BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY REGULATIONS

ELIGIBILITY:

Candidates for admission to the first year of the **Bachelor of Science (Information Technology)** Degree course shall be required to have passed in the Higher Secondary Examinations conducted by the Government of Tamil Nadu in the relevant subjects or an Examination accepted as equivalent thereto by the Academic Council. Subject to such other conditions as may be prescribed there to are permitted to appear and qualify **with any one of the following subjects**: Mathematics / Computer Science / Statistics / Business Mathematics and wherever the students have not studied Mathematics, the necessary Maths knowledge be imparted through Tutorial/ Bridge Course.

OBJECTIVE OF THE COURSE:

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

1. Demonstrating a substantial understanding of concepts in key areas of Information Technology and its applications.
2. Analysis and synthesis involved in Computer System, Information System and Computer applications.
3. To develop a software and in its design and implementation for professional competence
4. To equip and Train the students to meet the requirement of the IT Industries and Public Sectors.
5. To stimulate an interest in computing as an academic discipline with a view to encouraging progression to research and higher studies.

SCHEME OF EXAMINATIONS

Course	Subject	Hrs of Instruction	Exam Duration (Hrs)	Max Marks			Credit Points
				CA	CE	Total	
First Semester							
Part – I							
15UTL11T 15UHL11H 15UML11M 15UFL11F	Tamil-I/ Hindi-I/ Malayalam-I/ French – I	6	3	25	75	100	4
Part – II							
15UEG12E	English - I	6	3	25	75	100	4
Part – III							
15UIT13A	**Core I :** Computing Fundamentals & C Programming	4	3	25	75	100	4
15UIT13B	**Core II :** Digital Fundamentals and Architecture	4	3	25	75	100	4
15UMA1AB	**Allied 1 :** Mathematical Structures for Computer Science	5	3	25	75	100	4
15UIT13P	**Core LAB I :** Programming Lab in C	3	3	40	60	100	4
Part – IV							
15UFC1FA	**Foundation Course - I :** Environmental Studies	2	3	-	50	50	2
		30				**650**	**26**
Second Semester							
Part – I							
15UTL21T 15UHL21H 15UML21M 15UFL21F	Tamil-II/ Hindi-II/ Malayalam-II/ French – II	6	3	25	75	100	4

29/7/15
BoS Chairman/HoD
Department of Information Technology
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Dr. P. R. MUTHUSWAMY
PRINCIPAL
Dr. NGP Arts and Science College
Dr. NGP - Kalapatti Road
Coimbatore - 641 048
Tamilnadu, India

Part – II							
15UEG22E	English-II	6	3	25	75	100	4
Part – III							
15UIT23A	**Core III** : C++ Programming	5	3	25	75	100	4
15UMA2AB	**Allied 2** : Discrete Mathematics	5	3	25	75	100	4
15UIT23P	**Core Lab II** :Programming Lab in C++	4	3	40	60	100	4
15UIT23Q	**CoreLab III** : Programming Lab in Internet and Office Automation	2	3	20	30	50	2
Part – IV							
15UFC2FA	**Foundation Course - II** : Value Education : Human Rights	2	3	-	50	50	2
		30				**600**	**24**
Third Semester							
Part – III							
15UIT33A	**Core IV** : Data Structures	6	3	25	75	100	4
15UIT33B	**Core V** : Java Programming	5	3	25	75	100	4
15UIT3AA	**Allied 3**: Cyber Security	6	3	25	75	100	4
15UIT33P	**Core Lab IV**: Programming Lab in Java	5	3	40	60	100	4
Part-IV							
15UIT3SA	**Skill Based Subject 1** : Introduction to Web Design	4	3	20	55	75	3
15UFC3FA 15UFC3FB 15UFC3FC 15UFC3FD	Tamil / Advanced Tamil (OR)Yoga for Human	2	3	-	50	50	2

15UFC3FE	Excellence / Women's Rights/Constitution of India						
	NMEC-I	2	3	-	50	50	2
		30				**575**	**23**
Fourth Semester							
Part – III							
15UIT43A	**Core VI** : System Software and Operating Systems	6	3	25	75	100	4
15UIT43B	**Core VII** : Visual Basic And ORACLE	6	3	25	75	100	4
15UIT4AA	**Allied 4**: Software Engineering and testing	5	3	25	75	100	4
15UIT43P	**Core Lab V** : Programming Lab in VB and ORACLE	6	3	40	60	100	4
Part – IV							
15UIT4SP	**Skill Based Lab 1**: HTML, XML, JAVA Scripts Lab	3	3	30	45	75	3
	NMEC-II	2	3	-	50	50	2
15UFC4FA/ 15UFC4FB/ 15UFC4FC/	**Part IV** : Tamil / Advanced Tamil (OR) General Awareness	2	3	-	50	50	2
		30				**575**	**23**
Fifth Semester							
Part – III							
15UIT53A	**Core VIII**: Data Communication and Networks	6	3	25	75	100	4
15UIT53B	**Core IX**: Dot Net Programming	6	3	25	75	100	4
15UCT5EA 15UCT5EB 15UCT5EC	**Elective I** :	6	3	25	75	100	4

15UIT53P	**Core Lab VI** : Programming Lab in Dot Net	5	3	40	60	100	4
Part-IV							
15UIT5SA	**Skill Based Subject 2** :PHP and MySQL	4	3	20	55	75	3
15UIT5SP	**Skill Based LAB 2** : Programming Lab in PHP and MySQL	3	3	30	45	75	3
		30				**550**	**22**
Sixth Semester							
Part – III							
15UIT63A	**Core X**:: Open source tools	6	3	25	75	100	4
15UIT6EA/ 15UIT6EB/ 15UIT6EC	**ELECTIVE II** :	6	3	25	75	100	4
15UIT6ED/ 15UIT6EE/ 15UIT6EF	**ELECTIVE III** :	6	3	25	75	100	4
15UIT63P	**Core Lab VII** : Programming Lab in Open source Tools	6	3	40	60	100	4
15UIT63V	**Core XI** : Project and Viva Voce	6	3	40	60	100	4
Part-V							
15UEX65A	Extension Activity	-	-	50	-	50	2
		30				**550**	**22**
					Grand Total	**3500**	**140**

ELECTIVE – I

(Student shall select any one of the following subject as Elective in fifth semester)

S.No	Subject Code	Name of the Subject
1.	15UIT5EA	A. Cloud Computing
2.	15UIT5EB	B. AI and Robotics
3.	15UIT5EC	C. Multimedia

ELECTIVE - II

(Student shall select any one of the following subject as Elective in sixth semester)

S.No	Subject Code	Name of the Subject
1.	15UIT6EA	A. Cryptography And Network Security
2.	15UIT6EB	B. Mobile Computing
3.	15UIT6EC	C. Web Programming

ELECTIVE - III

(Student shall select any one of the following subject as Elective in sixth semester)

S.No	Subject Code	Name of the Subject
1.	15UIT6ED	D. Soft Computing
2.	15UIT6EE	E. Data Mining
3.	15UIT6EF	F. Enterprise Information System

NON MAJOR ELECTIVE COURSES

- The department offers the following two papers as Non Major Elective Courses for other than the computer studies related students.

- Student shall select any one of the following subject as Non Major Elective Courses during their III and IV semester

S. No	Semester	Course Code	Course Title
1.	III	15UED34J	NMEC-I : PHOTOSHOP AND FLASH LAB
2.	IV	15UED44J	NMEC-II : HTML,CSS LAB

FOR COURSE COMPLETION

Students has to complete the following subject:

- Language papers (Tamil/Malayalam/French/Hindi, English) in I and II semester.
- Environmental Studies in I semester.
- Value Education in II and III semester respectively.
- General Awareness in IV semester.
- Allied papers in I, II, III and IV semesters.
- Elective papers in the fifth and sixth semesters
- Skill based Courses in III, IV and V semesters.
- Non Major Elective Courses in III and IV semester
- Extension activity in VI semester.
- An in-house project at the end of VI semester only.

Total Credit Distribution

Subjects	Credits	Total		Credits	Cumulative Total
Part I: Tamil	4	02 x 100 =	200	08	16
Part II: English	4	02 x 100 =	200	08	
Part III:					
Core	4	10 x 100 =	1000	40	110
Core Practical	4	06 x 100 =	600	24	
Core Practical	2	01 x 50 =	50	02	
Project	4	01 x 100 =	100	04	
Allied Theory	4	04 x 100 =	400	16	
Elective	4	03 x 100 =	300	12	
Skill based subject theory	3	02 x 75 =	150	06	
Skill based subject Practical	3	02 x 75 =	150	06	
Part IV:					
Value Education	2	01 x 50 =	50	02	12
Environmental Studies	2	01 x 50 =	50	02	
Foundation Courses	2	02 x 50 =	100	04	
NMEC	2	02 X 50 =	100	04	
Part V:					
Extension Activity	1	01 X 50 =	50	02	02
Total			**3500**	**140**	**140**

15UTL11T	பகுதி -1 :தமிழ் தாள்-I	முதல் பருவம்

Total Credits:4
Hours Per Week:6

(ஓர் ஆண்டு தமிழ் பயிலும் மாணவர்களுக்கு உரியது)

முதல் ஆண்டு

பகுதி -1 தமிழ் தாள்

இக்காலஇலக்கியம்- நீதி இலக்கியம் – சிற்றிலக்கியம்

அலகு-1 இக்காலஇலக்கியம் (கவிதை,சிறுகதை,உரைநடை)

