Concepts - Hierarchical Modeling with Structures. **(12 Hours)**

UNIT V

Graphical User Interfaces and Interactive Input Methods: The User Dialogue - Input of Graphical Data - Input Functions - Initial Values for Input-Device Parameters-Interactive Picture-Construction Techniques - Virtual Reality Environments. **Three Dimensional Concepts:** Three Dimensional Display Methods - Three Dimensional Graphics Packages. **Computer Animation:** Design of Animation Sequences - General Computer Animation Functions - Raster Animations - Computer Animation Languages - Key frame systems - Motion Specifications. **(12 Hours)**

COURSE BOOK:

1. **"Computer Graphics C Version"**, Donald Hearn, M. Pauline Baker, Pearson Education, Dorling Kindersley (India) Pvt. Ltd , Second Edition, 2013

   UNIT I : Chapters : 1, 2

   UNIT II : Chapter : 3

   UNIT III : Chapters : 4 ,5

   UNIT IV : Chapters : 6, 7

   UNIT V : Chapters : 8 , 9, 16

BOOKS FOR REFERENCE:

1. **"Computer Graphics"** by **Chennakesava** R. Alavala, PHI Learning Private Limited, New Delhi, 2009.
2. **"Computer Graphics Principles & Practice"** by James D.Foley, Andries Van Dam, Steven K. Feiner, John F. Hughes, Second Edition in C, Pearson Education, 2009.

COMPILER DESIGN

Semester: IV **Hours: 4**

Code : 17CS4CE1B **Credits: 3**

COURSE OUTCOMES:

- Realize basics of compiler design and apply it in real time applications.
- Analyze different types of parsing techniques to solve the problem.
- Use optimizing techniques to reduce the number of instructions in a program.
- Assess the role of lexical analysis and syntax analysis to find the errors.
- Identify the transformation of source Code into machine Code by the compiler.

UNIT I

Introduction: Language Processors -The structure of a compiler - the evolution of programming languages - the science of building compiler - applications of compiler technology - Programming language basics. **A Simple syntax - Directed Translator:** Introduction - Syntax definition - syntax directed translation - Parsing-Lexical analysis - Symbol tables - Intermediate Code generation.

(12 Hours)

UNIT II

Lexical Analysis: The role of the Lexical analyzer - input buffering - specification of tokens - recognition of tokens - the lexical analyzer generator Lex - Finite automata - Form regular expressions to automata - design of a lexical analyzer generator - optimization of DFA based pattern matchers. **(12 Hours)**

UNIT III

Syntax analysis : Introduction - Context-Free Grammars - Writing a grammar - Top - down parsing - bottom up parsing - Introduction to LR Parsing: Simple LR - Parser Generators. **(12 Hours)**

UNIT IV

Intermediate Code Generation : Variants of Syntax Trees - Three address code - Types and declarations - translations of expressions - type checking - control flow - Backpatching - Switch statements - Intermediate code for procedures.

(12 Hours)

UNIT V

Code generation : Issues in the Design of a code generator - The target language - address in the target code - basics blocks and flow graphs - optimization of basic blocks - a simple code generator - Peephole optimization - register allocation and assignment - instruction selection by tree rewriting - optimal code generation for expressions - dynamic programming code generation.

(12 Hours)

COURSE BOOK:

1. **"Compilers Principles, Techniques and Tools",** Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, Pearson Education, Dorling Kindersley (India) Pvt. Ltd , Second Edition, First Impression 2011.

   UNIT I : Chapters : 1 (1.1 - 1.7), 2 (2.1 - 2.4, 2.6 - 2.9)

   UNIT II : Chapter : 3 (3.1 - 3.10)

   UNIT III: Chapters : 4 (4.1 - 4.6, 4.9 - 4.10)

   UNIT IV: Chapter : 6 (6.1 - 6.10)

   UNIT V : Chapter : 8 (8.1 - 8.12)

BOOKS FOR REFERENCE:

1. **"Crafting a Compiler with C**", Charles N. Fischer, Richard J. LeBlanc, Jr. Pearson Education, Fourth Impression 2011.
2. **"Advanced Compiler Design Implementation",** Steven S. Muchnick, Elsevier, a division of Reed Elsevier India private Ltd, 2013.

MICROPROCESSOR LAB

Semester: IV **Hours: 4**

Code : 17CS4CP06 **Credits: 2**

COURSE OUTCOMES:

- Perform arithmetic operation to understand the ALU of a computer
- Evaluate different number systems and understand the conversion of number system.
- Execute basic operations in sorting, searching and reversing the elements in an array
- Study the interfacing of peripheral devices with 8086 microprocessor
- Work on various application such as 7 segment display and traffic signal controller

I. ADDITION AND SUBTRACTION

1. 8- bit Addition
2. 16- bit Addition
3. 8- bit Subtraction
4. BCD Subtraction

II. MULTIPLICATION AND DIVISION

1. 8- bit Multiplication
2. BCD Multiplication
3. 8- bit Division

III. SORTING AND SEARCHING

1. Searching for an element in an array
2. Sorting in ascending order
3. Finding largest and smallest elements from an array
4. Reversing array elements
5. Block move.
6. Sorting in Descending order

IV. CODE CONVERSION

1. BCD to HEX and HEX to BCD
2. Binary to ASCII and ASCII to Binary
3. ASCII to BCD and BCD to ASCII

V. APPLICATIONS

1. Drive a Stepper motor Interface to rotate the motor in clockwise.
2. Seven segment display interface to display messages FIRE and HELP
3. Traffic signal controller

DESIGN AND ANIMATION LAB

Semester: IV **Hours: 2**

Code : 17CS4SK04 **Credits: 2**

COURSE OUTCOMES:

- Demonstrate the effective utilization of flash tool
- Exhibit the layer techniques for designing.
- Perform the various types of tweening
- Apply the various animation techniques to animate text and create symbols.
- Build an animated short story using various techniques

1. Working with Flash Tools.
2. Working with various Panels
3. Working with Text Tools
4. Working with Layers
5. Bouncing Ball
6. Creating Symbols
7. Animation through Frame
8. Motion Tweening
9. Shape Tweening
10. Animation Text
11. Short Story Creation

VISUAL PROGRAMMING

Semester: V **Hours: 5**
Code : 17CS5MC08 **Credits: 5**

COURSE OUTCOMES:

- Explore the features of Integrated Development Environment (IDE).
- Write and apply decision structures for determining different operations and Loop Structures.
- Write Windows applications using forms, controls, events, procedures and functions.
- Create visual programming skills needed for modern software development using error handling techniques.
- Apply data management operations and store the results in Database.

UNIT I

Welcome to Visual Basic2015: Implementing Event - Driven Programming - Installing Visual Basic 2015 - The Visual Studio 2015 IDE - Creating a Simple Application. **The Microsoft .NET Framework:** The .NET Vision - Common Language Runtime - The Common Type System and Common Language Specification. **Writing Software:** Information and Data Algorithms - Working with Variables - Comments and Whitespace - Data Types - Storing Variables - Methods. **(15 Hours)**

UNIT II

Controlling the Flow: Making Decisions - The If Statement - Select Case - Loops. **Working with Structures:** Understanding Arrays - Understanding Enumerations - Understanding Constants - Structures - Working with Array Lists - Working with Collections. **(15 Hours)**

UNIT III

Building Windows Applications: Responding to Events - Counting Characters - Counting Words - Creating More Complex Applications - Creating the Toolbar - Creating the Status Bar - Creating an Edit Box - Clearing the Edit Box - Responding to Toolbar Buttons. **Displaying Dialogs:** The MessageBox - The OpenFileDialog Control - The SaveDialog Control - The FontDialog Control - The ColorDialog Control - The PrintDialog Control - The FolderBrowser DialogControl. **(15 Hours)**

UNIT IV

Creating Menus: Understanding Menu Features - Creating Menus - Context Menus. **Debugging and Error Handling:** Major Error Types - Debugging - Error Handling. **(15 Hours)**

UNIT V

Accessing Data Using Structured Query Language*:* **What is Database - Understanding Basic SQL Syntax.** Data base Programming with SQL Server and ADO.Net: **ADO.NET - The ADO.NET Data Namespaces - The ADO.NET Classes in Action - Data Binding.** **(15 Hours)**

COURSE BOOK:

1. **"Beginning Microsoft Visual Basic 2015",** Bryan Newsome, Wiley India Edition, 2016.

   Unit I : Chapters: 1, 2, 3

   Unit II : Chapters: 4, 5

   Unit III : Chapters: 6, 7

   Unit IV : Chapters: 8, 9

   Unit V : Chapters: 12, 13

BOOKS FOR REFERENCE:

1. **"Visual Basic .NET Programming",** new Black Book, Steven Holzner, Paraglyph Press Inc., 2013.
2. **"Mastering Microsoft Visual Basic 2008",** Evangelos Petroutsos, Mark Ridgeway, Willey India Pvt. Ltd, 2010.

DATABASE MANAGEMENT SYSTEM (DBMS)

Semester: V **Hours: 5**

Code : 17CS5MC09 **Credits: 5**

COURSE OUTCOMES:

- Acquire a deep knowledge on relational Database, Structured Query Language and Data Modeling.
- Understand the logical design of the database using data modeling such as Entity Relationship diagrams and data normalization.
- Familiarize SQL queries, sub-queries, functions, views, indexes, and queries.
- Examine and develop skills on aggregate functions, joins, unions, triggers and cursors.
- Analyze database Security and deal with e transaction Management and control Concurrency.

UNIT I

Introduction to Database Management Systems: Introduction - Database - Characteristics of Data in a Database - Database Management System - DBMS - Types of DBMS. **Introduction to Relational Database Management Systems (RDBMS)**: Introduction - RDBMS Terminology - The Relational Data Structure - Relational Data Integrity - Relational Data Manipulation - Codd's Rules. **Database Architecture and Data Modeling:** Introduction - Conceptual, Physical and Logical Database Models - Database Design - Design Constraints - Functional Dependencies. **(15 Hours)**

UNIT II

Entity Relationship (E- R) Modeling: Introduction - ER Model - Components of an ER Model - ER Modeling Symbols. **Enhanced Entity Relationship (EER) Model:** Introduction - Super class and Subclass Entity types - Attribute Inheritance - Specialization - Generalization - Categorization. **Data Normalization:** Introduction - First Normal Form(1NF) - Second Normal Form(2NF) - Third Normal Form(3NF)-Boyce Codd Normal Form(BCNF) - Fourth Normal Form(4NF) - Fifth Normal Form (5NF) - Domain Key Normal Form(DKNF) - Denormalization. **(15 Hours)**

UNIT III

Relational Algebra and Relational Calculus: Relational Algebra - Relational Calculus. **Introduction to Structured Query Language (SQL):** Introduction - History of SQL - Characteristics of SQL- Advantages of SQL - SQL in Action - SQL Data types and Literals - Types of SQL Commands - SQL Operators - Arithmetic Operators - Comparison Operators - Logical Operators - Set Operators - Operator Precedence. **Tables, Views and Indexes - Queries and Subqueries. (15 Hours)**

UNIT IV

Aggregate Functions: Introduction - General Rules - COUNT () and COUNT (*) - SUM () - AVG () - MAX () and MIN (). **Insert, Update and Delete Operations - Cursors:** Introduction-Cursor Operations - Cursor Positions - Cursor Coding Guidelines. **Joins and Unions:** Joins - Unions. **Programming with SQL**: Introduction- Query Processing - Embedded SQL- Dynamic SQL. **Triggers:** Introduction- Triggers - Types of Triggers - Trigger syntax - Combining Trigger Types- Setting Inserted Values - Disabling and Enabling Triggers - Replacing Triggers-Dropping Triggers-Advantages and Limitations of Triggers. **(15 Hours)**

UNIT V

Database Security : Introduction, Database Environment - Data Security Risks - Complex user management requirements - Dimensions of Database Security, Data Security Requirements, Database Users - Protecting the data within the database - Granting and Revoking privileges and roles - Data Encryption, Database integrity - system availability factors - Best Security Practices, Network Security - Authenticating users to the database - security auditing. **Data Integrity - Transaction Management and Concurrency Control. (15 Hours)**

COURSE BOOK:

1. **"Database Management System" -** Alexis Leon & Mathews Leon (A division of Win Leon Publishing Pvt. Ltd), 2008.