1. பாரதியார் – எங்கள் தாய்
2. பாரதிதாசன் – வாழ்வு
3. .மு.மேத்தா – மரங்கள்
4. . சிற்பி – சர்ப்பயாகம்
5. .சல்மா – விலகிப்போகும் வாழ்க்கை
6. ஜெயகாந்தன் – இனிப்பும் கரிப்பும்
7. அம்பை – வல்லூறுகள்
8. முனைவர் வ.சுப மாணிக்கம் – சங்க நெறிகள்
9. சோ.நா. கந்தசாமி - தமிழர் பண்பாடு - ஒரு விளக்கம்

அலகு - 2 நீதி இலக்கியம்

1. நாலடியார் - அறிவுடைமை (அதிகாரம்-25)
2. மூதுரை - 5 பாடல்கள் (பா.எண் : 6,16,17,23,26)
3. பழமொழி நானூறு - முயற்சி(10 பாடல்கள்)
4. நான்மணிக்கடிகை - 5 பாடல்கள் (பா.எண் :1,5,7,8,9)
5. திரிகடுகம் - 5 பாடல்கள் (பா.எண் :2,3,5,6,8)

அலகு -3 சிற்றிலக்கியம்

1. தமிழ் விடுதூது – தூதுப் பொருள்கள்(101-112)
2. திருக்குற்றாலக் குறவஞ்சி – குறத்தி மலைவளம் கூறுதல் (6பாடல்கள்)
3. முக்கூடற் பள்ளு – பள்ளியர் ஏசல் (161-175)
4. கலிங்கத்துப்பரணி – இந்திர சாலம் (154-178)

5.அபிராமி அந்தாதி –10 பாடல்கள் பாடல் எண்:

(2,4,6,11,20,26,63,69,71,82)

அலகு -4 இலக்கிய வரலாறு

1. தமிழ்க் கவிதையின் தோற்றமும் வளர்ச்சியும்
2. **தமிழ் சிறுகதையின் தோற்றமும் வளர்ச்சியும்**
3. **தமிழ் உரைநடையின் தோற்றமும் வளர்ச்சியும்**

அலகு - 5 இலக்கணம்

1. **வல்லினம் மிகும் ,மிகா இடங்கள்**
2. **பெயர் ,வினை,இடை , உரிச் சொற்களின் பொது இலக்கணம்**
3. பிறமொழிச்சொற்களைத் தமிழ்ச் சொற்களாக மாற்றுதல் (வடமொழி – தமிழ்,
   ஆங்கிலம் – தமிழ்)
4. பயிற்சிக்குரியன (கவிதை ,சிறுகதை,கட்டுரை படைத்தல்)

பார்வை நூல்கள்

1 . தமிழ்த்துறை வெளியீடு
2. இலக்கிய வரலாறு – பேராசிரியர் முனைவர் பாக்யமேரி

15UHL11H	PART-I: HINDI-I	SEMESTER- I

Total Credits:4
Hours Per Week:6

Prose, Non-detailed Text, Grammar & Translation Books Prescribed:

1. **PROSE : Nuthan Gadya Sangrah**

Editor: Jayaprakash (Prescribed Lessons – only 4)

Lesson 1 - Razia
Lesson 2 – Makreal
Lesson3- Bahtha Pani Nirmala
Lesson 4 – Rashtrapitha Mahathma Gandhi

Publisher: Sumitra Prakashan Sumitravas,
16/4 Hastings Road,
Allahabad – 211 001.

2. **NON DETAILED TEXT: Kahani Kunj.**

Editor: Dr.V.P.Amithab. (Stories 1 -4 only)
Publisher : Govind Prakashan Sadhar Bagaar,
Mathura,
Uttar Pradesh – 281 001.

3. **GRAMMAR :** Shabdha Vichar (Sangya, Sarvanam, Karak, Visheshan) ONLY (Noun, Pronoun, Adjective, Case Endings) Theoretical & Applied. Book for

4. **REFERENCE :** Vyakaran Pradeep by Ramdev. Publisher : Hindi Bhavan, 36,Tagore Town, Allahabad – 211 002. 4.

5. **TRANSLATION:** English- Hindi only. Anuvadh Abhyas – III (1-10 lessons Only)

PUBLISHER: Dakshin Bharath Hindi Prachar Sabha ,Chennai -17.

6. **COMPREHENSION :** 1 Passage from ANUVADH ABHYAS – III (16- 30) Dakshin bharath hindi prachar sabha , Chennai- 17.

15UML11M	PART-I: MALAYALAM-I	SEMESTER-I

Total Credits:4
Hours Per Week:6

For those who joined in 2014-2015 academic year and after
Paper I Prose, Composition & Translation

This paper will have the following five units:

1. **Unit I &II** - Novel
2. **Unit III & IV** - Short story
3. **Unit V** **-** Composition & Translation

TEXT BOOKS:

1. Unit I &II -Naalukettu – M.T. Vasudevan Nair (D.C. Books, Kottayam, Kerala)

2. Unit III & IV - Manikkianum Mattu Prathana Kathakalum – Lalithampika Antharjanam (D.C.Books, Kottayam, Kerala)

3. Unit V- Expansion of ideas, General Essay and Translation of a simple passage from English about **100** words) to Malayalam

REFERENCE BOOKS:

1. Kavitha Sahithya Charitram –Dr. M.Leelavathi (Kerala Sahithya Academy, Trichur)
2. Malayala Novel sahithya Charitram –K.M.Tharakan(N.B.S. Kottayam)
3. Malayala Nataka Sahithya Charitram-G.Sankarapillai(D.C.Books, Kottayam)
4. Cherukatha Innale Innu –M.Achuyuthan(D.C. Books, Kottayam)
5. Sahithya Charitram Prasthanangalilude-Dr. K.M. George,(Chief Editor)
   (D.C. Books, Kottayam)

15UFL11F	PART-I: FRENCH-I	SEMESTER- I

Total Credits:4
Hours Per Week:6

French Language for Under-graduate Degree Programmes

Compétence Culturelle	Compétence De communication	Compétence grammaticale
UNITÉ 1 – Ici, en France		
• Moi et les Autres • La France Express	• INTERACTION: s'identifier • RÉCEPTION ECRITE: Comprendre une annonce d'aeroport • RÉCEPTION ORALE: comprendre l'ecrit de la rue (Panneaux, plaques, rues...) • PRODUCTION ÉCRITE**:** écrire un SMS	• Le présent des verbes: Je suis, je reste,J'arrive • Le lieu: (je suis) à… (je suis) ici • L'infinitif
UNITÉ 2 – Ici, en classe		
• Moi et le francais • Le francais dane le monde	• INTERACTION: Se présenter • RÉCEPTION ORALE: Comprendre des consignes Orales • RÉCEPTION ÉCRITE: Comprendre une fiche D''inscription • PRODUCTION ÉCRITE: écrire un texte à 'impératif	• Tu/vous • Le present des Verbes en-er et de être:je, tu,vous • La forme Impérative (tu ,vous) Des verbes en-er
UNITÉ 3 - Samedi		
• Le fil du temps	• INTERACTION: S'informer • RÉCEPTION ORALE: Comprendre une annonce • RÉCEPTION ÉCRITE: Comprendre un article (titres et illustrations) • PRODUCTION ÉCRITE: écrire des slogans	• Les articles Défines:le,la,les • A,de+le,la,les: Au,aux,du,des,à l', de l' • Être(présent)I'heure • Ll faut+nom Ll faut+infinitive • Pharses

		verbe+complément, Complément+verbe
UNITÉ 4 - Dimanche		
• Les activités Culturelles des Français	• INTERACTION: Acheter,demander des Informations • RECEPTION ORALE: Comprendre les Titres du journal à la radio • RÉCEPTION ÉCRITE: Comprendre les Informations • PRODUCTION ÉCRITE: Inventer des noms de journaux	• Faire, present • Avior, present • Ll y a • Le présent des verbes en-er: Regarder • Combien? • Quand? • Complément de nom: Tremblement de terre, les noms de pays…. • Du,des,de la(reprise U2) • Les adjectifs possessifs: Mon,ta,son, Ma,ta,sa Mes,tes,ses
UNITÉ 5 – Dommage!		
• Un baby-boom en 2000 et 2001 • L'amour, toujours	• INTERACTION: exprimer la tristesse, la peur, conseiller,encourager • RÉCEPTION ORALE: Comprendre une émission De radio • RÉCEPTION ÉCRITE: Comprendre un sondage • PRODUCTION ÉCRITE: écrire des blogs	• Est-ce que • Le present des verbes pouvoir,Vouloir • Le conditionnel des Verbs pouvoir, Vouloir • Ne…pas

TEXT BOOK:

1. *Marcella Di Giura Jean-Claude Beacco,* **Alors I.** Goyal Publishers Pvt Ltd 86, University Block Jawahar Nagar (Kamla Nagar) New Delhi – 110007.

15UEG12E	PART II: ENGLISH-I	SEMESTER-I

Total Credits:4
Hours Per Week:6

OBJECTIVE:

1. To develop the language competence of the students.
2. To be enriched with functional English.

UNIT-I

PROSE

1. My Financial Career – Stephen Leacock
2. At School – Gandhi
3. Ecology – Barry Commoner

UNIT-II

SHORT STORIES

1. The Gateman's Gift – R.K. Narayan
2. The Open Window – H.H. Munro
3. The Face of Judas Iscariot – Bonnie Chamberlain

UNIT-III

ONE ACT PLAY

1. The Discovery – Herman Ould

UNIT-IV

FUNCTIONAL GRAMMAR

1. Vocabulary Exercises
2. Synonyms, Compound Words, etc
3. Communication Skills – Tasks
4. Different types of sentences
5. The Structure of Sentences
6. Transformation of Sentences

UNIT-V

COMPOSITION TASKS

1. Greeting, Introducing, Requesting, Inviting
2. Congratulating, Thanking, Apologising, Advice
3. Suggestions, Opinions, Permissions.
4. Comprehension

TEXT BOOKS:

1. *Seshasayee. N*. 2001. **Honeycomb.** Anu Chitra Publications, Chennai.
2. *Syamala, V*. 2002. **Effective English Communication for You**. Emerald Publisher, Chennai.