   Unit I : Chapters : 5, 7, 8.

   Unit II : Chapters : 9, 10, 11.

   Unit III : Chapters : 12, 17, 15, 17.

   Unit IV : Chapters : 18, 19, 20, 21, 22, 25 .

   Unit V : Chapters: 27, 28, 29

BOOKS FOR REFERENCE:

1. **"Data Base System Concepts" -** Abraham SillberSchatz, Hendry F. Korth, S. Sundrashan, 6th Edition, The McGraw-Hill Companies, 2013.
2. **"Data Base Management System" -** Rakesh Saini, M. M. S. Rauthan, Abhay Saxena, Bindu sharma, Vayu Education of India, First Edition, 2010.
3. **"Fundamentals of Database Systems" -** Ramez Elmasri, Shamkant B. Navathe, Dorling Kindersley (India) Private Limited, Fifth Edition, 2017.

OPERATING SYSTEM

Semester: V **Hours: 4**

Code : 17CS5MC10 **Credits: 4**

COURSE OUTCOMES:

- Acquire fundamental knowledge of Operating System.
- Discuss the concurrency in synchronization, deadlock and the mechanism to manage / avoid in multiprogramming system
- Demonstrate memory management along with issues and challenges in it.
- Understand the types of I/O management, disk scheduling and its related problems.
- Discuss file management and security threats.

UNIT I

Operating System Overview: Operating System Objectives and functions - The Evolution of Operating System - Major Achievements - Microsoft Windows Overview - Traditional/Unix Systems - Modern UNIX System - Linux. **Process Description and Control:** Process - Process States - Process Description - Process Control. **(12 Hours)**

UNIT II

Concurrency: Mutual Exclusion and Synchronization: Principles of Concurrency - Mutual Exclusion: Hardware Support - Semaphores - Message Passing - Readers/Writers Problem. **Concurrency: Deadlock and Starvation:** Principles of Deadlock - Deadlock Prevention - Deadlock Avoidance - Deadlock Detection - An Integrated Deadlock Strategy - Dining Philosophers Problem.

(12 Hours)

UNIT III

Memory Management: Memory management requirements - Memory Partitioning - Paging - Segmentation. **Virtual Memory:** Hardware and Control Structures - Operating System Software. **(12 Hours)**

UNIT IV

Uniprocessor Scheduling: Types of Processor Scheduling - Scheduling Algorithms. **Multiprocessor and Real Time Scheduling:** Multiprocessor Scheduling - Real Time Scheduling. **I/O Management and Disk Scheduling:** I/O Devices - Organization of the I/O Function - Disk Scheduling. **(12 Hours)**

UNIT V

File Management: Overview - File Organization and Access - B-Trees - File Directories - File Sharing - Record Blocking. **Computer Security Threats:** Computer Security Concepts - Threats, Attacks, and Assets - Intruders - Malicious Software Overview - Viruses, Worms and Bots - Rootkits. **(12 Hours)**

COURSE BOOK:

1. **"Operating Systems Internals and Design Principles",** William Stallings. Pearson Education Inc. 7th Edition, Dorling Kindersley (India) Pvt. Ltd. 2017.

Unit I	:	Chapters:	1 (1-3, 7-10), 2 (1-4).
Unit II	:	Chapters:	4 (1-3, 5, 6), 5(1-6)
Unit III	:	Chapters:	6 (1-4), 7(1-2)
Unit IV	:	Chapters:	8 (1-2), 9(1-2),10 (1-2, 5)
Unit V	:	Chapters:	11(1-6), 13(1-6)

BOOKS FOR REFERENCE:

1. **"Operating System",** Harvey M. Deitel, Paul J. Deitel, David R. Choffness, Pearson Education, 3rd Edition, Tenth Impression, 2013.
2. **"Operating System Concepts",** Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Wiley India (P) Ltd, 8th Edition, 2017.

SOFTWARE PROJECT MANAGEMENT

Semester: V **Hours: 4**

Code : 17CS5CE2A **Credits: 3**

COURSE OUTCOMES:

- Get insight on software development.
- Summarize cost estimation and requirements of software development.
- Develop strategies to initiate, plan, execute, monitor and control the software design.
- Evaluate the proposal to a product and manage people in software environments.
- Apply project management tools and techniques for process development.

UNIT I

Introduction to Software Engineering: Some Definitions - Some Size Factors - Quality and Productivity Factors - Managerial Issues. **Planning a Software Project:** Defining the Problem - Developing a Solution Strategy - Planning the Development Process - Planning an Organizational Structure - Other Planning Activities. **(12 Hours)**

UNIT II

Software Cost Estimation: Software Cost Factors - Software Cost Estimation Techniques - Staffing - Level Estimation - Estimating Software Maintenance Costs. **Software Requirements Definition:** The Software Requirement Specification - Formal Specification Techniques. **(12 Hours)**

UNIT III

Software Design: Fundamental Design Concepts - Modules and Modularization Criteria - Design Notations - Design Techniques - Detailed Design Considerations - Real-Time and Distributed System Design- Test Plans - Milestones, Walkthroughs and Inspections - Design Guidelines. **(12 Hours)**

UNIT IV

Implementation Issues: Structured Coding Techniques - Coding Style - Standards and Guidelines - Documentation Guidelines. **Verification and Validation Techniques:** Quality Assurance - Walkthroughs and Inspections - Static Analysis - Symbolic Execution- Unit Testing and Debugging - System Testing - Formal Verification. **(12 Hours)**

UNIT V

Software Maintenance: Enhancing Maintainability during Development- Managerial Aspects of Software Maintenance- Configuration Management- Source - Code Metrics - Other Maintenance Tools and Techniques. **(12 Hours)**

COURSE BOOK:

1. "**Software Engineering Concepts**", Richard Fairley, TATA McGraw-Hill Education Private Limited, New Delhi, 2013.

   UNIT I : Chapters : 1, 2

   UNIT II : Chapters : 3, 4

   UNIT III : Chapter : 5

   UNIT IV : Chapters : 6, 8

   UNIT V : Chapter : 9

BOOKS FOR REFERENCE:

1. "**Software Engineering**", Ian Sommer Ville, Pearson Education, Nineth Edition, 2017.
2. **"Software Engineering a Practitioners Approach",** Roger S. Pressman, Mc-Graw Hill International Edition, Seventh Edition, 2017.

DISTRIBUTED SYSTEMS AND PARALLEL PROCESSING

Semester: V **Hours: 4**

Code : 17CS5CE2B **Credits: 3**

COURSE OUTCOMES:

- Understand the software components of distributed computing systems.
- Develop knowledge on communication and interconnection architecture of multiple computer systems.
- Recognize the difficulties of distributed of computing resources.
- Understand networks & protocols, mobile & wireless computing and their applications to real world scenario.
- Familiar with the design, implementation and security issues of distributed system.

UNIT I

Basic Distributed System Concepts: Introduction - Distributed Computing Models - Issues in Designing Distributed Systems - Client Server model. **Distributed System Management**: Introduction - Resource Management - Task Assignment Approach - Load Balancing Approach - Load Sharing Approach - Process Management in a Distributed Environment - Process Migration-Threads.

(12 Hours)

UNIT II

Distributed Shared Memory: Introduction - Basic Concepts of DSM - Hardware DSM - Design Issues in DSM Systems - Issues in Implementing DSM Systems. **Distributed File System:** Introduction to DFS - File Models - Distributed File System Design - Semantics of File Sharing - DFS Implementation - File Caching in DFS - Replication in DFS. **(12 Hours)**

UNIT III

Distributed Database Management System: Introduction - Distributed DBMS Architectures - Data Storage in a Distributed DBMS - Distributed Catalog Management - Distributed Query Processing - Distributed Transactions - Distributed Concurrency Control - Distributed Database Recovery - Mobile Database - **Emerging Trends in Distributed Computing:** Introduction to Emerging Trends - Grid Computing - SOA - Cloud Computing. **(12 Hours)**

UNIT IV

Parallel Computer Architecture: Parallel Architecture - Convergence of Parallel Architectures-Fundamental Design Issues - **Parallel Programs:** Parallel Application Case Studies - The Parallelization Process - Parallelization of an Example Program. **(12 Hours)**

UNIT V

Shared Memory Multiprocessors: Cache Coherence - Memory Consistency - Design Space for Snooping Protocols - Assessing Protocol Design Trade - offs - Synchronization **(12 Hours)**

COURSE BOOKS:

1. **"Distributed Computing",** Sunita Mahajan, Seema Shah, Oxford University Press, 2013

   Unit I : Chapters: 1 (1.1-1.2, 1.4 - 1.5), 7(7.1-7.8)

   Unit II : Chapters: 8 (8.1-8.5), 9(9.1-9.7)

   Unit III : Chapters: 13 (13.1-13.9), 14 (14.1-14.4)

2. **"Parallel Computer Architecture A Hardware/Software Approach",** David E. Culler, Jaswinder Pal Singh with Anoop Gupta, Morgan Kaufman Publishers Inc, 2011.

   Unit IV : Chapters : 1 (1.1-1.3), 2 (2.1-2.3)

   Unit V : Chapter : 5 (5.1-5.5)

BOOKS FOR REFERENCE:

1. **"Distributed Systems Concepts and Design",** George Coulouris, Jean Dollimore, Tim Kindberg, Fourth Edition, Dorling Kindersley (India) Pvt. Ltd, 2009.
2. **"Distributed Systems Principles and Paradigms",** Andrew S. Tanenbaum, Maarten Van Steen, Prentice Hall of India Pvt. Ltd, Second Edition, 2007.

PARALLEL PROCESSING

Semester: V **Hours: 4**

Code : 17CS5CE2C **Credits: 3**

COURSE OUTCOMES:

- Gain the fundamental knowledge of parallel processing.
- Familiar with taxonomies of parallel systems.
- Understand the theoretical limitations of parallel computing with intractability.
- Explain the beneficial and challenging aspects of parallelism.
- Analyze the programming in heterogeneous processors of distributed systems.

UNIT I

FUNDAMENTALS OF PARALLEL COMPUTING :Need for Parallel Computing - Parallel Computer Models - ILP, TLP and Data Parallelism- Parallel Programming Overview - Processes, Tasks and Threads - Parallel Programming Models - Shared Memory Programming - Message Passing Paradigm - Interaction and Communication - Interconnection Networks. **(12 Hours)**

UNIT II

CHALLENGES OF PARALLEL PROGRAMMING: Identifying Potential Parallelism - Techniques for Parallelizing Programs - Issues - Cache Coherence issues - Memory Consistency Models - Maintaining Memory Consistency - Synchronization Issues - Performance Considerations. **(12 Hours)**

UNIT III

SHARED MEMORY MODELS AND OPENMP PROGRAMMING :OpenMP Execution Model - Memory Model and Consistency - Open MP Directives - Run Time Library Routines - Handling Data and Functional Parallelism - Performance Considerations. **(12 Hours)**

UNIT IV

MPI PROGRAMMING :The MPI Programming Model - MPI Basics - Circuit Satisfiability - Global Operations- Asynchronous Communication - Collective Communication - Other MPI Features -Performance Issues - Combining OpenMP and MPI. **(12 Hours)**

UNIT V

PROGRAMMING HETEROGENEOUS PROCESSORS :GPU Architecture - Basics of CUDA - CUDA Threads - CUDA Memories - SynchronizationHandling - Performance Issues - Application Development. Introduction to OpenCL.