REFERENCE BOOKS:

1. *Rajamanickam. A.* 2001**. Everyman's English Grammar.** Macmillan.
2. *Krishna Mohan and Meera Banerji*. 2005. **Developing Communication Skills.** Macmillan, Chennai.
3. *Wren, P.C. and H. Martin***.** 1998**. High School English Grammar and Composition.** Macmillan.

15UIT13A	CORE I: COMPUTING FUNDAMENTALS AND C PROGRAMMING	SEMESTER - I

Total Credits: 4
Hours Per Week: 4

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Concepts programming language.
2. On successful completion of the course the students should have the ability to programming in C.

CONTENTS

UNIT - I

Fundamentals of Computers: Introduction – History of Computers-Generations of Computers- Classification of Computers-Basic Anatomy of a Computer System-Input Devices-Processor-Output Devices-Memory Management – Types of Software- Overview of Operating System-Programming Languages-Translator Programs-Problem Solving Techniques.

UNIT - II

Overview of C: Introduction - Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators - Type conversion in expression – operator precedence & associative operators - Mathematical functions - Reading & Writing a character - Formatted input and output.

UNIT - III

Decision Making and Branching: Introduction – If, If….Else, nesting of If …Else statements- 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. Arrays – Character Arrays and Strings

UNIT - IV

User-Defined Functions: Introduction – Need and Elements of User-Defined Functions- Definition-Return Values and their types - Function Calls – Declarations – Category of Functions- Nesting of Functions - Recursion – Passing Arrays and Strings to Functions - The Scope, Visibility and Lifetime of Variables- Structures and Unions.

UNIT - V

Pointers: Introduction- Use of Pointer–declaring of Pointer - Pointer Expressions –- Pointers with Arrays- Pointers and Strings – Pointers and Function– File Input and Output Operations- file Operations-file Handling –randomly accessing data from file- error handling in file operation –Command line Argument

TEXT BOOKS:

1. *K.S.Kahlon, Gurvinder Singh, Rachhpal Singh,* 2010. **Fundamentals of C Programming**, Kalyani Publications, [Fifth Edition].
2. *Yashvant Kanetkar,* 2013. **ANCI C Programming**, BPB Publications, Revised & Updated Edition.

REFERENCE BOOKS:

1. *Ashok N Kamthane*, 2002. **Programming with ANSI and Turbo C**, Pearson Edition.
2. *Henry Mullish and Huubert L.Cooper,* 1996. **The Sprit of C**, Jaico Pub. House.
3. *Balagurusamy.E,* 2008. **Computing Fundamentals & C Programming** [Second Reprint]. Tata McGraw-Hill

15UIT13B	CORE II: DIGITAL FUNDAMENTALS AND ARCHITECTURE	SEMESTER - I

Total Credits: 4
Hours Per Week: 4

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Knowledge on Digital circuits, Computer architecture
2. Interfacing of various components.

CONTENTS

UNIT - I

Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates.

UNIT - II

Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications. Sequential circuits: Flip-Flops: RS, D, JK, and T - Multiplexers – De multiplexers – Decoder Encoder – shift registers-Counters.

UNIT - III

Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking – Priority Interrupt: Daisy- Chaining Priority, Parallel Priority Interrupt.

UNIT - IV

Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation.

UNIT- V

Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory

TEXT BOOKS:

1. *Albert Paul Malvino, Donald P Leach*, 1996. **Digital Principles and Applications**, TMH, [Unit I & II].

2. *M. Morris Mano,* 2011. **Computer System Architecture**, [Third Edition], PHI, [Unit III, IV & V].

REFERENCE BOOKS:

1. *V.K. Puri*, *2000*. **Digital Electronics Circuits and Systems,** TMH, [Unit I & II].

2. *M. Carter*, *2006*. **Computer Architecture Schaum's outline series,** TMH.

15UMA1AB	ALLIED 1: MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE	SEMESTER - I

Total credits: 4
Hours per Week: 5

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Understanding the concepts of mathematics and its working principles.
2. Learning applications of statistical and numerical methods for Computer Science.

CONTENTS

UNIT - I

Matrices – Introduction –Determination –Inverse of a matrix –Rank of a Matrix –Eigen value Problems.

UNIT - II

System of Simultaneous Linear algebraic Equation –Gauss elimination, Gauss Jordon, Gauss Seidal methods. The solution of Numerical Algebraic & Transcendental equation – Bisection method –Newton – Rapson method –false position method.

UNIT - III

Numerical Differentiations –Newton's forward Difference - Backward Difference –Stirling formula Numerical Integration – Trapezoidal Rule & Simpson's rule Numerical solutions of ordering differential Equations – Taylor series & Runge kutta method

UNIT - IV

Measures of central tendency –Mean Median and Mode –Relationship among mean median and mode. Measures of dispersion –Range, quartile deviation, mean deviation and Standard deviation

UNIT - V

Regression and Correlation –Types of relationship –Linear regression – Correlation Coefficient of correlation –Regression equation of variables – Discrete Probability distribution – Uniform, Binomial & poison Distribution

TEXT BOOKS:

1. *Dr M.K. Venkataraman* –NPC,2003. **Engineering Mathematics** Volume II, [Unit I].
2. *M.K. Venkataraman* –NPC, 2005. **Numerical Methods in science & Engineering**, Revised Edition, [Unit II & III].
3. *S.P. Gupta & M.P. Gupta Sultan Chand and Sons, 2012* .**Business Statistics**, [Unit IV & V].

REFERENCE BOOKS:

1. *Balagurusamy.E,* **Numerical methods,*1999*.** Tata MC Graw Hill.
2. *S C Gupta, V. K. Kapoor Sultan Chand and Sons ,2013.* **Fundamental of Mathematical Statistics.**

15UIT13P	CORE LAB I: PROGRAMMING LAB IN C	SEMESTER - I

Total Credits: 4
Hours Per Week: 3

OBJECTIVE:

The subject aims to build the concepts regarding:

1. To impart knowledge on C programming.

LIST OF PRACTICALS:

1. Program to use do and while loop.
2. Program to use for loop.
3. Program to perform magic square of order n, where n > 3 and n is odd.
4. Program to use operators.
5. Program to sort using arrays.
6. Program to use string commands with pointers.
7. Program to use string command with arrays.
8. Program to use recursive function.
9. Program to use structure and array of structures.
10. Program to use function with pointers.
11. Program to use file manipulation commands.
12. Program to use command line argument.

15UTL21T	**பகுதி – I: தமிழ் தாள் II**	**இரண்டாம் பருவம்**

Total Credits:4
Hours Per Week:6

2015-2016 ஆம் கல்வியாண்டு முதல் பயில்வோருக்குரிய பாடத்திட்டம்
(ஓர் ஆண்டு தமிழ் பயிலும் மாணவர்களுக்கு உரியது) முதல் ஆண்டு
சங்க இலக்கியம்- பக்தி இலக்கியம் – காப்பியம்

அலகு 1 சங்க இலக்கியம்

1. நற்றிணை – பாடல் எண் : 210 (நெய்தல்) 'நெடியமொழிதலும் கடிய ஊர்தலும்'
2. குறுந்தொகை –பாடல் 2 , 3 (குறிஞ்சி) 'கொங்குதேர் வாழ்க்கை', 'நிலத்தினும் பெரிதே'
3. கலித்தொகை – பாடல் 16 நெய்தல்கலி - 'ஆற்றுதல் என்பது'
4. புற நானூறு – பாடல் 184, 312 'உற்றுழி உதவியும்', 'ஈன்று புறந்தருதல்'
5. ஐங்குறுநூறு – மருதம் முதல் 5 பாடல்கள் (வேட்கைப் பத்து)

அலகு -2 காப்பியங்கள்

1.சிலப்பதிகாரம் – வழக்குரை காதை
2.மணிமேகலை – ஆதிரை பிச்சையிட்ட காதை
3.சீவக சிந்தாமணி- நாமகள் இலம்பகம்(நாட்டு வளம் முதல் 20 பாடல்கள்)
4.கம்பராமாயணம் – வாலிவதைப் படலம் (வாலி இராமனை வினவுதல்.பாடல் எண்கள் (4121 முதல் 4136 வரை)

அலகு 3 பக்தி இலக்கியம்

1. தேவாரம் – திருஞானசம்பந்தர் (கோளறுபதிகம்)
2. திருப்பாவை –ஆண்டாள் (முதல் 15 பாடல்கள்)
3. தேம்பாவணி- காட்சிப்படலம் (முதல் 15 பாடல்கள்)
4.சீறாப்புராணம் –மானுக்குப் பிணை நின்ற படலம்

அலகு-4 இலக்கிய வரலாறு

1.முச்சங்க வரலாறு
2.சங்க இலக்கிய வரலாறு
3.பக்தி இலக்கியத்தின் தோற்றமும் வளர்ச்சியும்
4.காப்பியத்தின் தோற்றமும் வளர்ச்சியும்

அலகு -5 இலக்கணம்

1.எழுத்து, அசை, சீர், தளை, அடி, தொடை பொது இலக்கணம்

2.தொகை நிலைத் தொடர்கள்

பார்வை நூல்கள்

1. தமிழ்த்துறை வெளியீடு
2. இலக்கிய வரலாறு – பேராசிரியர் முனைவர் பாக்யமேரி

15UHL21H	PART-I :HINDI-II	SEMESTER- II

Total Credits:4
Hours Per Week:6

(Modern Poetry, Novel, Translation & Letter Writing)

1. **Modern Poetry:** Shabari – By Naresh Mehtha

Publishers: Lokbharathi Prakashan I Floor,Duebari Building Mahathma Gandhi Marg, Allahabad -1.