(12 Hours)

COURSE BOOKS:

1. **"Computer Architecture - A quantitativeapproach",** John L. Hennessey and David A. Patterson, Morgan Kaufmann / Elsevier Publishers, 5th. Edition, 2012.

   UNIT I: Chapter 1, 2

2. **"An Introduction to Parallel Programming",** Peter S. Pacheco, Morgan Kaufmann, 2011.

   UNIT II: Chapter 2, 3

3. **"Parallel programming in C with MPI and OpenMP",** Michael J Quinn, Tata McGraw Hill, 2003.

   UNIT III: Chapter 3, 4

   UNIT IV: Chapter 5

4. **"Programming Massively Parallel Processors",** David B. Kirk and Wen-mei W. Hwu, Morgan Kaufmann, 2010.

   UNIT V: Chapter 7

BOOKS FOR REFERENCE:

1. **"Introduction to ParallelComputing",** AnanthGrama, George Karypis, Vipin Kumar and Anshul Gupta, Second Edition, Pearson Education Limited, 2003.
2. **"Multi-core Programming",** ShameemAkhter and Jason Roberts, Intel Press, 2006.
3. **"Designing and Building Parallel Programs: Concepts and Tools for ParallelSoftware Engineering",** Ian Foster, Addison Wesley Longman Publishing Co., USA, 1995.
4. **"Parallel Computing Architecture: A hardware/Software approach",** David E. Culler, Jaswinder Pal Singh, Morgan Kaufmann / Elsevier Publishers, 1999.

SOFTWARE TESTING

Semester: V **Hours: 4**

Code : 17CS5CE2D **Credits: 3**

COURSE OUTCOMES:

- Discuss various types of Testing for software development.
- Ability to apply software testing and engineering methods.
- Compare the functions of System and Acceptance testing
- Contribute to efficient delivery of software solutions and implement improvements in the software development processes.
- Apply of software testing techniques in commercial environments

UNIT I

Introduction Principles of Testing - Software Development Life Cycle Models - Phases of Software Project - Quality, Quality Assurances and Quality Control- Testing, Verification and Validation - Process Model to represent Different Phases - Life Cycle Models - Spiral and Iterative Model - The V Model- Modified V Model - Comparison of Various Life Cycle Models. **(12 Hours)**

UNIT II

Types of Testing. White Box Testing - What is White Box Testing - Static Testing - Structural Testing - Challenges in White Box Testing - Black Box Testing - What is Black Box Testing - Why - When to do- How to do - Integration Testing - What is Integration Testing - Integration Testing as a type of Testing - Integration Testing as a phase of Testing - Scenario Testing - Defect Bash. **(12 Hours)**

UNIT III

System and Acceptance Testing. System Testing Overview - Why is it done? - Functional Versus Non- Functional Testing - Functional System Testing - Non - Functional Testing - Acceptance Testing - Summary of Testing Phases - Performance Testing - Introduction - Factors Governing Performance Testing - Methodology for Performance Testing - Tools for Performance - Process for Performance Testing - Challenges - Internationalization ($I_{18}n$) Testing - Introduction - Primer on Internationalization - Test Phases for Internationalization Testing - Enabling Testing - Locale Testing - Internationalization Validation - Fake Language Testing - Language Testing - Localization Testing - Tools used for Internationalization - Challenges and Issues. **(12 Hours)**

UNIT IV

Specialized Testing and People Issues in Testing, Testing of Object - Oriented Systems - Introduction - Primer on Object- Oriented Software - Differences in OO Testing - Usability and Accessibility Testing - Common People Issues - Perception and Misconceptions about Testing - Comparison Between Testing and Development Functions- Providing Career paths for Testing Professionals - The Role of the Ecosystem and a call for Action. **(12 Hours)**

UNIT V

Organization Structures for Testing Teams : Dimensions of Organization Structures - Structures in Single - Product Companies - Structures for Multi-Product Companies - Effects of Globalization and Geographically Distributed Teams on Product Testing - Testing Services Organization - Success Factors for Testing Organization - Testing Reporting - Best Practices. **(12 Hours)**

COURSE BOOK:

"Software Testing Principles and Practices", SrinivasanDesikan and GopalaswamyRamesh ,Pearson Education.

UNIT I : Chapter 1 - 2 **UNIT II :**Chapter 3 - 5

UNIT III : Chapter 6,7,9 **UNIT IV** :Chapter 11-13

UNIT V : Chapter 14 - 15

BOOKS FOR REFERENCE:

1. **"Software Testing Techniques",** Boris Beizer ,Dreamtech Publications.

"Software Testing: Effective Methods, Tools and Techniques", RenuRajani and Pradeep Oak, Tata-McGraw-Hill Publishing Company Limited.

VISUAL PROGRAMMING LAB

Semester: V **Hours: 5**

Code : 17CS5CP07 **Credits: 3**

COURSE OUTCOMES:

- Design and implement visual programming basics and its components.
- Write and apply looping structures to perform repetitive tasks.
- Demonstrate arrays for sorting and manipulation of data.
- Create Windows applications using forms, controls and events.
- Create applications using ADO. NET.

1. SIMPLE PROGRAMS USING CONTROLS
2. NUMBER CHECKING
    i) Prime Number
    ii) Perfect Number
    iii) Armstrong Number
3. NUMBER SERIES GENERATION
    i) Sum of Series,
    ii) Fibononacci Series
4. String Manipulation
5. Date and Time Function
6. Design a Scientific Calculator program using Control Array.
7. SORTING PROGRAMS
    i) Number Sorting
    ii) String Sorting
8. Simple program using Mouse Control
9. Design a Quiz program
10. Traffic control signal using Timer Control
11. Design a Text Editor Program.
12. Application using Menu Editor and MDI.
13. Design a Program for Electricity Bill Preparation.
14. Design a program for CIA Record Preparation.
15. Payroll processing using DAO Control.
16. Student Database Creation using OLEDB.
17. Microsoft Report Creation.
18. Crystal Report Creation.

DBMS LAB

Semester: V **Hours: 5**

Code : 17CS5CP08 **Credits: 3**

COURSE OUTCOMES:

- Understand, analyze and apply common SQL queries for DDL, DML and DCL operations.
- Working with Aggregate and Group functions
- Design different tables and apply embedded and nested queries.
- Analyze and apply queries to retrieve information from a data base.
- Construct real life applications and implement a database.

1. Working with DDL, DML and TCL Commands.
2. Retrieving rows with logical, comparison, conjunctive and arithmetic Operators
3. Retrieving rows and columns with relational and special operators
4. Retrieving rows with Character, Number and Date functions.
5. Working with Aggregate functions.
6. Working with group function
7. Join Operation & Sub queries
8. Working with Sequence and Index
9. Working with Views
10. Simple PL/SQL programs
11. Working with stored procedures
12. Working with functions
13. Working with Triggers
14. PL/SQL with exception handling
15. Working with implicit and explicit cursor.
16. Exception Handling
17. Working with packages

APTITUDE BUILDING - I

Semester: V **Hours: 2**

Code : 17AE5NE01 **Credits: 2**

COURSE OUTCOMES:

- Understand the basic concepts of numerical ability.
- Gain mastery over logical reasoning through concise thinking.
- Have command over English Language.
- Acquaint with general knowledge and current affairs.
- Develop sufficient confidence to face competitive exams and clear it.

UNIT I

Numerical Ability: Numbers - Highest common factor & Least common multiple of numbers - average - Problems on numbers - percentages - Problems on ages - Percentage - Profit and loss - ratio and proportion - Time & work.

UNIT II

Reasoning: Series completion - analogy - coding & decoding - puzzle test - direction sense test - alphabet test - alpha - numeric sequence puzzle - arithmetic reasoning - inserting missing character - logical sequence of words.

UNIT III

English Language: Spotting errors: Articles, Tenses, Nouns, Pronouns, Adjectives, adverbs, Prepositions - Selecting the most suitable word - Synonyms, Antonyms - Spell check - Double blanks in a sentence.

UNIT IV

General knowledge: Computer awareness: Classification, Elements of computing process, Programming languages, Computer memory, Software & Hardware, Operating systems - Banking awareness: Banking Regulation act, Reserve Bank of India, Commercial banks, e-banking, Currency system, Money Market, Banking and Finance, Indian Monetary Policy.

UNIT V

Current affairs: National & International Current Affairs: Economy, Sports, Science & Technology, Polity.

COURSE BOOK:

Course Material prepared by the Staff.

BOOKS FOR REFERENCE:

1. IBPS - VI, Institute of Banking Personnel Selection, Bank Po, Probationary officers/Management trainees Arihant Publications (India) Limited, 2015.
2. A.P. Bhardwaj, General English for Competitive Examinations, Dorling Kindersley (India) Pvt Ltd, New Delhi, 2013.
3. Dr. R.S. Aggarwal, Quantitative Aptitude, S.Chand & Company PVT.LTD, New Delhi, 2013.
4. Dr. R.S. Aggarwal, A Modern Approach to Verbal & Non - Verbal Reasoning, S. Chand & Company PVT.LTD, New Delhi, 2009.

CLOUD COMPUTING

Semester: V **Credits: 2**

Code : 17CS5SS01

COURSE OUTCOMES:

- Define Cloud Computing principles and paradigms of Cloud Computing.
- Describe the importance of virtualization along with their technologies.
- Summarize various applications and technologies.
- Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing and Amazon web Service.
- Impart the skills to develop Cloud applications in emerging trends.

UNIT I

Introduction: Cloud Computing at a Glance - Historical Developments - Building Cloud Computing Environments - Computing Platforms and Technologies. **Principles of Parallel and Distributed Computing:** Eras of Computing - Parallel vs Distributed Computing - Elements of Parallel Computing - Elements of Distributed Computing - Technologies for Distributed Computing.

UNIT II

Virtualization: Introduction - Characteristics of Virtualized Environments - Taxonomy of Virtualization Techniques - Virtualization and Cloud Computing - Pros and Cons of Virtualization - Technology Examples. **Cloud Computing Architecture:** Introduction - Cloud Reference Model - Types of Clouds - Economics of the Cloud -Open Challenges.

UNIT III

Aneka: Cloud Application Platform: Framework Overview - Anatomy of the Aneka Container - Building Aneka Clouds - Cloud Programming and Management. **Concurrent Computing: Thread Programming:** Introducing Parallelism for Single Machine Computation - Programming Applications with Threads - Multithreading with Aneka - Programming Applications with Aneka Threads.

UNIT IV

High Throughput Computing: Task Programming: Task Computing - Task Based Application Models - Aneka Task - Based Programming. **Data Intensive Computing: Map - Reduce Programming:** Data - Intensive Computing - Technologies for Data - Intensive Computing - Aneka MapReduce Programming . **Cloud Platforms in Industry:** Amazon Web Services - Google AppEngine - Microsoft Azure.

UNIT V

Cloud Applications: Scientific Applications - Business and Consumer Applications. **Advanced Topics in Cloud Computing:** Energy Efficiency in Clouds - Market Based Management of Clouds - Federated Clouds/InterCloud - Third Party Cloud Services.

COURSE BOOK:

"Mastering Cloud Computing"- Rajkumar Buyya, Christian Vecchiola, S. Thamarai Selvi, McGraw Hill Education, 2016.

Unit I : Chapters : 1 (1.1-1.4), 2 (2.1-2.5)

Unit II : Chapters : 3 (3.1-3.6), 4 (4.1-4.5)

Unit III : Chapters : 5 (5.1-5.4), 6 (6.1-6.4)

Unit IV : Chapters : 7 (7.1-7.3), 8 (8.1-8.3), 9 (9.1-9.3)

Unit V : Chapters : 10 (10.1, 10.2), 11 (11.1-11.4)

BOOKS FOR REFERENCE:

1. **"Cloud Computing - Principles and Paradigms"**- Rajkumar Buyya, James Broberg, Andrzej Goscinski, Wiley- India Pvt. Ltd. 2013.
2. "**Cloud Computing: Web based Applications That Change the Way You Work and Collaborate Online",** Michael Miller, Pearson Education, 2014.

COMPUTER NETWORKS

Semester: VI **Hours: 5**

Code : 17CS6MC11 **Credits: 5**

COURSE OUTCOMES:

- Describe the functions of each layer in OSI and TCP/IP model.
- Explain the types of transmission media with real time applications in physical layer.
- Illustrate the functions of data link layer and explain the protocols.
- Classify routing protocols and analyze the assignment of IP addresses for any network.
- Elucidate the functions of Application layer and discuss cryptography and network security.

UNIT I

Introduction: Uses of Computer Networks - Network Hardware - Network Software - Reference Models - Example Networks - Network Standardization.

(15 Hours)

UNIT II

The Physical Layer: Guided Transmission Media - Wireless Transmission- Communication Satellites - Digital Modulation and Multiplexing - The Public Switched Telephone Network - The Mobile telephone system - Cable Television.

(15 Hours)

UNIT III

The Data Link Layer: Data Link Layer Design Issues - Error Detection and Correction - Elementary Data Link Protocols - Sliding window protocols - Example Data Link Protocols - **The Medium Access Control Sub layer:** The Channel Allocation Problem - Multiple Access protocols - Ethernet - Wireless LANS - Broadband wireless - Bluetooth - RFID - Data Link Layer Switching. **(15 Hours)**

UNIT IV

Network Layer: Network layer Design Issues - Routing Algorithms - Congestion Control Algorithms - Quality of service - Internetworking. **The Transport Layer:** The Transport Service - Elements of Transport Protocols - Congestion Control - The Internet Transport Protocols: UDP - The Internet Transport Protocols: TCP.

(15 Hours)

UNIT V

The Application Layer: DNS (The Domain Name System) - Electronic Mail - The World Wide Web- Streaming Audio and Video - Content Delivery. **Network Security:** Cryptography - Symmetric key Algorithms - Public key Algorithms - Digital Signatures - Management of public keys - Communication Security.

(15 Hours)

COURSE BOOKS:

1. "**Computer Networks**" - Andrew S. Tanenbaum, David J. Wetherall, Pearson Education Inc., Dorling Kindersley (India) Pvt. Limited, Fifth Edition, 2014.

   UNIT I : Chapter : 1

   UNIT II : Chapter : 2

   UNIT III : Chapters : 3, 4

   UNIT IV : Chapters : 5,6

   UNIT V : Chapter : 7

2. **"Computer Networks"** - Andrew S. Tanenbaum, Pearson Prentice Hall, Dorling Kindersley (India) Pvt Limited, Fourth Edition, 2009.

   UNIT V : Chapters: 8 (8.1-8.6)

BOOKS FOR REFERENCE:

1. **"Computer Networks a Systems Approach",** Larry L. Peterson and Bruce S. Davie, Fifth Edition, Reprint - 2014.
2. "**Computer Networks",** Bhushan Trivedi, OXFORD University press, 2011.

DATA MINING

Semester: VI **Hours: 5**

Code : 17CS6MC12 **Credits: 5**

COURSE OUTCOMES:

- Understand the basic principles, concepts and applications of data warehousing and data mining
- Familiar with association rule mining techniques, correlation analysis and constraint based association mining.
- Apply clustering, estimation, prediction and classification algorithms
- Identify the usages of Decision tree Algorithm in classification analysis
- Compare various Mining Techniques such as Web mining, Sequence mining, Spatial mining etc.,

UNIT I

Introduction: Introduction - Data mining as a subject. **Data warehousing:** Introduction - Data warehouse Architecture - Dimensional Modeling - Categorization of Hierarchies - Aggregate Function - OLAP Operations - Lattice of Cuboids - OLAP Server - ROLAP - MOLAP. **(15 Hours)**

UNIT II

Data Mining : Introduction - Data Mining - Data Mining definitions - KDD vs. Data mining - DBMS vs. DM - Other related Areas - DM Techniques - Other mining problems - Issues and challenges in DM - DM Application Areas - DM Applications - case studies. **Association Rules:** Introduction -Association rule - Methods to discover association rules - Apriori Algorithm - Partition Algorithm- Pincer - Search Algorithm - Dynamic Itemset Counting Algorithm - FP-tree Growth Algorithm. **(15 Hours)**

UNIT III

Clustering Techniques: Introduction - Clustering Paradigms - Partitioning Algorithms - k - Medoid algorithm - CLARA - CLARANS - Hierarchical Clustering - DBSCAN - BIRCH - CURE - Categorical Clustering Algorithms-STIRR - ROCK - CACTUS. **(15 Hours)**

UNIT IV

Decision Trees: Introduction - Decision tree - Tree Construction Principle - Best Split - Splitting Indices - Splitting Criteria - Decision Tree Construction Algorithms - CART- ID3 - C4.5 - CHAID - Pruning Technique. **(15 Hours)**

UNIT V

Web Mining: Introduction - Web Mining - Web Content Mining - Web Structure Mining - Web Usage Mining - Text Mining. **Temporal and Spatial Data Mining**: Introduction - Temporal Data Mining - Sequence Mining - Time Series Analysis - Spatial Mining. **(15 Hours)**

COURSE BOOK:

"Data Mining Techniques", by Arun K. Pujari, Universities press (India) Private Ltd. Third Edition, 2013.

Unit I : Chapters : 1 (1.1, 1.2), 2(2.1- 2.5, 2.8- 2.12)

Unit II : Chapters : 3 (3.1- 3.11), 4 (4.1-4.8)

Unit III : Chapter : 5 (5.1-5.14)

Unit IV : Chapters : 6 (6.1 - 6.11, 6.18)

Unit V : Chapters : 10 (10.1-10.6), 11(11.1, 11.2, 11.4, 11.11, 11.12)

BOOKS FOR REFERENCE:

1. **"Data mining Concepts and Techniques"** by Jiawei Han and Micheline Kamber, Jian Pei, Third Edition, Morgan Kaufman Publishers, 2013.
2. **"Introduction to Data Mining with Case Studies"** by G. K. Gupta, PHI Learning Private Limited, New Delhi, 2011.

MOBILE COMPUTING

Semester: VI **Hours: 4**

Code : 17CS6MC13 **Credits: 4**

COURSE OUTCOMES:

- Grasp the concepts and features of mobile computing technologies and applications.
- Describe the functionalities and components of telecommunication systems.
- Discuss the applications of mobile communication.
- Compare and contrast wireless LAN and mobile communication networks and their technical features.
- Analyze and recognize the working principles of network and transport layers in mobile communication.

UNIT I

Introduction: Applications - A Simplified Reference Mode. **Wireless Transmission:** Cellular Systems. **Medium Access Control:** Motivation for a Specialized MAC - SDMA - FDMA - TDMA- CDMA. **(12 Hours)**

UNIT II

Telecommunications Systems: GSM - DECT - TETRA - UMTS and IMT 2000.

(12 Hours)

UNIT III

Satellite Systems: History - Applications - Basics. **Broadcast Systems:** Overview - Cyclical Repetition Of Data - Digital Audio Broadcasting - Digital Video Broadcasting - Convergence of Broadcasting and Mobile Communication.

(12 Hours)

UNIT IV

Wireless LAN: Infra Red Vs Radio Transmission - Infrastructure and Ad-Hoc Network - IEEE 802.11 - HIPERLAN - Bluetooth. **(12 Hours)**

UNIT V

Mobile Network Layer: Mobile IP - Dynamic Host Configuration Protocol - Mobile Ad- Hoc Networks. **Mobile Transport Layer:** Traditional TCP - Classical TCP Improvements - TCP over 2.5/3G Wireless Networks - Performance Enhancing Proxies. **(12 Hours)**

COURSE BOOK:

"Mobile Communications", Jochen Schiller, Pearson Education.**,** Second Edition. 2008.

UNIT I : Chapters: 1 (1.1, 1.5), 2(2.8), 3(3.1-3.5).

UNIT II : Chapter : 4 (4.1-4.4)

UNIT III : Chapters : 5 (5.1-5.6),6(6.1-6.5)

UNIT IV : Chapter : 7 (7.1-7.5)

UNIT V : Chapters : 8 (8.1-8.3),9(9.1-9.4)

BOOKS FOR REFERENCE:

1. "**Mobile Computing Technology, Applications and Service Creations"** Asoke K Thalukder, Hasan Ahmed, Roopa R Yavagal, Second Edition, Tata McGraw Hill Education (India) Private Limited, 2013.

2. "**Mobile Computing**", Rishabh Anand, Khanna Book Publishing Co. (P) Ltd, New Delhi, 2012.

INTERNET OF THINGS

Semester: VI **Hours: 4**

Code : 17CS6CE3A **Credits: 3**

COURSE OUTCOMES:

- Understand the fundamentals of Internet of Things ecosystem.
- Design and develop IoT platform design Methodology.
- Compare the objects and devices used in IoT environment.
- Apply IoT in different application scenario and analyze the protocols used in IoT.
- Apply things in creation of smart world scenario.

UNIT I

INTRODUCTION TO INTERNET OF THINGS: Introduction - Physical design of IoT - Logical Design of IoT - IoT Enabling Technologies - IoT Levels and Development Templates - Domain Specific IoTs - IoT and M2M. **(12 Hours)**

UNIT II

IOT PLATFORMS DESIGN METHODOLOGY: Introduction - IoT Design Methodology - Iot Systems - Logical Design Using Python - Introduction - Installing Python - Python Data Types and Data Structures - Control Flow .

(12 Hours)

UNIT III

IOT PHYSICAL DEVICES & ENDPOINTS - What is an IoT Device - Exemplary Device: Raspberry PI - About the Board- Linux on Raspberry PI - Raspberry PI Interfaces - Programming Raspberry PI with Python - Others IoT Devices.

(12 Hours)

UNIT IV

IoT Physical Servers & Cloud Offerings - Introduction To Cloud Storage Models & Communication APIs - WAMP - Autobahn for IoT - Phython Web Application Framework - Django - Amazon web services for IoT. **(12 Hours)**

UNIT V

CASE STUDIES Illustrating IoT Design: Introduction - Home Automation - Cities - Environment - Agriculture. **(12 Hours)**

COURSE BOOK:

1. **"Internet of Things: A Hands-On Approach",** Arshdeep Bahga, Vijay Madisetti, Universities Press, 2015.

   Unit I : Chapter: 1(1.1-1.5), 2(2.1-2.10), 3(3.1-3.4)

   Unit II : Chapter: 5, (5.1-5.2), 6(6.1-6.4)

   Unit III : Chapter: 7 (7.1-7.7)

   Unit IV : Chapter: 8 (8.1-8.4, 8.6)

   Unit V : Chapter: 9 (9.1-9.5)

BOOKS FOR REFERENCE:

1. **"Designing the Internet of Things"**, Adrian McEwen & Hakim Cassimally, Wiley India Pvt Limited, 2015.
2. **"Learning Internet of Things"**, Peter Waher, Packt Publishing Ltd., 2015.