2. **Novel**: Seva Sadhan – By Prem Chand

Publisher:

3. **Translation:** Hindi – English Only, (anuvadh abyas – iii) lessons.1 – 10 only publisher: dakshin bharath hindi prachar sabha chennai – 600 017.

4. **Letter Writing:** (Leave letter, Job Application, Ordering books, Letter to Publisher, Personal letter)

15UML21M	PART-I: MALAYALAM-II	SEMESTER- II

Total Credits:4
Hours Per Week:6

1. **PAPER II**
   PROSE: NON-FICTION
   This Paper will have the following five units:

2. **UNIT I & II**

   Biography

3. **UNIT III, IV & V**

   Travelogue

TEXT BOOKS:

1. Unit I & II :*Changampuzha Krishna Pillai: Nakshatrangalude Snehabhajanam –M.K. Sanu* (D.C. Books, Kottayam)
2. Unit III, IV & V Kappirikalude Nattil – *S.K. Pottakkadu* (D.C. Books, Kottayam)

REFERENCE BOOKS:

1. *Dr. K.M. George* (N.B.S. Kottayam) Jeevacharitrasahithyam
2. *Dr. Vijayalam Jayakumar* (N.B.S. Kottayam) Jeevacharitrasahithyam malayalathil- Athmakathasahithyam malayalathil –
3. *Prof. Ramesh Chandran. V*,(Kerala Bhasha Institute, Trivandrum) Sancharasahithyam Malayalathil-

15UFL21F	PART-I: FRENCH-II	SEMESTER- II

Total Credits:4
Hours Per Week:6

French Language for Under-graduate Degree Programmes

Compétence Culturelle	Compétence De communication	Compétence grammaticale
UNITÉ 6 – Super!		
• L'égalité homme/femme	• INTERACTION: Exprimer des sentiments, exprimer la joie, le plaisir, le bonheur • RÉCEPTION ORALE: Comprendre un jeu radiophonique • RÉCEPTION ÉCRITE: Comprendre des announces • PRODUCTION ÉCRITE: Écrire des cartes postales	• Les noms de professions masculine/feminine • Le verb finir et less Verbes du groupe en-ir • Le present de l'impératif • Savoir(present) • Le participle passé: Fini, aimé, arrive, dit,écrit • Quel(s), quelle(s)..: Interrogatif et Exclamatif • À + infinitive • Les articles: n,une,des
UNITÉ 7 – Quoi?		
• Le 20 siécle: Petits progrés Grand progrés	• INTERACTION: Decrire quelque chose, une personne • RECEPTION ORALE: Comprendre un message publicitaire • RÉCEPTION ÉCRITE: Comprendre un dépliant touristique • PRODUCTION ÉCRITE: Écrire des petites annonces	• On • Plus, moins • Le verbe aller: • Present, impératif • Aller + infinitife • Le pluriel en –x
UNITÉ 8 – Et aprés		
• Nouvelles du jour	• INTERACTION: Raconteur,situer un récit dans le temps • RÉCEPTION ORALE:	• L'imparfait:: quel-Ques forms pour introduire le récit:Il faisait, il y avait, il

	Comprendre une description • RÉCEPTION ÉCRITE: Comprendre un test • PRODUCTION ÉCRITE: écrire des cartes postales	Était • Un peu, beaucoup, trop,Assez • Trés • Le verbe venir: Présent, impératif • En Suisse, au Maroc, aux Etats-Unis
UNITÉ 9 – Mais oui!		
• La génération des 20-30 ans	• INTERACTION: Donner son opinion, Expliquer pourquoi • RÉCEPTION ORALE: Comprendre des informations à la radio • RÉCEPTION ÉCRITE: Comprendre un texte informatif • PRODUCTION ÉCRITE: éncrire un mél de protestation	• Répondre, prendre: Présent, impératif, part Passé • Parce que pourquoi • Tout/tous, toute/s Tous/toutes les… (répétition action)
UNITÉ 10 – Mais non!		
• De la ville à la campagne	• INTERACTION: Débat:: exprimer l'accord, exprimer le Désaccord • RECEPTION ORALE: Comprendre un message sur un répondeur téléphonique • RÉCEPTION ÉCRITE: Comprendre un témoignage • PRODUCTION ECRITE: Rediger des petites Announces immobilieres	• Le verbe devoir: Present et participe passé • Le verbe vivre, present • Aller + infinitive • Venir+ infinitive • Etre pour/contre

TEXT BOOK:

1. *Marcella Di Giura Jean-Claude Beacco,* **Alors I.** Goyal Publishers Pvt Ltd 86, University Block Jawahar Nagar (Kamla Nagar) New Delhi – 110007.

15UEG22E	PART II: ENGLISH-II	SEMESTER-II

Total Credits:4
Hours Per Week:6

OBJECTIVES:

1. To develop the language competence of the students.
2. To be enriched with functional English.

UNIT-I

PROSE

1. Words of Wisdom – Chetan Bhagat
2. Forgetting – Robert Lynd
3. My Early Days – Dr. Abdul Kalam

UNIT-II

SHORT STORIES

1. Am I Blue? – Alice Walker
2. Last Leaf – O Henry
3. Selfish Giant – Oscar Wilde

UNIT-III

ONE ACT PLAY

1. Soul Gone Home - Langston Hughes

UNIT-IV

FUNCTIONAL GRAMMAR

1. Lexical Skills and Question Forms
2. Idioms and Phrases – Subject-Verb Agreement
3. Spelling, Antonyms and Synonyms, Infinitives
4. Vocabulary, Report Writing
5. Plurals, Particles in Adjectives
6. Apostrophe, Archaic Words, Art of Persuasion
7. Syllables, Changing Adjectives to Nouns
8. Homonyms, Prepositions
9. Compound Words, Acronyms, Collective Nouns, Degrees of Comparison

UNIT-V

COMPOSITION TASKS

1. Letter Writing - Structure
2. Business Correspondence – Memos, reports, proposals
3. Resume & C.V.
4. Advertisements
5. Notices, Agenda, Minutes
6. Circulars
7. Essay Writing
8. Précis Writing
9. Dialogue Writing
10. Soft Skills, Business English

TEXT BOOKS:

1. *Board of Editors.* 2012. **Radiance – English for Communication**, Emerald Publishers.
2. *Syamala, V*. 2002. **Effective English Communication for You**. Emerald Publisher, Chennai.

REFERENCE BOOKS:

1. *Rajamanickam. A.* 2001**. Everyman's English Grammar.** Macmillan.
2. *Krishna Mohan and Meera Banerji*. 2005. **Developing Communication Skills.** Macmillan, New Delhi.
3. *Wren, P.C. and H. Martin***.** 1998**. High School English Grammar and Composition.** Macmillan.

15UIT23A	CORE III: C++ PROGRAMMING	SEMESTER - II

Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Major components of Object-Oriented Programming.
2. To inculcate knowledge on Object-oriented programming concepts using C++.

CONTENTS

UNIT- I

Introduction to **C++ -** key concepts of Object-Oriented Programming – Advantages Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures: - Decision Making and Statements: If... Else, jump, goto, break, continue, Switch case statements - Loops in C++: For, While, Do - Functions in C++ - Inline functions – Function Overloading.

UNIT - II

Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.

UNIT - III

Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

UNIT- IV

Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding , Polymorphism and Virtual Functions.

UNIT - V

Files – File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions.

TEXT BOOKS:

1. *Ashok N Kamthane*, 2013. **Programming in C++**, [Second Education], Pearson Publication.

REFERENCE BOOKS:

1. *Balagurusamy.E*, 1998. **Object-Oriented Programming with C++**, TMG Publication.
2. *Maria Litvin & Gray Litvin*, 2002. **C++ for you**, Vikas publication.
3. *John R Hubbard*, 2002. **Programming with C** [2nd Edition], TMH publication.

15UMA2AB	ALLIED 2: DISCRETE MATHEMATICS	SEMESTER - II

Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Major concepts of discrete mathematics.
2. Learning applications of discrete structures in Computer Science.

CONTENTS

UNIT - I

Set theory-Introduction-Set & its Elements-Set Description-Types of sets-Venn-Euler diagrams-Set operations & Laws of set theory-Fundamental products-partitions of sets-min sets- Algebra of sets and Duality-Inclusion and Exclusion principle

UNIT - II

Mathematical logic – Introduction-prepositional calculus – Basic logical operations-Tautologies - Contradiction- Argument- Method o f proof-Predicate calculus.

UNIT - III

Relations –Binary Relations –Set operation on relations-Types of Relations –Partial order elation –Equivalence relation –Composition of relations – Functions –Types of functions –Invertible functions –Composition of function

UNIT - IV

Languages–Operations on languages –Regular Expressions and regular languages –Grammar –Types of grammars –Finite state machine –Finite – State automata

UNIT - V

Graph Theory –Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs –Representation of graphs in computer memory -Trees –Properties of trees –Binary trees – traversing Binary trees – Computer Representation of general trees.

TEXT BOOK:

1. *Sharma J.K,* 2005. **Discrete Mathematics**, [Second Edition], Macmillan India Ltd. (UNIT I TO V)

REFERENCE BOOKS:

1. *J. P Tremblay R Manohar, 2003.***Discrete Mathematics Structures with Applications to computer science**, Mc Graw Hill International Edition.
2. *Dr M. K. Venketaramen, Dr N.Sridharan, N.Chandarasekaran,2002.* **Discrete Mathematics**, The National publishing Company Chennai.