SECURITY IN COMPUTING

Semester: VI **Hours: 4**

Code : 17CS6CE3B **Credits: 3**

COURSE OUTCOMES:

- Gain knowledge on basic terminology and concepts related to Information Security.
- Discuss Legal, Ethical and Professional Issues in Information Security.
- Ensure the security of Information with the security tools.
- Deploy encryption techniques to secure information using Cryptography
- Learn the role of management and implement security policies standards and practices.

UNIT I

Cryptography: Terminology and Background - Substitution Ciphers - Transpositions - Making "Good" Encryption Algorithms - The Data Encryption Standard - The AES Encryption Algorithm - Public Key Encryption - Possible attacks on RSA - The uses of Encryption. **(12 Hours)**

UNIT II

Program security: Secure Programs - Nonmalicious program errors - Viruses and other malicious code - Targeted Malicious Code - Control against Program Threats. **(12 Hours)**

UNIT III

Database and Data Mining Security : Introduction to Databases - Security Requirements - Reliability and Integrity - Sensitive Data - Inference - Multilevel Databases - Proposals for Multilevel Security - Data Mining. **(12 Hours)**

UNIT IV

Security in Networks: Network Concepts - Threats in networks - Network security Controls - Firewalls - Intrusion Detection Systems - Secure e-mail.

(12 Hours)

UNIT V

Privacy in Computing: Privacy Concepts - Privacy Principles and Policies - Authentication and Privacy - Data Mining - Privacy on the Web - E-Mail Security - Impacts on Emerging Technologies. **(12 Hours)**

COURSE BOOK:

1. **"Security in Computing"** - Charles P. Pfleeger, Shari Lawrence Pfleeger, Pearson Education, Fourth Edition, 2015.

   Unit I : Chapter: 2 (2.1-2.9)

   Unit II : Chapter: 3 (3.1-3.5)

   Unit III : Chapter: 6 (6.1-6.8)

   Unit IV : Chapter: 7 (7.1-7.6)

   Unit V : Chapter: 10 (10.1-10.7)

BOOKS FOR REFERENCE:

1. **"Introduction to Computer Security"** - Matt Bishop, Sathyanarayana S. Venkatramanayya, Pearson Education, 2013.
2. **"Cryptography and Network Security - Principles and Practice",** William Stallings, Pearson Education, Fifth Edition, 2011.

BIG DATA TECHNIQUES

Semester: VI **Hours: 4**

Code : 17CS6CE3C **Credits: 3**

COURSE OUTCOMES:

- Learn Big Data fundamentals, characteristics and challenges.
- Collect, manage, store, query and analyze various forms of big data.
- Understand architectures and platforms for big data analysis such as Hadoop and MapReduce.
- Analyze the impact of big data for business decisions and strategy.
- Model and implement efficient big data solutions in recent application areas.

UNIT I

Understanding Big Data: Concepts and Terminology - Big Data Characteristics - Different Types of Data. Business Motivations and Drivers for Big Data Adoption: Marketplace Dynamics - Business Architecture - Business Process Management - Information and Communications Technology - Internet of Everything (IoE).

(12 Hours)

UNIT II

Big Data Adoption and Planning Considerations: Organization Prerequisites - Data Procurement - Privacy - Security - Provenance - Limited Real time support - Distinct Performance Challenges - Distinct Governance Requirements - Distinct Methodology -Clouds - Big Data Analytics Lifecycle. **(12 Hours)**

UNIT III

Enterprise Technologies and Big Data Business Intelligence: Online Transaction Processing (OLTP) - Online Analytical Processing (OLAP) - Extract Transform Load (ETL) - Data Warehouses-Data Marts - Traditional BI - Big Data BI. Big Data Storage Concepts: Clusters - File Systems and Distributed File Systems - NoSQL - Sharding - Replication - Sharding and Replication - CAP Theorem - ACID - BASE

(12 Hours)

UNIT IV

Big Data Processing Concepts: Parallel Data Processing - Distributed Data Processing - Hadoop - Processing Workloads -Cluster - Processing in Batch Mode - Processing in Real time Mode. **(12 Hours)**

UNIT V

Big Data Storage Technology: On-Disk Storage Devices - In-Memory Storage Devices. Big Data Analysis Techniques: Quantitative Analysis - Qualitative Analysis- Data Mining - Statistical Analysis - Machine Learning - Semantic Analysis - Visual Analysis **(12 Hours)**

COURSE BOOK:

"Big Data Fundamentals Concepts, Drivers & Techniques", Thomas Erl, Wajid Khattak, and Paul Buhler, December 2015.

UNIT I	:	Chapters	: 1, 2
UNIT II	:	Chapters	: 3
UNIT III	:	Chapters	: 4, 5
UNIT IV	:	Chapters	: 6
UNIT V	:	Chapters	: 7, 8

BOOKS FOR REFERENCE:

1. **"BIG DATA Black Book"**, DTEditorial Services, Dreamtech press, 2017.
2. **"Big Data ImperativesEnterprise Big Data Warehouse, BI Implementations and Analytics",** Mohanty, Soumendra, Jagadeesh, Madhu, Srivatsa, Harsha, First Edition 2013.

ARTIFICIAL INTELLIGENCE

Semester: VI **Hours: 4**

Code : 17CS6CE3D **Credits: 3**

COURSE OUTCOMES:

- Gain knowledge in intelligent agent and different types of agents to solve problems.
- Design intelligent system for game playing.
- Represent various real life domains using logic based techniques
- Apply knowledge representation, reasoning and machine learning techniques to real world issues.
- Enhance the skills to build simple knowledge based system.

UNIT I

Introduction - The Foundations of Artificial Intelligence - The History of AI - The state of art - **Intelligent Agents** - Agents and environments - Good behavior: The concept of rationality - The Nature of Environments - The Structure of agents.

(12 Hours)

UNIT II

PROBLEM SOLVING: Solving problems by searching: Problem - solving Agents - Example Problems - Searching for Solutions - Uninformed search strategies - Avoiding repeated states - Searching with partial information- **Adversarial search:** Games - Optimal Decision in Games - Alpha - Beta Pruning - Imperfect, Real-Time Decisions - Games that include an Element of Chance - State of the Art Game Programs. **(12 Hours)**

UNIT III

Planning: The Planning Problem - Planning with state-Space search - Partial order planning - Planning graphs - planning withy propositional logic - analysis of planning approaches - **Planning and acting in the real world**- Time, Scheduling and Resources - Hierarchical task network planning - Planning and acting in Nondeterministic domains - Conditional planning . **(12 Hours)**

UNIT IV

LEARNING: Learning from observations: Forms of learning - Inductive Learning - Learning Decision Trees - Ensemble Learning - Why Learning works : Computational Learning Theory - **knowledge in learning**: A logic formulation of learning - Knowledge in Learning - Explanation - based Learning - Learning using Relevance Information - Inductive Logic Programming. **(12 Hours)**

UNIT V

Perception: Introduction - Image Formation - Early Image Processing Operations - Extracting three dimensional information - object recognition - using vision for manipulation and navigation - **Robotics**: Introduction - Robot Hardware - Robotic Perception - Planning to move - Planning uncertain movements - Moving - Robotics software architecture - Application Domains. **(12 Hours)**

COURSE BOOK:

S.Russell and P.Norvig, ''Artificial Intelligence: A Modern Approach'', Prentice Hall, Second Edition, 2009.

UNIT I : Chapter: 1(1.2-1.4), 2(2.1-2.4).

UNIT II : Chapter: 3(3.1-3.6), 6(6.1-6.6)

UNIT III : Chapter: 11(11.1 - 11.6), 12(12.1-12.4)

UNIT IV : Chapter: 18 (18.1-18.5), 19 (19.1-19.4)

UNIT V : Chapter: 24(24.1-24.6), 25(25.1-25.8)

BOOKS FOR REFERENCE:

1. M. Tim Jones, ''Artificial Intelligence: A Systems Approach (Computer Science)'', Jones ad Bartlett Publishers, Inc.; First Edition, 2008
2. Gerhard Weiss, ''Multi Agent Systems'', Second Edition, MIT Press, 2013.
3. David L. Poole and Alan K. Mackworth, ''Artificial Intelligence: Foundations of Computational Agents'', Cambridge University Press, 2010.
4. I. Bratko, ''Prolog: Programming for Artificial Intelligence'', Fourth edition, Addison - Weesley Educational Publishers Inc., 2011.

PROJECT

Semester: VI **Hours: 10**

Code : 17CS6PR01 **Credits: 6**

COURSE OUTCOMES:

- Acquire practical knowledge within the chosen area of technology for project development.
- Apply knowledge of computing and information technologies to produce effective designs and solutions for specific computer-based problems.
- Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach.
- Participate as an active and effective member of a project team to achieve specific computer-based outcomes.
- Describe the impact upon society of computers, and the technical and human aspects of this impact.
- Effectively communicate during project development and present results for the area of concentration.

APTITUDE BUILDING - II

Semester: VI **Hours: 2**

Code : 17AE6NE02 **Credits: 2**

COURSE OUTCOMES:

- Understand the concepts of numerical ability other than basic.
- Gain mastery over logical reasoning through concise thinking to advanced level.
- Have good command over English Language.
- Acquaint with general knowledge and current affairs with complete framework.
- Develop sufficient confidence to face advanced level competitive exams and clear it.

UNIT I

Numerical Ability: Time and distance - problems on trains - simple interest - compound interest - area - probability - true discount - bankers' discount - data interpretation - tabulation - bar charts - pie charts.

UNIT II

Reasoning: Logic - statements & arguments, statement & assumptions, statement & course of action - statement & conclusions - deriving conclusions from passage.

UNIT III

English Language: Choosing the appropriate filler - Phrase substitution - Ordering of jumbled sentences - Cloze test / Passages - Comprehension passages.

UNIT IV

General knowledge: Educational institutions - National days & awards - Indian freedom struggle - Books & Authors - Who's Who.

UNIT V

Current affairs: National & International affairs: Economy, Sports, Science & Technology, Polity.

COURSE BOOK:

- Course Material prepared by the Staff.

BOOKS FOR REFERENCE:

1. IBPS - VI, Institute of Banking Personnel Selection, Bank Po, Probationary officers / Management trainees Arihant Publications (India) Limited, 2015.
2. A.P. Bhardwaj, General English for Competitive Examinations, Dorling Kindersley (India) Pvt. Ltd, New Delhi, 2013.
3. Dr. R.S. Aggarwal, Quantitative Aptitude, S. Chand & Company PVT. LTD, New Delhi, 2013.
4. Dr. R.S. Aggarwal, A Modern Approach to Verbal & Non - Verbal Reasoning, S. Chand & Company PVT. LTD, New Delhi, 2009.

PART I - HINDI - COURSE PATTERN (2017- 2020)

Part	Sem.	Code	Title of the Paper	Hours	Credits
I	I	17GH1GS01	Paper - I - Prose, Short Story and Grammar- I	5	3
	II	17GH2GS02	Paper - II - Novel, One act Play, and Grammar - II	5	3
	III	17GH3GS03	Paper - III Poetry and History of Hindi Literature, Alankar	5	3
	IV	17GH4GS04	Paper IV - General Essay, Technical Hindi, Translation, and Letter Writing	5	3
		Total		**20**	**12**

TESTING AND EVALUATION

Course	Continuous Internal Assessment	Semester Examination
Hindi	40%	60%

Continuous Internal Assessment

Continuous Assessment will be carried out by the Course Teachers. The components of CIA are as follows:

Components	Marks
Test -I	30
Test -II	30
Seminar/Quiz	10
Assignment	05
Attendance	05
Total	***80**

* The total internal marks obtained for 80 will be converted into marks obtained for 40.

HINDI - EXTERNAL QUESTION PATTERN

Time: 3 Hours **Marls: 60**

Section A: (One Word / Sentence) 10 x 1 = 10 Marks

Section B: (Paragraph / Annotation) 4 x 5 = 20 Marks

Section C: (Essay) 3x 10 = 30 Marks

PAPER I - PROSE, SHORT STORY AND GRAMMAR - I

Semester: I **Hours: 5**

Code : 17GH1GS01 **Credits: 3**

COURSE OUTCOMES:

- Develop the reading and writing skill in Hindi.
- Learn the concept of "Bhakthi" through Hindi Poems.
- Inculcate the Value and Morals through short stories in Hindi
- Improve the grammatical knowledge and enable the students to communicate effectively.
- Appreciate the literary contribution of various writers through short stories and poems.

1. Prose : Naveen Hindi Patamala Part-3

Published by Dakshina Bharathi Hindi Prachar Sabha,

Thyagaraya Nagar, Chennai - 600 017.

The following Lessons have been prescribed

a) Shiraj Ki Gurubhakthi

b) Shri Krishn

c) Gupth Rupya

d) Karmaveer Kamaraj

2. Short Story : Kahani Manjari

Edited by : Dakshin Bharath Hindi Prachar Sabha,

Thyagaraya Nagar, Chennai - 600 017.

The following short stories have been priscribed

a) Badegar kee beti	-	Premchand
b) Thayee	-	Vishwamranava Shrama Kaushik
c) Paanch minute	-	Mohanlalji Mahato yogi
d) Usne Kaha tha	-	Chandra dharshama Guleri

3. Grammar 1 : Vyakaran Pradeep Published by Ramdev, Hindi Bhaan,

63, Tagore Nagarm Allahabad -2

The following topics have been prescribed

a) Noun b) Gender and Number

c) Pronoun d) Adjectives

PAPER II - NOVEL, ONE ACT PLAY AND GRAMMAR - II

Semester: II **Hours: 5**

Code : 17GH2GS02 **Credits: 3**

COURSE OUTCOMES:

- Analyse the impact of social references among women through the novel of 'Nirmala'.
- Demonstrate the creative skill through one Act play.
- Inculcate the values of patriotism among students through the one Act play of Doorshra Din.
- Formulate the approach of Hindi linguistic and grammar
- Analyse on literary critism in Hindi literature.

1. **Novel** : Nirmala (Abridged version)
   by Premchand, Hamsa Prakashan Allahabad
2. **One Act Play** : Aadarsh Ekanki
   Published by Dakshina Bharath Hindi Prachar Sabha,
   Thyagaraya Nagar, Chennai - 600 017.
   The following Ekankies have been prescribed
   a) Doosra din - Kanchanlatha sabbarval
   b) Rajpoothri Ka badla - Divjendralal Rai
3. **Grammar** : Ramdev, Published by Hindi Bhavan,
   63 Tagore Nagar, Allahabad - 2
   The following topics have been prescribed
   a) Verb
   b) Tense and Voice
   c) Adverb
   d) Prepositions
   e) Conjunctions
   f) Interjunctions

PAPER III - POETRY AND HISTORY OF HINDI LITERATURE, ALANKAR

Semester: III **Hours: 5**

Code : 17GH3GS03 **Credits: 3**

COURSE OUTCOMES:

- Understand the spiritual and social values through Dona of Kabir, Tulasi, Rahim and Bihari.
- Analyse the literary approach of various Hindi Poems.
- Analyse the history of Hindi Literature.
- Develop the knowledge regarding Alankkar in Hindi Literature.
- Apply Alankkar to enhance the beauty of literature.

1. POETRY:

Kavya Saurab Published by Dakshina Bharatha Hindi Prachar Sabha, T. Nagar, Chennai - 600 017.

The following poems have been prescribed

1. Sachche Devtha - Ayodhya Singh Upadhyay Harioudh
2. Murjhaphool
3. Vivshtha
4. Badal - Sumitranandan Panth
5. Vasanth Aayaa
6. Deep Koi jal raha hai
7. Kabir Ke Dohe - 5 numbers
8. Tulasi Ke Dohe - 5 numbers
9. Raheem Ke Dohe - 5 numbers
10. Bihari Ke Dohe - 5 numbers

2. HISTORY OF HINDI LITERATURE:

Hindi Sahitya Ka Ithas by Rajanath Sharma Vinod Pushhak Mandir, Agra - 2

The following topics have been prescribed Salient features of Aadikl Bakthikal (Gyan marg, Premmag, Rambakthi, Krishnabakthi and Reethika.

Short Notes from Adunikkal**:** Chayavad, Pragathivad, Mythili Sharan, Gupta, Dinkar Premchand Pant Prasad, Ramachandra Shukla

3. ALANKAR:

Ras chand Alankar Chandrika Karnataka Mahila Hindi Seva Samithi, Chamarajpet, Bangalore - 560 008. The following Alankars have been prescribed Anupras, Yamak, Vakrokthi, Upama, Virodabhas.

PAPER - IV - GENERAL ESSAY, TECHNICAL HINDI, TRANSLATION AND LETTER WRITING

Semester: IV **Hours: 5**

Code : 17GH4GS04 **Credits: 3**

COURSE OUTCOMES:

- Write argumentative essay using appropriate style, structure and voice.
- Harness the critical thinking abilities by reading essay.
- Improve the proficiency in Hindi and English translation.
- Imbibe the knowledge of technical terms in Hindi and its application in daily life.
- Learn the forms and convention of different types of letter.

1. General Essay:

Nibandh Praveshika, Dakshin Bharath Hindi Prachar Sabha T.Nagar, Chennai - 600 017

The following Sahityotar (General) essay have been prescribed

a. Anushashan
b. Parishram Ka Mahatva
c. Paropkar
d. Bharat Ki Kalatmak Ekta
e. Nari Ka Karthavye Aur Adhikaar

2. Translation: Anuvad Abyas - III (1-5 Lessons) English to Hindi, Hindi to English Published by Dakshina Bharath Hindi Prachar Sabha T.Nagar, Chennai - 600 017.

3. Technical Hindi: Karyalaya Sahayika, Kendriya Sachivalaya Hindi Parishad NewDelhi, Hindi Vathayan Dr. K. Chandra Mohan, Viswa Vidyalaya Prakashan Varanashi

Banking Terms	:	50 only
Nemikaryalaya Tippani	:	50 only
Name of the Ministries	:	33 only

4. Letter Writing: Pramanik Alekan Aur Tippan Prof Viraj M.A. Kashmirgate, Delhi - 110 006

PaariVarik Patra, Avedan Patra, Sampathak ke naam Patra, Padhadhikariyon ke naam Patra.

NATIONAL CADET CORPS

NON MAJOR ELECTIVE

Sem.	Part	Code	Title of Paper	Hours	Credits
V	IV	17NC5NE01	Organization and health programme in NCC	2	2
VI	IV	17NC6NE02	National integration and personality development	2	2

INTERNAL COMPONENTS

Internal - I	:	30 marks
Internal - II	:	30 marks
Component - I	:	10 marks
Component - II	:	10 marks
Component - III	:	10 marks
Component - IV	:	10 marks
Total	**:**	**100 marks**

ORGANIZATION AND HEALTH PROGRAMME IN NCC

Semester: V **Hours: 2**

Code : 17NC5NE01 **Credits: 2**

UNIT I: INDIAN MILITARY AND NCC ORGANIZATION

History of Indian Military - Paramilitary forces - BSF- CRPF and CISF - NCC Organization and History - Aims and Objectives of NCC - Motto of NCC - DG's Four Cardinal Principles of NCC - NCC Song- Ranks in Army, Air force and Navy - Certificate Examination in NCC- Honours and Awards. **(6 Hours)**

UNIT II: MAP READING

Map and its features - kinds of north - Service protractor and Compass-bearing - Conversion of bearings - Conventional signs - Setting of map - Finding own position - Map to ground - Ground to map - Night March chart. **(6 Hours)**

UNIT III: HYGIENE AND SANITATION

Personal Hygiene - Sanitation - Methods of purification of drinking water -Latrine types - Urinal Types. **(6 Hours)**

UNIT IV: TYPES OF DISEASE AND POLLUTION

Define Health - Types of Health - Communicable and Non communicable Disease - Pollution and its type. **(6 Hours)**

UNIT V: FIRST AID

Aims of First Aid - Principle of First Aid - Motto of First Aid - List of items in First aid Box - Types of Bandages - Types of Fracture - Dislocation - Types of Wounds - Burns and Scalds - Sprain - Strain - Asphyxia - Drowning - Poison - Shock - Snake bite - Sun and Heat Stroke - Insect bite - Dog bite - Hanging - Artificial Respiration - Haemorrhage. **(6 Hours)**

BOOK FOR REFERENCE:

Mishra R.C., **A Handbook of NCC,** Kanti Prakashan, Etawah, 2000.

NATIONAL INTEGRATION AND PERSONALITY DEVELOPMENT

Semester: VI **Hours: 2**

Code : 17NC6NE02 **Credits: 2**

UNIT I: NATIONAL INTEGRATION

Motto of National Integration - Importance of National Integration Culture and heritage of Tamil Nadu. **(6 Hours)**

UNIT II: CIVIL AFFAIRS

Aim of aid to civil authority - Role of NCC Cadets during natural calamities - Types of disaster - Essential services during natural calamities **(6 Hours)**

UNIT III: CIVIL DEFENCE AND SELF DEFENCE

Civil Defence - Organization - Aims and services - Aid to Civil authorities in emergency - Self Defence -Aims of Self Defence - Women and Self Defence **(6 Hours)**

UNI IV: LEADERSHIP AND PERSONALITY DEVELOPMENT

Leadership - Types and traits - Man Management in NCC - Duties of a Good Citizen - Role of Youth in Nation Building - Morale - Factors which affect morale - Factors which develop high morale Personality Development - Factor influencing Personality-Time Management . **(6 Hours)**

UNIT V: SOFT SKILLS

Soft skills - interview skill - influencing skill - social skill - communication skill - self motivation - self esteem - body language. **(6 Hours)**

BOOK FOR REFERENCE:

Mishra R.C., **A Handbook of NCC,** Kanti Prakashan, Etawah, 2000.

INTERNAL QUESTION PATTERN

Time: 2 hours **Marks: 30**

PART - A

Answer Any 4 out of five 4 x 2 = 8

PART- B

Two either or questions (one from each) 2 x 4 = 8

PART - C

Two either or questions (one from each 2 x 7 = 14

PHYSICAL EDUCATION

COURSE PATTERN (2017 - 2020)

(PART V)

Sem.	Code	Title of the Paper	Hours	Credits
I & II	17NP4GS01	Yoga and Rhythmic Activities	120	-
III & IV		Fundamentals of Physical Education	120	1
		Total	**240**	**1**

YOGA AND RHYTHMIC ACTIVITIES

Semester: I & II **Hours: 120**

Code : 17NP4GS01

COURSE OUTCOMES:

- Recall the principle of Asnas
- Classify Pranayama for different needs
- Appraise the application and effects of Suryanamaskar for human wellness
- Execute the techniques in Free Hand Exercise
- Construct Pyramids based on the underlying principles

UNIT I: ASNAS

Sitting Postures - Standing Posture - Prone Posture - Supine Postures.