15UIT23P	CORE LAB II: PROGRAMMING IN C++	SEMESTER - II

Total Credits: 4
Hours Per Week:4

OBJECTIVE:

The subject aims to build the concepts regarding:

1. To gain knowledge on C++ programming language.

LIST OF PRACTICALS:

1. Program for number conversion.
2. Program to allocate memory using new operator for 10 integers. Read and display integers.
3. Program to use inline functions.
4. Program to use function overloading.
5. Program to declare class with private member variables. Declare member function as static. Read and display the values of member variable.
6. Program to use friend function in two classes.
7. Program to use Overload operator "+" to concatenate two strings, "= = "to compare two strings.
8. Program for creating class Employee with details and perform salary depending on the grade.
9. Program to illustrate the concept of virtual function.
10. Program to use string commands using Pointers.
11. Program to creating a File and to display the contents of that file with line numbers.
12. Program to merge two files into a single file.

15UIT23Q	CORE LAB III: PROGRAMMING IN INTERNET AND OFFICE AUTOMATION	SEMESTER - II

Total Credits: 2
Hours Per Week: 2

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To learn basic computer skills with Microsoft Word, Microsoft Excel, Microsoft
2. PowerPoint and Microsoft Access

LIST OF PRACTICALS:

1. Creating a resume and format using MS WORD.
2. Creating a class time table using MS WORD
3. Program to prepare mail merge for parent meeting using MS WORD
4. Program to prepare Student mark sheet using MS EXCEL
5. Creating a chart for result analysis using MS EXCEL
6. Program to prepare a mark list for following conditions using data filter and data sort in MS EXCEL
    a) Prepare mark list in ascending order.
    b) Average is greater than or equal to 60.
    c) Average is between 50 and 60.
    d) Average is below 40
7. Designing an organizational chart for Arts and Science College using POWER POINT
8. Creating a power point presentation to advertise a product using Slide Transition and Custom animation
9. Creating a database to student's Mark sheet using MS Access
10. Creating a data base to employee pay roll using MS Access
11. Creating an E-MAIL ID
12. Program to use Mail ID and SEND information with Signature
13. Program to use Mail ID and send information through attached file.

15UIT33A	CORE IV: DATA STRUCTURES	SEMESTER - III

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. On successful completion of the course the students should have the ability to analyze the algorithms
2. To know about the linear and non-linear data structures.

CONTENTS

UNIT - I

Introduction: Introduction of Algorithms, Analyzing Algorithms. Arrays: Sparse Matrices - Representation of Arrays. Stacks and Queues. Fundamentals - Evaluation of Expression Infix to Postfix Conversion - Multiple Stacks and Queues

UNIT - II

Linked List: Singly Linked List - Linked Stacks and Queues - Polynomial Addition - More on Linked Lists - Sparse Matrices - Doubly Linked List and Dynamic - Storage Management - Garbage Collection and Compaction.

UNIT - III

Trees: Basic Terminology - Binary Trees - Binary Tree Representations - Binary Trees -Traversal - More on Binary Trees - Threaded Binary Trees - Binary Tree Representation of Trees - Council Binary Trees. Graphs: Terminology and Representations - Traversals, Connected Components and Spanning Trees Shortest Paths and Transitive Closure

UNIT - IV

External Sorting: Storage Devices -Sorting with Disks: K-Way Merging - Sorting with Tapes Symbol Tables: Static Tree Tables - Dynamic Tree Tables - Hash Tables: Hashing Functions - Overflow Handling.

UNIT - V

Internal Sorting: Insertion Sort - Quick Sort - 2 Way Merge Sort - Heap Sort - Shell Sort - Sorting on Several Keys. Files: Files, Queries and Sequential organizations - Index Techniques -File Organizations.

TEXT BOOKS:

1. *Ellis Horowitz, Sartaj Shani,* 1999. **Data and File Structures,** Galgotia Publication, [Unit II, III, IV & V].
2. *Ellis Horowitz, Sartaj Shani, Sanguthevar Rajasekaran,1999.***Computer Algorithms**, Galgotia Publication, [Unit I].

REFERENCE BOOK:

1. *Vijayalakshmi Pai.G.A,* 2008. **Data Structure & Algorithms Concepts Techniques & Applications**, Tata McGraw – Hill Publication.

15UIT33B	CORE V: JAVA PROGRAMMING	SEMESTER - III

Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Major components of Object-Oriented Programming.
2. To inculcate knowledge on Java programming concepts
3. To understand the knowledge of Applet and Graphics Programming

CONTENTS

UNIT- I

Fundamentals of Object-Oriented Programming: Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming –Application of Object-Oriented Programming. Java Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and www –Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.

UNIT - II

Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: if, if ..else, nested if, switch, ? : Operator - Decision Making and Looping: while, do, for – Jumps in Loops - Labeled Loops – Classes, Objects and Methods.

UNIT - III

Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting Classes together-Creating, Accessing and using a package-Adding a class to a package – Multithreaded Programming: Creating threads-Life cycle of a thread-Thread exceptions and Priority.

UNIT – IV

Managing Errors and Exceptions – Applet Programming : Applet Life Cycle –Adding Applet to HTML file – Running Applet – Passing Parameters to Applet -Graphics Programming: Graphics class- Lines and Rectangles-Circles and Ellipses – Drawing Arcs and Polygons – Line graphs - Bar charts.

UNIT - V

Managing Input / Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.

TEXT BOOK:

1. *Balagurusamy.E,* 2011. **Programming with JAVA - A Primer**, [Sixth Edition], Tata McGraw - Hill Publication, [Unit I, II, III, IV, V].

REFERENCE BOOKS:

1. *Patrick Naughton & Hebert Schildt, 1999.***The Complete Reference JAVA 2,** [Third Edition], TMH Publication.
2. *John R. Hubbard, 2002.***Programming with JAVA**, [Second Edition], TMH Publication.

15UIT3AA	ALLIED 3: CYBER SECURITY	SEMESTER - III

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Security attacks and services, using Algorithms to prevent attacks.
2. Cyber security Measures, Organizational structures and International Cooperation for Cyber security.

CONTENTS

UNIT - I

Security trends – Attacks and Services – Classical Crypto Systems – Different types of Ciphers – LFSR sequences – Basic Number Theory – Congruence's – Chinese Remainder Theorem – Modular Exponentiation – Fermat and Euler's Theorem – Legendre and Jacobi Symbols – Finite fields – Continued fractions.

UNIT - II

Simple DES – Differential Cryptanalysis – DES – Modes of operation – Triple DES – AES – RC4 – RSA – Attacks – Primality Test – Factoring.

UNIT - III

Discrete Logarithms – Computing Discrete Logs – Diffie-Hellman Key exchange – ElGamal Public Key Cryptosystems – Hash functions – Secure Hash – Birthday Attacks – MD5 – Digital Signatures – RSA – ElGamal – DSA.

UNIT - IV

Cyber security: Objectives – Definition – Cyber security - Technical and Procedural Measures of Cyber security.

UNIT - V

Organizational Structures : Introduction – Organizational Structures and Policies for Cyber security – A Framework for Organizational Structures – NCSec Referential – International Cooperation for Cyber security.

TEXT BOOKS:

1. *Wade Trappe, Lawrence C Washington*, 2007. **Introduction to Cryptography with Coding theory**, [Second Edition], Pearson. (Units I, II, III)
2. **ITU Global Cyber security Agenda (GCA), High-Level Experts Group (HLEG) Global Strategic Report**, 2008. ITU First Printing. (Units IV, V)

REFERENCE BOOKS:

1. *William Stallings*, 2006. **Cryptography and Network Security Principles and Practices**, [Fourth Edition], Pearson/PHI.
2. *W. Mao*, 2007. **Modern Cryptography – Theory and Practice**, [Second Education], Pearson.

15UIT33P	CORE LAB IV: PROGRAMMING IN JAVA	SEMESTER - III

Total Credits: 4
Hours Per Week: 5

OBJECTIVE:

The subject aims to build the concepts regarding:

1. To include knowledge on implementation of algorithm and key concepts using Java.

LIST OF PRACTICALS:

1. Program to use for loop statement.
2. Program to use branching statement.
3. Program to use Class and perform the functions to represent a bank Information Systems
4. Program to use to extract a portion of a character string and print the extracted string.
5. Program to use the concept of multiple inheritance using Interfaces.
6. Program to demonstrate the use of package.
7. Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.
8. Program to Use Exception Handling Operations.
9. Program to draw several shapes in the created windows.
10. Program to create bar chart.
11. Program to open an existing file and append text to that file.
12. Program to demonstrate the random access file is created and used for both reading and writing data to it.

15UIT3SA	SKILL BASED SUBJECT I: INTRODUCTION TO WEB DESIGN AND APPLICATIONS	SEMESTER - III

Total Credits: 3
Hours Per Week: 4

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Fundamentals of Electronic Mail.
2. Use of internet and its application.

CONTENTS

UNIT - I

Fundamentals of Electronic Mail: Introduction - Email: Advantages and Disadvantages - Userids, Passwords and Email addresses - Message Components - Message Composition - Mailer Features - E mail Inner Workings - Email Management - MIME Types. Browsing and Publishing ; Introduction – Browser bare bones – Coast – to – Coast surfing – Hyper Text Markup Languages – Web page installation – Web page set up – HTML formatting and hyper link creation

UNIT - II

The internet: Introduction – internet defined – internet history – the way the internet works – internet congestion – Internet culture – Business culture and the internet – collaborative computing and the internet. World Wide Web: introduction the web defined – web browser details – web writing styles – web presentation outline, design, and management – registering web pages.

UNIT - III

Searching the World Wide Web: introduction – directories, search engines and Meta search engines – search fundamentals – search strategies – how does a search engine works. Telnet and FTP: introduction – telnet and remote login – File transfer – Computer Viruses

UNIT - IV

Basic HTML: introduction – semantic versus syntactic – based style types – headers and footers – lists – tables – debugging. Advanced HTML: introduction – frames – html forms – CGI scripts – dynamic documents – html tools – next generation html – cascading style sheets

UNIT - V

News groups, Mailing Lists, Chat rooms and MUDs: introduction – news groups and mailing lists history – mailing list fundamentals – newsgroups and mailing lists availability – chat-rooms – MUDs. Electronic Publishing: introduction – electronic publishing advantages and disadvantages – copy right issues – project Gutenberg and on-line books – electronic journals, magazines and news papers – miscellaneous publishing issues.

TEXT BOOK:

1. *Raymond Greenlaw, Ellen Hepp,* 2005. **Fundamentals of the INTERNET and the World Wide Web**, [Second Edition], Tata McGraw –Hill Edition.

15UED34J	PART IV :NMEC-I :PHOTOSHOP AND FLASH LAB	SEMESTER - III

Total Credits: 2
Hours Per Week: 2

OBJECTIVE:

The subject aims to build the concepts regarding:

1. To gain knowledge on Photoshop and Flash

LIST OF PRACTICALS:

Adobe Photoshop:

1. Program to Design a visiting card containing at least one graphic and text information.
2. Program to prepare a cover page for the book in your subject area. Plan your own design.
3. Program to extract the flower only from given photographic image and organize it on a background. Selecting your own background.
4. Program to adjust the brightness and contrast of the picture so that it gives an elegant look.
5. Program to type a word and apply the effects shadows emboss.
6. Program to use appropriate tool(s) from the toolbox, cut the objects from 3 files (f1.jpg, f2.jpg & f3.jpg); organize them in a single file and apply feather effects.

Macromedia Flash:

1. Program to creating an animation to represent the growing moon.
2. Program to creating an animation to indicate a ball bouncing on steps.
3. Program to simulate movement of a cloud
4. Program to create an animation with the following features in a word Welcome.
   - ❖ Letters should appear one by one
   - ❖ The fill color of the text should change to a different color after the display of the full word
5. Program to change a circle into a square.
6. Program to display the background through your name using mask.

15UIT43A	CORE VI: SYSTEM SOFTWARE AND OPERATING SYSTEM	SEMESTER - IV

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To understand the various concepts of System programs and machine languages.
2. It emphasizes the need and the functionality of the operating system.
3. To discuss the components and responsibilities of the operating system like storage management, process management and file system also discussed.

CONTENTS

UNIT - I

Introduction –System Software and machine architecture-Assemblers-Basic assembler functions - Machine dependent features-program relocation-Machine independent features – literals - symbol defining statements-expressions-program blocks-control sections and program linking - Assembler design options-one pass assemblers-multi pass assemblers. Loader and Linkers: Basic Loader Functions - Machine dependent loader features – relocation – program – linking -Machine independent loader features - Automatic Library search - Loader options - Loader design options – linkage editor - dynamic linking - Bootstrap loader.

UNIT - II

Macro processor: Basic macro processor functions - Machine independent macro processor features - concatenation of macro parameter macro processor design options-recursive macro expansion - general purpose macro processor – macro processing within language translators. Text Editors: Overview of editing process -user interface - editor structure

UNIT - III

Machine dependent compiler features – Intermediate form of the program-Machine dependent code optimization-machine independent compiler features-Compiler design options-division into passes-interpreters-p –code compilers-compiler-compilers.

UNIT - IV

Introduction: –Definition of Process – Process states - process states transition – Interrupt processing – interrupt classes – Storage Management Real Storage: Real storage management strategies – Contiguous versus Non-contiguous storage allocation – Single User Contiguous Storage allocation- Fixed partition multiprogramming – Variable partition multiprogramming. Virtual Storage: Virtual storage management strategies – Page replacement strategies – Working sets – Demand paging – page size.

UNIT - V

Processor Management Job and Processor Scheduling: Preemptive Vs Non-preemptive scheduling – Priorities – Deadline scheduling - Device and Information Management Disk Performance Optimization: Operation of moving head disk storage – Need for disk scheduling – Seek Optimization – File and Database Systems: File System – Functions – Organization – Allocating and freeing space – File descriptor –Access control matrix.

TEXT BOOKS:

1. *Leland–L-Beck*, 2003. **System Software-An Introduction to Systems Programming**, [Third Edition], Pearson Education Publishers, [Unit I, II, III].
2. *H. M Deitel*, 2003. **Operating Systems**, [Second Edition], Pearson Education Publication, [Unit IV & V].

REFERENCE BOOKS:

1. *Achyut s Godbole*, 2005. **Operating Systems**, Reprint, TMH Publications.
2. *John J. Donovan*, 1991. **Systems Programming**, TMH Publications.
3. *D.M. Dhamdhrer*, 2008. **Systems Programming and Operating Systems**, [Second Edition Revised].

15UIT43B	CORE VII: VISUAL BASIC AND ORACLE	SEMESTER - IV

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Visual Basic Fundamentals and Knowledge in Visual Programming.
2. Concepts of Relational Database and Oracle

CONTENTS

UNIT - I

Introducing Visual Basic: What is VB? – Event and Event Procedures – Object related concepts –VB Program Components – VB environment – Visual Basic Fundamentals- constants – Variables – Data Types and Declarations – Operators and Expressions – Program Comments. Branching and Looping: Relational operators and Logical Expressions – Branching with If-Then, If-Then-Else blocks – Selection Select Case – Looping with For-Next, Do-Loop, While-Wend – Stop statement.

UNIT - II

Visual Basic control Fundamentals: Control tools – Control tool Categories – Working with Controls – Assigning Property values to Forms and Controls – Entering Input Data -Executing commands – Displaying Output –Check Box-radio Button- Selecting from a List - Creating timed Events – Scroll Bars. Menus and Dialog Boxes- Building Drop-Down Menus – Accessing Menu from Keyboard – Menu Enhancements – Submenus – Pop-Up Menus – Dialog Boxes – more about MsgBox Function – The Input Box function.

UNIT - III

Procedures: Modules and Procedures – Sub Procedures – Event Procedures – Function procedures – Scope – Optional Arguments. Arrays: Characteristics – Declarations –Processing – Passing Arrays to Procedures – Dynamic Arrays – Array-related Functions – Control Arrays

– Data Files- Sequential Data Files – Random-Access Data files– Binary files

UNIT - IV

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules –Database Design: Normalization – DDL :- Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Data Management and Retrieval: DML - DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operators

UNIT - V

PL/SQL: A Programming Language: Fundamentals of PL/SQL -Block Structure –– Declaration –- Control Structures- Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Named Blocks: Procedures – Functions – Packages –Triggers.

TEXT BOOKS:

1. *Byron S. Gottfried*, 2009. **Visual Basic – Schaum's Outline series**, TMH.
2. *Nilesh Shah*, 2012. **Database Systems using Oracle**, [Second Edition], PHI.

REFERENCE BOOKS:

1. *Eric A Smith*, *Valor Whisher, Hank Marquis,* 1998. **Visual Basic 6 Programming Bible**, Illustrated Edition, Wiley.
2. *Cornell,* 1999. **Visual Basic 6 From the Ground Up**, Tata McGraw Hill Company Ltd.
3. *Oracle Press, Oracle 9i,* 2007. **A Beginner's Guide**, [Eleventh reprint], Tata McGraw Hill.

15UIT4AA	ALLIED 4: SOFTWARE ENGINEERING AND TESTING	SEMESTER - IV

Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Mainly concentrates on software engineering concepts along with some of the methodologies of Testing.
2. Characteristics of software, software evolution, software models.
3. The various phases in software design and the different types of software testing techniques.

CONTENTS

UNIT - I

The evolving role of software – Software characteristics – Software Engineering: A layered technology. Process Models: The Waterfall model, Incremental process model, Evolutionary process models, specialized process models.

UNIT - II

Requirements Engineering: Tasks, initiating - Analysis Model: Requirement analysis, Scenario based modeling, Flow oriented modeling, and Class based modeling. Design Engineering: Design within the context of software, Design process and design quality, Design concepts, Design model. Architectural Design: Software architecture, Mapping data flow into software architecture.

UNIT - III

The seven step testing process: Overview of the software testing process: The cost of computer testing – The Seven step software testing process – Workbench Skills. Organizing for testing: Objective – Workbench – Input – Do procedures –Check Procedures – Output. Developing the test plan:

Objective – Concerns - Workbench – Input – Do procedures – Check Procedures – Output.

UNIT - IV

Verification Testing: Overview - Objective – Concerns - Workbench – Input – Do procedures – Check Procedures – Output. Validation Testing: Overview - Objective – Concerns – Workbench – Input – Do procedures – Check Procedures – Output. Analyzing and Reporting test results: Overview - Objective – Concerns - Workbench – Input – Do procedures – Check Procedures – Output.

UNIT - V

Acceptance and operational testing: Overview - Objective – Concerns - Workbench – Input – Do procedures – Check Procedures – Output. Post implementation analysis: Overview - Objective – Concerns - Workbench – Input – Do procedures – Check Procedures – Output.

TEXT BOOKS:

1. *Roger S Pressman*, 2012. **Software Engineering – A Practitioner's Approach**, [Sixth Edition, Fifth Reprint], McGraw Hill, [Unit I & II].
2. *William.E.Perry*, 2008. **Effective Methods for Software Testing**, [Third Edition], Willey India, [Unit III & IV, V].

REFERENCE BOOK:

1. *Richard Fairley*, 2011. **Software Engineering Concepts**, [Twenty Third Reprint], Tata McGraw Hill.

15UIT43P	CORE LAB V: PROGRAMMING IN VISUAL BASIC AND ORACLE	SEMESTER - IV

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To gain knowledge on windows application using Visual Basic.
2. To gain knowledge on ORACLE Database.