(24 hours)

UNIT II: PRANAYAMA

Pranayama - Suga Pranayama - Chandra bethana - Nadi Sudhi - Ujjayee - Seethali - Seethakari - Brahmari. **(24 hours)**

UNIT III: SURYANAMASKAR

Suryanamaskar: 12 Postures - 12 Postures & Breathe consioius - 12 Postures With manthra - Relaxation Techiniques. **(24 hours)**

UNIT IV: CALLISTHENICS (FREE HAND EXERCISE)

Standing series - Bending series - Sitting series - Twisting series - Dumb - bells - Indian Clubs - Lezium - Hoops. **(24 hours)**

UNIT V: AEROBICS & PYRAMIDS

Aerobics: Aerobic Basics - Aerobic Movements - Aerobic With Rhythm - Aerobic Programme

Pyramids: Basics of Pyramids - Types of Pyramids. **(24 hours)**

BOOKS FOR REFERENCE:

1. Wuest Jeborah,A and Charles A. Bucher (1987), 'Foundation of Physical Education, B.I Publication Pvt.Ltd., New Delhi.
2. Elangovan.R, (2002), 'Utarkalvi Oru Arimugam', Ashwin Publication, Triunelveli.
3. Chandrasekaran.K, (1999), 'Sound Health through Yoga, Prem Kalyan Publication, Sedapatti.
4. Iyengar, B.K.S,'Lights on Yoga', Unwin Hyman Company, London

FUNDAMENTALS OF PHYSICAL EDUCATION

Semester: III & IV **Hours: 120**

Code : 17NP4GS01 **Credits: 1**

COURSE OUTCOMES:

- Familiarize the fundamentals of Physical Education
- Illustrate different rules for different games and athletic events
- Examines the need for good nutrition
- Synthesis the relation between hygiene and health
- Apply the first aid techniques

UNIT I: PHYSICAL EDUCATION

Definition, need, scope, aims and objectives of physical education. **(24 hours)**

UNIT II: GAMES AND ATHLETEIC EVENTS

History of Games: Basketball, Volley Ball, Kho-Kho, Kabaddi, Badminton and Ball Badminton - Rules and regulation of the Games and Athletic Events. **(24 hours)**

UNIT III: NUTRITION

Balanced Diet, Daily Energy Requirement, Nutrient Balance, Nutrition Intake, Diet and Competition, Nutritional Tips, Your Ideal Weight. **(24 hours)**

UNIT IV: HEALTH EDUCATION

Meaning of health education, Definition of health education, Personal Hygiene, Communicable Diseases **(24 hours)**

UNIT V: FIRST AID

First Aid: Injuries to bones and Muscles, Sprain, Strain, Muscle Cramp and joints Dislocation and Fractures Snake-bite, Dog bite Poisoning, Artificial Respiration, (Drowning) **(24 hours)**

BOOKS FOR REFERENCE:

1. Sathyanesan, R.C., 'Hand Broken Physical Education, 'Gheena Publishers, Madurai.
2. Thirunarayanan,C and Hariharan,s, 'Analytical History of physical Education 'South India Press, Karaikudi.
3. St. John Ambulance Association, 'First Aid to the Injured' New Delhi.
4. Prabhakar Eric, (1995), 'The way to Atheletic Gold', Affliated East West Pvt. Ltd., New Delhi.

SCHEME OF EVALUATION

1.	Summative Examination (2 hours)	:	40 marks
2.	Continuous Internal Assessment	:	60 marks
	Total	**:**	**100 marks**

SCHEME OF EVALUATION FOR CONTINUOUS INTERNAL ASSESSMENT

1.	Attendance (240 hrs)			:	20 marks
	❖ Theory Class	:	120 hrs		
	❖ Games	:	60 hrs		
	❖ Field Work	:	60 hrs		
2.	Performance in any one Game			:	10 marks
3.	Performance in any one of Athletic event			:	10 marks
4.	Performance in Yoga / Rhythmic activities			:	10 marks
5.	Assignment			:	10 marks
	Total			**:**	**60 marks**

QUESTION PATTERN FOR SUMMATIVE EXAMINATION

Total marks: 40 **Time: 2 hours**

SECTION - A

Answer All Questions (5x1=5)

(Choose the best Answer)

SECTION - B

Answer any four questions (4x2=8)

(Four question out of six)

SECTION - C

Answer any Four out of Six questions (4x5=20)

(Four question out of six)

SECTION - D

Answer any one question (1x7=7)

(One question out of two)

CERTIFICATE COURSES

DESK TOP PUBLISHING - COURSE PATTERN

Theory: 30 Hours Practical: 30 Hours Total: 60 hours

Code	Title of the Paper	Hours	Credit
CCCSDT01	Desk Top Publishing (DTP)	2	1
CCCSDTP1	DTP - Lab	2	1
Total (15 weeks x 4 = 60 hours)		**4**	**2**

OPEN SOURCE PROGRAMMING - COURSE PATTERN

Theory: 30 Hours Practical: 30 Hours Total: 60 hours

Code	Title of the Paper	Hours	Credit
CCCSLX01	Open Source Software Programming	2	1
CCCSLXP1	Open Source Software Programming Lab	2	1
Total (15 weeks x 4 = 60 hours)		**4**	**2**

MULTIMEDIA - COURSE PATTERN

Theory: 30 Hours Practical: 30 Hours Total: 60 hours

Code	Title of the Paper	Hours	Credit
CCCSMM01	Multimedia	2	1
CCCSMMP1	Multimedia Lab	2	1
Total (15 weeks x 4 = 60 hours)		**4**	**2**

GRAPHICS DESIGNING - COURSE PATTERN

Theory: 30 Hours Practical: 30 Hours Total: 60 hours

Code	Title of the Paper	Hours	Credit
CCCSCD01	Graphics Designing	2	1
CCCSCDP1	Graphics Designing Lab	2	1
Total (15 weeks x 4 = 60 hours)		**4**	**2**

OPEN SOURCE WEB DEVELOPMENT WITH LAMP – COURSE PATTERN (From 2019 onwards)

Theory: 30 Hours Practical: 30 Hours Total: 60 hours

Code	Title of the Paper	Hours	Credit
CCCSLP01	Open Source Web Development With Lamp	2	1
CCCSLPP1	Open Source Web Development With Lamp Lab	2	1
Total (15 weeks x 4 = 60 hours)		**4**	**2**

DESK TOP PUBLISHING (DTP)

Code: CCCSDT01 **Hours: 2**

Credit: 1

COURSE OUTCOMES:

- Obtain the skills to work in the field of content designing or desk top publishing
- Obtain the knowledge to work in printing Press, News Paper houses, Publishing companies and Advertising Industries.

UNIT I

Fundamentals of Computer: Definition of computer system - Classification of computer - Computer Hardware - Basic Operations Performed by a Computer System - Basic components of Computer System - Central Processing Unit - Primary Memory - Arithmetic Logic Unit (ALU) - Control Unit - Peripherals - Input Devices - Output Device - Types of software - Utilities. **(6 Hours)**

UNIT II

Microsoft Word: Word processor Basics - Menus - Creating a new blank document - Tool bars - Changing the size of a document - Closing the document - Quitting word. **Typing Your First Document:** Starting Microsoft word - Saving the document - Previewing the document - Printing the document - Closing the word document. **(6 Hours)**

UNIT III

Getting into Photoshop: Introduction - Best in Photoshop 7.0 - Photoshop Interface - Saving the File - Importing Existing File. **Editing and Retouching:** Working with Selections - Selection with Rectangle Marquee Tool, Elliptical Marquee Tool - Moving a Selection - Moving with Keyboard Shortcut - Selection with the Magic Wand, Lasso Tool - Adding and Subtraction Selection - Selection with the Magnetic Lasso - Transforming a Selection - Combining Selection Tools - Cropping the Completed Image - Image Color Adjustments. **Making Artistic use of Photoshop:** Painting Tools - Working with Brushes - Drawing - Eraser Tool - Brushes Palette - Pen Tool - Selecting an Image with Pen Tool - Editing and Cleaning Tools - Clone Stamp Tool - Healing Brush - Image Resizing. **(6 Hours)**

UNIT IV

Building Original Art work in Photoshop: Layers - Creating A Layer - Layer Mask - Transform - Custom shapes - Create Your own Custom shapes. Transforming Images with Filters: Filters - Text Tool - Text Wrap. **Adobe InDesign:** Introducing InDesign CS4: Getting started with InDesign CS4 - Exploring InDesign CS4 workspace - working with custom workspaces - creating a new document - saving a document - closing a document and quitting the application. **(6 Hours)**

UNIT V

Working with Documents: Opening an existing document - Introducing master pages - Working with text - Working with the type on path tool - Performing basic formatting text - Performing advance formatting text. **Working with drawing tools and Objects:** Using shape tools - Using pencil tool - Using pen tool - Transforming objects. **(6 Hours)**

COURSE BOOKS:

1. **"DESKTOP PUBLISHING"**- Sr. R. Joshitta &J. Jenitha, ACCA Publications, 2013.
2. **"Adobe Photoshop 7.0 - A Novice Guide"**- J. Jenitha, A. Diana, ACCA Publication, 2012

UNIT I	:	Chapter : 1 (Book :1)
UNIT II	:	Chapters : 2, 3 (Book : 1)
UNIT IV	:	Chapters : 7 (Book :1)
Unit V	:	Chapters : 8, (Book : 1)
UNIT III	:	Chapters : 1,2, 3 (Book : 2)
UNIT IV	:	Chapters : 4, 5 (Book : 2)

BOOKS FOR REFERENCE:

1. **"Comdex 14-in-1 Computer Course Kit", Vikas Gupta**, Dreamtech Press Edition, 2008.
2. **"Comdex 9-in-1 DTP Course Kit", Vikas Gupta**, Dreamtech Press Edition, 2013.

DTP - LAB

Code: CCCSDTP1 **Hours: 2**

Credit: 1

MS-WORD

1. Preparing an advertisement using various tools
2. Creating a mail merge
3. Formatting the text using different fonts, Drop cap and Columns division
4. Working with images and Watermark options

ADOBE PHOTOSHOP

5. Exercises using Cloning & Healing
6. Working with Layers
7. Exercises using Shapes and Styles
8. Exercises using Corrective Filtering
9. Working with Colors & Text Effects.

ADOBE INDESIGN

10. Formatting text in Page
11. Working with Shape tools, Pencil tools and pen tools
12. Working with Images
13. Transforming objects.

OPEN SOURCE SOFTWARE PROGRAMMING

Code: CCCSLX01 **Hours: 2**

Credit: 1

COURSE OUTCOMES:

- Able to understand the open source file system using Linux and to issue essential Linux commands from the command line
- Acquire the knowledge of file access permissions

UNIT I

Introduction to Linux: Linux Distributions - Operating Systems and Linux - History of Linux and Unix - Open Source Software - Linux Software. **Getting Started:** Accessing Linux from the Command Line Interface - Command Line Interface - Software Repositories. **(6 Hours)**

UNIT II

The Linux Shell and File Structure: The Shell - History - Filename Expansion - Standard I/O and Redirection - Pipes - Redirecting and Piping the standard Error - Jobs - Ending Processes - The C Shell - The TCSH Shell - The Z-shell. **(6 Hours)**

UNIT III

The Shell Scripts and Programming: Shell Variables - Shell Script - Environment Variables and Sub shells export and setenv - Control Structures- TCSH/C Shell Control Structure. **(6 Hours)**

UNIT IV

Shell Configuration: Shell Initialization and configuration Files - Configuration Directories and Files - Aliases - Controlling Shell Operations - Environment Variables and Sub shells - Configuring your Shell with Shell Parameters - The TCSH Shell Configuration. **(6 Hours)**

UNIT V

Linux Files, Directories and Archives: Linux Files - The Linux Structure - Listing, Displaying and Printing Files - Managing Directories - File and Directory Operations - The mtools Utilities - Archiving and Compressing Files. **(6 Hours)**

COURSE BOOK:

"LINUX Programming a Nutshell"- Ms.P. Sathya, Ms.J. Ruby, ACCA Publications, 2010.

UNIT I	:	Chapters	: 1, 2
UNIT II	:	Chapter	: 3
UNIT III	:	Chapter	: 4
UNIT IV	:	Chapter	: 5
UNIT V	:	Chapter	: 6

BOOKS FOR REFERENCE:

1. **"Red Hat ® LINUX ®",** Kerry Cox, PHI Learning Private Limited, New Delhi, Edition, 2009.
2. **"The Complete Reference - Linux",** Richard Petersen, Tata McGraw-Hill Publishing Company Ltd., New Delhi, Sixth Edition, 2008.

OPEN SOURCE SOFTWARE PROGRAMMING LAB

Code: CCCSLXP1 **Hours: 2**

Credit: 1

1. Basic Commands in Linux
2. Working with Vi Editor
3. Shell programming with control structures
4. Using Linux commands within Shell scripts
5. Programs using gawx
6. Identifying machines and sending messages
7. Pocket forwarding
8. Working with cron
9. Programming with TEX.
10. Programming with LaTeX.
11. Implementing cp command.
12. Implementing grep command.
13. Implementing wc command.
14. Implementing cat command.
15. Implementing rm command.

MULTIMEDIA

Code: CCCSMM01 **Hours: 2**

Credit: 1

COURSE OUTCOMES:

- To understand the fundamental concept of Multimedia and their components.
- Ability to create intentional lighting with 3D scene.
- Ability to design, model and texture 3D objects.

UNIT I

MULTIMEDIA: What Is Multimedia**:** Interactive Multimedia - Advantages Of Interactive Multimedia - Where To Use Multimedia - Text - Graphics - Audio - Film - Video. **UNDERSTANDING TEXT:** Typeface or Fonts - Types of Fonts. **COMPUTER GRAPHICS:** 2D Computer Graphics - 3D Computer Graphics API. **UNDERSTANDING SOUND:** Basic Sound Concept - Audio Formats and Quality Levels - AIF Format - AU Format - EA Format - MIDI Format - Mp3 Format. **UNDERSTANDING VIDEO:** Digital Vs Analog Video. **(6 Hours)**

UNIT II

PHOTOSHOP: Fundamentals - Opening and Importing Images - Resolution - Models and Colour Spaces - Layers. **PAINTING PIXELS:** The Painting Tools - Erasing - Fills - Type. **SELECTION AND ALLIED OPERATIONS:** Marquee selection and cropping - Lasso Selection - Paths - Combining and Transforming Selections. **(6 Hours)**

UNIT III

ADJUSTMENTS AND RETOUCHING: Tonal Adjustment - Colour Adjustments - Retouching By Hand. **EFFECTS AND FILTERS:** Blurring and Sharpening - Special Effects and Distortion - Layer Effects and Layer Styles. **(6 Hours)**

UNIT IV

FLASH: Animation with Interacting - Basic Concepts - Drawing - Lines and Shapes - Strokes and Fill - Shapes and Brushes - Selection - Transformation and Reshaping - Importing Artwork and Manipulating Images. **ANIMATION:** Animating One Frame at a Time - Motion Tweening - Symbols and Instances - Shape Tweening - Sound. **(6 Hours)**

UNIT V

ACTIONS: Buttons - Button action - Frame Action - Action and Movie Clip Symbols - Actions - Browsers and Networks - Beyond the Basic Actions. **FLASH MX275:** Interface Elements - Panels - Tools - Layer Folders - Accessibility - Video - Components - User Interface Components - Changing the Appearance of Components. **(6 Hours)**

COURSE BOOK:

Study Material - By the Department.

BOOKS FOR REFERENCE:

1. "**Flash MX 2004**", Thiagharajan and Anbumani, Tata McGraw Hill, New Delhi.
2. "**Photoshop CS3 Bible**", Laurie Ulrich Fuller and Robert C. Fuller, Willey India Pvt. Ltd.
3. "**A COURSE BOOK of Multimedia**", Vishnu Priya Singh, 1st Ed., Computech Pub. Ltd., New Delhi, 2014.

MULTIMEDIA LAB

Code: CCCSMMP1 **Hours: 2**

Credit: 1

PHOTOSHOP

1. Exercises using Painting and Brushes
2. Exercises using Cloning and Healing
3. Exercises using Shapes and Styles
4. Picture manipulation using filter.
5. Design pictures using layers.
6. Design Marriage Invitation using image and Text Effects.

FLASH

7. Working with Tools, Panels & symbols
8. Frame by frame animation
9. Motion & Shape Tweening
10. Animating Text
11. Working with Guide layers
12. Working with Mask layers
13. Move a Ball with audio.
14. Prepare Traffic Control using animation.
15. **Case Study:** Short story creation with multiple scenes

GRAPHICS DESIGNING

Code: CCCSCD01 **Hours: 2**

Credit: 1

COURSE OUTCOMES:

- Able to produce a broad range of documents including newsletters, product leaflets, adverts, posters and sales material for either internal use or for commercial printing
- Able to help the web developers to create web pages, brilliant vector graphics.

UNIT I

CorelDraw Basics: Characteristic Features - Getting Started with CorelDraw- Creating a new file - The CorelDraw Screen - Property bar - Working with files - Views - Zooming. **(6 Hours)**

UNIT II

Drawing and Selecting: Getting familiar with the toolbox - Getting started with the Project - Working with Objects and Shapes - Applying effects to Objects.

(6 Hours)

UNIT III

Working with Text: The text tool - Align Artistic & Paragraph Text - Converting from one text type to another - Formatting text - Set Line & Character Spacing - Edit Individual Characters - Check Spelling - Customizing Type Assist - Aligning and distributing objects - Changing the order of objects - The Text Editor - Fitting text to a path - Wrapping & Combining and linking paragraph text frames - Creating, applying, and editing graphic or text styles - Create Columns - Link Text Area **(6 Hours)**

UNIT IV

Working with Images: Bitmaps and vector images - Importing images - Resizing, Rotating and Skewing images - Cropping an image - Adding special effects to bitmaps - Exporting files to other applications - Publishing to PDF.

(6 Hours)

UNIT V

Page Layout and Background: Changing the page size - Changing the page layout - Changing the page background - Page Frame - Guidelines - Rulers - Create a Grid - Working with Pages - Working with Layers. **(6 Hours)**

COURSE BOOK:

"Get your feet Wet with CorelDRAW"- Sr R. Joshitta, Ms. S. Josephine, ACCA Publications, 2012.

BOOKS FOR REFERENCE:

1. **"Comdex Multimedia and Web Design",** Vikas Gupta, Dreamtech Press Edition, 2010.
2. **"Comdex 14-in-1 Computer Course Kit",** Vikas Gupta, Dreamtech Press Edition, 2008.

GRAPHICS DESIGNING LAB

Code: CCCSCDP1 **Hours: 2**

Credit: 1

1. Working with artistic text
2. Formatting text
3. Working with Symbols and drawing shapes.
4. Design a Wedding Card
5. Design a Greeting card
6. Working with background colors
7. Working with Images
8. Adding special effects to Images
9. Text placing in line Path
10. Design an Invitation using images, shapes and text

OPEN SOURCE WEB DEVELOPMENT WITH LAMP (From 2019 onwards)

CODE: CCCSLP01 **HOURS: 2**

CREDIT: 1

COURSE OUTCOMES:

- Understand and use open source software.
- Install and configure a Web platform (LAMP) used in web-site development.
- Install and configure database server (MySQL) for use with PHP and Apache to provide interactive dynamical content for the web.
- Implement server side programming language (PHP), with dynamic content.
- Acquire strategies and skills to develop interactive Websites and applications in the open source environment using Linux, Apache, MySQL and PHP (LAMP) technologies

UNIT I

Open Source: Overview of open source software, Open source products, Development philosophy, Comparison between Open source, closed source, free software, and source-available, Pros and cons, Development tools. **(6 Hours)**

UNIT II

Linux Administration: Configuring the bash shell, Finding and processing files, Managing users, groups and permissions, Investigating and managing processes, Essential system administration tools. Setting Environment: Installing and configuring apache web server (Linux), Installing PHP (Linux),Introduction to PHP and MySQL, Identifying the prerequisites, Unpacking, configuring and compiling, Editing httpd.conf, Setting up access privileges, Restarting apache server.

(6 Hours)

UNIT III

Database Management Using MySQL: Getting started with MySQL, Installing MySQL on linux configuring your system, Creating databases, tables, and indexes, Inserting, deleting, and updating data, Querying MySQL, Working with advanced queries, Understanding the different join types using MySQL, Built-in functions with SELECT **(6 Hours)**

UNIT IV

PHP: Getting started with PHP, Working with variables in PHP, Working with constants in PHP, Working with simple expressions and operators in PHP, Using control and looping statements, Working with advance program flow statement , Working with functions, Working with arrays, Storing data in arrays using PHP, Manipulating arrays. **(6 Hours)**

UNIT V

Processing Web Forms in PHP: Working with forms in PHP, Validating input data, Using magic quotes, File and directory access in PHP, PHP file handling, PHP directory handling, Working and formatting with strings, Investigating and manipulating strings, Saving form data: Saving form data using cookies, Saving form data using sessions. Handling Databases: Working with the DBA functions, Database integration—SQL **(6 Hours)**

COURSE BOOK:

Study Material – By the Department

BOOKS FOR REFERENCE:

1. *Jason Gerner, Elizabeth Naramore, Morgan L. Owens, Matt Warden, Professional LAMP Linux, Apache, MySql and PHP5 Web development , Wiley (2006).*

2. James Lee , Brent Ware*, Open Source Development with LAMP: Using Linux, Apache, MySQL, Perl, and PHP , Pearson Education (2003).*

3. Eric Filson , Erick Rosebrock*, Setting up LAMP: Getting Linux, Apache, MySQL, and PHP Working Together, SyBex (2004).*

4. *Matt Doyle, Beginning PHP 5.3,Wiley (2010).*

OPEN SOURCE WEB DEVELOPMENT WITH LAMP LAB

Code: CCCSLPP1 **Hours: 2**

Credit: 1

COURSE OUTCOMES:

- Knowledge to install and setting up of LAMP environment.
- Acquire idea about basic administration activities on Linux environment.
- Developed and Tested simple PHP programs and Understood PHP built-in-functions.
- Learnt to create database and tables and perform database operations.
- Hosted a website in the Web Server.
- Familiarity to create web application using LAMP.

Linux

1. Installation and setting up of LAMP environment
2. Basic Commands in Linux
3. Shell programming with control structures

PHP & MySQL

1. Develop a PHP program using controls and functions
2. Develop a PHP program using String function and Arrays.
3. Develop a PHP program using parsing functions (use Tokenizing)
4. Develop a PHP program and check Regular Expression, HTML functions, Hashing functions.
5. Develop a PHP program and check File System functions, Date and time functions.
6. Creating a form for various operation SQL queries using PHP
7. Develop a PHP program to display student information using MYSQL table.
8. Develop a college application form using MYSQL.