LIST OF PRACTICAL:

VISUAL BASIC:

1. Program to perform Binary Operations
2. Program to use list box and combo box
3. Program to develop a form with basic operations.
4. Program to prepare a Questionnaire.
5. Program to develop a menu driven program
6. Program to develop a Simple Project using VB as front end and ORACLE as back end.

ORACLE

1. Creating a table and perform various queries using any one Comparison, Logical, Set, Sorting and Grouping operators.
2. Creating a table which demonstrate the use of primary key and foreign key and Generate Reports..
3. Creating PL/SQL Block to update the rate field by 20% more than the current rate in inventory table which has the following fields: Prono, ProName and Rate. After updating the table a new field (Alter) called for Number of item and place for values for the new field without using PL/SQL block.
4. Creating PL/SQL Block using cursor handling methods.
5. Creating a database trigger to implement on master and transaction tables.
6. Creating PL/SQL to use Exception Handling.

15UIT4SP	SKILL BASED LAB I : HTML,XML,JAVA SCRIPTS LAB	SEMESTER - IV

Total Credits: 3
Hours Per Week: 3

OBJECTIVE:

The subject aims to build the concepts regarding:

1. To gain knowledge on HTML, XML and JAVA Scripts.

LIST OF PRACTICALS:

1. Designing a Simple Web Pages using standard HTML tags like, HEAD, TITLE, and BODY
2. Designing a HTML web pages, which make use of INPUT, META, SCRIPT, FORM, APPLET, BGSOUND, MAP
3. Program to Work with various attributes of standard HTML elements
4. Program to use Java Script's Window and document objects and their properties and to give the dynamic functionality to HTML web pages
5. Program to use Java Script snippet which make use of Java Script's inbuilt as well as user defined objects like navigator, Date Array, Event, Number etc.
6. Program to use the form validation in various INPUT elements like Text Filed, Text Area, Password, Selection list etc.
7. Program to use XML web Documents which make use of XML Declaration, Element Declaration, Attribute Deceleration
8. Program to use Internal DTD, External DTD, Entity Declaration.

15UED44J	PART IV: NMEC -II: HTML AND CSS LAB	SEMESTER - IV

Total Credits :2
Hours Per Week: 2

OBJECTIVE:

The subject aims to build the concepts regarding:

1. To gain knowledge on HTML, CSS.

LIST OF PRACTICALS:

1. Designing a webpage, with text formatting html tags
2. Designing a webpage, to provide link from 1 page to another
3. Creating a Frame using <frameset> tag.
4. Designing a webpage, to create a image using <img> tag as a link
5. Creating a table and enter your academic information using html tags.
6. Creating a CSS with font formatting tags
7. Creating a CSS to mention the colors of the webpage
8. Creating a CSS code to differentiate the block of several paragraphs in your page.
9. Creating a webpage to link external style sheet to your page.
10. Program to use Inline Elements.

15UIT53A	CORE VIII: DATACOMMUNICATION AND NETWORKS	SEMESTER - V

Total Credits: 4
Hours Per Week: 6

OBJECTIVE:

The subject aims to build the concepts regarding:

1. The physical arrangement of networks, types and modes of networks, data conversions and transmission medium, the detection and correction of errors, link control and link protocols of data link layer.
2. Electrical specification and implementation of different networks, types of switching, the standardized data interface and it's working principle, the logic of link mechanisms used in networks and different layers of TCP/IP.

CONTENTS

UNIT - I

Introduction – fundamental concepts – data communications – protocols and standards – standard organizations – signal propagation – Analog and digital signals – bandwidth of signal and a medium – data transmission rate and bandwidth. Network models: Introduction – protocols in computer communications – the OSI model – OSI layer functions.

UNIT - II

Transmission Errors: Detection and Correction – Introduction – Error classification – types of errors – error detection. Media and Transmission modes: Introduction – Analog transmission – Digital signal, Digital transmission – Analog to Digital conversion – Digital to analog conversion – Guided media – Unguided media.

UNIT - III

Network topologies, switching & routing algorithms: mesh, star, tree, ring, hybrid, basics of switching – router and routing – routing algorithms

UNIT - IV

Data Compression and Encryption: Introduction – Information Security – Cryptography – Symmetric and Asymmetric key encryption – digital certificates – digital signatures – SSL/TLS – Firewalls – Email Security.

UNIT - V

Networking and internetworking devices: Networking: Introduction – LAN – Ethernet – VLAN – Token ring – FDDI – MAN – WAN. Internetworking: Introduction – Why Internetworking – A virtual network – Repeaters – Bridges – Routers – Gateways – DNS – Email – FTP –TFTP – HTML – TELNET.

TEXT BOOKS:

1. *Achyut S Godbole, Atul Kahate,* 2011. **Data Communications and Networks**, [Second Edition], TMG.
2. *BehrouzA.Forouzan*, 2000. **Data Communication and Networking**, [Second Edition], TMG.
3. *William Stallings,* 2003. **Data and Computer Communication**, [Eighth Edition], Pearson Education.
4. *Andrew Tannenbaum.S, 2002.* **Computer Networks**, Pearson.

15UIT53B	CORE IX: DOT NET PROGRAMMING	SEMESTER - V

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Major components of Dot net Framework.
2. Concepts and Characteristics of C# Programming.
3. Creating windows form and web applications using Visual Studio.

CONTENTS

UNIT - I

Understanding .NET: The .NET Strategy – Origin of .NET technology – The .NET Framework – Common Language Runtime - .NET Languages – Benefits of .NET approach. Building C# 2005 applications - Visual C# Integrated Development Environment.
Introducing C#: What is C#? – Why C#? - Evolution of C# - Characteristics of C# - Applications of C# - Namespaces-Comments-Literals, Variables and Data Types-Operators and Expressions.

UNIT - II

Decision Making and Branching – Decision Making and Looping - Arrays and Strings. **Structures and Enumerators:** Structures – Structs with methods – Structs vs. classes – Enumerations – Enumerator Initialization – **Classes and Objects**: Defining a class, Adding Variables and Methods, access modifiers, creating objects, and Accessing class members. Constructors - overloaded constructor-copy constructor-private constructor-destructors. Static members and Static constructors. Method declaration – The main method – invoking methods – method parameters – pass by value, reference – Output Parameters – Variable argument list - Properties and Indexer

UNIT - III

Inheritance and Polymorphism: Types of inheritance - Defining a subclass – visibility control – defining subclass constructor – Overriding Methods – Overloading methods. **Interface**: Defining an Interface – extending and implementing an interface. **Operator Overloading**: Defining operator overloading – overloading unary operators – overloading binary operato

UNIT - IV

Delegates and Events – **Managing Errors and Exceptions:** Types of errors – Exceptions – syntax of exception handling code – multiple catch statements - throwing own exceptions. **Web Forms in C#** - Buttons – Labels – Literals – File Upload - Place holders – Check box – Radio buttons – Tables – Panels – Images – Image Buttons – Image Maps – List boxes – Drop-down list – hyperlinks – link buttons – Tree view – Menu – Validation Controls – Validation Groups

UNIT - V

Window Forms and Web-based Application Development on .NET: Creating Window Forms – Customizing a Form – Creating and running a sample WinApp Windows Application – Overview of Design Patterns – Web-based application on .NET.

TEXT BOOKS:

1. *Balagurusamy. E,2010.* **Programming in C# A Primer**, [Third Edition], Tata McGraw Hill.
2. *Matt Telles & Kogent Solutions Inc., dreamtech publications.* 2005. **C# 2005 Programming - Black Book.**

15UIT5EA	ELECTIVE I: CLOUD COMPUTING	SEMESTER - V

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To learn the different types of cloud computing services.
2. To make a cloud computing application unique, managing and working with cloud security.

CONTENTS

UNIT - I

Defining Cloud Computing: Definition - Cloud Types - Characteristics of Cloud Computing - Role of Open standards - Cloud Architecture: Cloud Computing Stack: Composiblity.

UNIT - II

Infrastructure - Platforms - Virtual Appliances - Communication protocols - Applications – Connecting to the cloud - Cloud Services: Infrastructure as a Service - Platform as a Service - Software as a Service

UNIT - III

Identity as a Service - Compliance as a Service - Platforms: Load balancing and visualization–Understanding Hypervisors - Cloud Security: Securing the Cloud.

UNIT - IV

Securing the data - Moving applications to the cloud - Cloud Storage: Definition – Provisioning –Cloud storage - Cloud Backup solutions - Cloud storage Interoperability

UNIT - V

Moving applications to the Cloud - Case Study: Google Web Services, Amazon Web Services - Microsoft Cloud Services.

TEXT BOOK:

1. *Barrie Sosinsky*, 2011. **Cloud Computing Bible**, Wiley India Pvt. Ltd, [Unit I toV].

REFERENCE BOOKS:

1. *Roger Jennings,* 2009. **Cloud Computing with Windows Azure Platform**, Wiley India Pvt. Ltd.
2. *Miller Michael*, 2008. **Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online**, Que Publishing.

15UIT5EB	ELECTIVE I: AI AND ROBOTICS	SEMESTER - V

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Heuristic, Hill Climbing, Planning, etc.
2. Introduction to robotics and their applications.

CONTENTS

UNIT - I

The AI Problems – AI technique – Criteria for success – Define the Problem as a state space search – Production System – Characteristics – Problem Characteristics.

UNIT - II

Heuristic Search Techniques: Generate and Test – Hill climbing –Best First Search – Problem Reduction – Constraints Satisfactions – Means End Analysis.

UNIT - III

Knowledge Representation Issues: Approaches to knowledge Representation – The Frame Problem – Computable Functions & Predicates – Resolution – Procedural versus Declarative Knowledge.

UNIT - IV

Fundamentals of Robotics: Introduction, classification of Robots, History of Robots, Advantages and Disadvantages of Robot, Robot components, Robot degree of freedom, Robot joints and coordinates, Robot workspace, Robot reach, Robot languages.

UNIT - V

Sensors: Introduction to internal and external sensors of the robot, Position sensors, Velocity sensors, Acceleration sensors, SONAR and IR sensors, Touch and tactile sensors. **Applications of Robots:** Applications of robots, selection of robots, economic factors and justification for robotic application; safety requirements.

TEXT BOOKS:

1. *Elaine Rich and Kevin Knight*, 1991. **Artificial Intelligence**, [Second Edition], Tata McGraw Hill, [Unit I, II, III].
2. *Craig J J,* 2004. **Introduction to Robotics**, **Mechanics and Control**, Pearson Education, New Delhi.
3. *Saeed B Niku*, 2003. **Introduction to robotics,** Pearson Education, New Delhi.

15UIT5EC	ELECTIVE I: MULTIMEDIA	SEMESTER - V

Total Credits: 4
Hours Per Week: 6

OBJECTIVE:

The subject aims to build the concepts regarding:

1. Introduction of Multimedia Content, Multimedia Literature.
2. Concepts of Sound, Images and Graphics.
3. Data Compression, Networking Systems and Multimedia Applications.

CONTENTS

UNIT - I

Introduction – Branch Overlapping Aspects of Multimedia Content – Global Structure – Multimedia Literature. Multimedia – Media and Data Streams – Medium.

UNIT - II

Sound/Audio: Basic Sound Concepts – Music –Speech, Images and Graphics: Basic Concepts – Computer Image Processing – Video and Animation: Basic Concepts – Television – Computer Based Animation.

UNIT - III

Data Compression : Storage Space – Coding Requirements – JPEG – MPEG – DVI, Optical Storage Media , Computer Technology – Multimedia Operating System.

UNIT - IV

Networking System: Layers, Protocols and Services, Networks, Metropolitan Area Networks, WAN, Multimedia Communication System.

UNIT - V

User Interfaces, Synchronization, and Abstraction for Programming: Abstraction Levels – Libraries – System Software – Toolkit – Higher Programming Languages Multimedia Application: Introduction – Media Population – Media Compos ion – Media Communication – Trends.

TEXT BOOK:

1. *Ralf Steinmetz & Klara Nahrstedt*, *1995.* **Multimedia Computing, Communication & Applications**, Pearson Education.

REFERENCE BOOK:

1. *Tay Vaughan,2011.* **MULTIMEDIA: Making it Work**, [Seventh Edition], TMH.

15UIT53P	CORE LAB VI: PROGRAMMING LAB IN DOT NET	SEMESTER - V

Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Major concepts of creating windows and web applications.
2. To gain knowledge on C# programming language.

LIST OF PRACTICALS:

1. Program to display current data and time using delegates and events.
2. Program to add a string to Combo box with value of Textbox when user clicks button control.
3. Program to display hierarchical representations of items with tree view control using Runtime coding.
4. Program to handle user defined Exceptions.
5. Program for Employee details to read and display the data using constructors and member functions.
6. Program to demonstrate the following events:
    a) Click
    b) Mouse Down
    c) Key Down
    d) Form Load
7. Program to create an application for File Menu with Menu items New, Open, Save, Print and Exit & Edit Menu with Menu items Cut, Copy, Paste, Find and Undo.
8. Program to create an application for student information database and perform the following operations:
    a) Addition
    b) Deletion
    c) Updation
9. Program to create a login form to check the authentication of the user.
10. Program to create a web form to display the data in a data grid control (purchase database).

11. Program to check the Validate the personal information using the validate controls.
12. Program to Design a simple web site that makes use of Master Pages.

15UIT5SA	SKILL BASED SUBJECT2 : PHP AND MYSQL	SEMESTER - V

Total Credits: 3
Hours Per Week:4

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Focus on open source tools like PHP, MySQL
2. Client and Server Side Technologies.
3. Role of Ajax in PHP.

CONTENTS

UNIT - I

Introduction to PHP - history of PHP - web application platform – static Html – client side technologies – server side – scripting – installation of PHP – syntax – variables – comments – string – output statements – objects - constants.

UNIT- II

PHP – Functions: calling a function – defining a function – variable scope – function parameter – return values – Boolean expressions – logical operators – branching – looping – strings – strings in PHP – case functions – Arrays: creating – retrieving – multi-dimensional arrays.

UNIT - III

My SQL: Introduction – SQL language – role of MY SQL – features and benefits – basics of my SQL and functions – My SQL data types – DML queries – building forms from queries – operators – functions – working with data base and tables.

UNIT - IV

My SQL and PHP: – installation of PHP– and My SQL – connections – My SQL with apache server – configuration – simple program using apache server -database connectivity.

UNIT - V

Ajax and PHP: Ajax introduction – database – xml – history of and Ajax – how does Ajax works, memory leaks, xml http requests – get or Post methods – problem and challenges – benefits of Ajax – how and when to Ajax – selecting the right tools – and frame work for Ajax.

TEXT BOOKS:

1. *Steve Suehring, Tim converse and Joyce Park, 2009.* **PHP 6 and MySQL (bible).**

REFERENCE BOOKS:

1. *Kevin Tatroe, Peter Macintyre and Rasmus Lerdorf, 2013.* **Programming: PHP,** [Third Edition], Oriell'y Publications.
2. *Vikram Vaswani Edition,* 2004. **The complete reference of MySQL,** Tata McGraw Hill.

15UIT5SP	SKILL BASED LAB 2: PROGRAMMING LAB IN PHP AND MYSQL	SEMESTER - V

Total Credits: 3
Hours Per Week:3

OBJECTIVE:

The subject aims to build the concepts regarding:

1. To impart knowledge on PHP, MYSQL

LIST OF PRACTICALS:

1. Program to send an HTML formatted Email in PHP.
2. Program to do different types of Sorting in PHP.
3. Program to do String Manipulation in PHP.
4. Program to get color code from the user which displays the color name.
5. Program to do calculator functions
6. Program to upload a file in PHP.
7. Program to login authentication using PHP and MySQL.
8. Creating an application using PHP and MySQL.
9. Creating an application using PHP and MYSQL, and generate the reports
10. Creating an application with DML QURIES.
11. Program to demonstrate how a web page can communicate with a web server while a user type characters in an input field
12. Download a small project module and convert into our Requirement

Example website

1. www.phpclasses.com

2. www.codeguru.com

15UIT63A	CORE X: OPEN SOURCE TOOLS	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Understood the Linux concept
2. Understood the Unix networking programming
3. Understood the PHP programming Basics
4. Understood Perl programming

CONTENTS

UNIT - I

Introduction to Linux – What every Linux users knows- The shell-The X windows system –Files and Directories.

UNIT - II

Viewing Text – Editing Text – Pattern matching, VI, Ex and Vim editors.

UNIT - III

UNIX Network Programming-Introduction to TCP/IP: Introduction – The Transport Layer TCP and UDP. **Elementary sockets**: Sockets Introduction, Elementary TCP sockets – I/O multiplexing – Socket options.

UNIT - IV

Perl Programming: Perl - Introduction, Perl Basics: - Syntax, Variables, Strings, Numbers, Operators, and Arrays: - Using Arrays, Manipulating Arrays, Associative Arrays, and Chop, Length, and Sub string. Hashes, Arguments, Logic, Looping, Files, Pattern Matching, Environment Variables, Using cgi-lib for Forms.

UNIT - V

File Management PERL: - File Handling, Reading from Files, Appending Files, Writing to Files, File Checking, Reading Directories. **Databases PERL:** - DBI Module, DBI Connect, DBI Query, MySQL Module, MySQL Connect, MySQL SelectDB, MySQL Query.

REFERENCE BOOKS:

1. *Ellen sivever, Aarom weber, Stephen Figgins, Robers Love and Arnold Robbins O'Reilly, 2005.***Linux Ina Nutshell – A desktop Quick Reference**, [Fifth Edition].

2. *Michael Stutz,* 2004. **Linux CookBook,** [Second Edition], SPD Pvt.ltd.

3. .*Tom Christinasen & Nathan Torkington, O'Relliy,* 2006. **Perl CookBook**, SPD Pvt.ltd.

15UIT6EA	ELECTIVE II: CRYPTOGRAPHY AND NETWORK SECURITY	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Computer Security Concepts, Architecture and its Mechanisms.
2. Role of an Operating System and basic terminologies of networks.
3. IP Security and Firewalls.

CONTENTS

UNIT - I

Introduction: Overview-Computer security concepts- The OSI security architecture- Security Attacks- Security services - Security mechanisms. - A model for network security.

UNIT - II

Symmetric And Asymmetric Ciphers -Classical Encryption Techniques: Symmetric cipher model – transposition techniques – Rotor machines. Block ciphers and the data encryption standard: Block cipher principles – the data encryption standard (DES) – the strength of DES. Public key cryptography**:** Principles of Public key cryptosystems – the RSA algorithms.

UNIT - III

Cryptographic Data Integrity **-**Cryptographic Hash Function: Applications of Cryptographic Hash Function – Two simple hash functions – Requirements and Security. Message Authentication Codes (MACs) : Message Authentication functions – Requirements for MACs – Security of MACs . Digital Signatures: Digital signatures – Digital Signatures standard

UNIT - IV

Network and Internet Security -Transport Level Security: Secure Socket Layer – HTTPS – Secure Shell (SSH).Wireless Network Security: IEEE 802.11 Wireless LAN overview- Wireless Application Protocol Overview- WAP End to End Security.

UNIT - V

IP Security and Firewalls - IP Security: IP Security Overview – IP Security Policy. Firewalls: The need for firewalls – firewall characteristics – types of firewalls.

TEXT BOOK:

1. *William Stallings*, 2011. **Cryptography and Network Security**, [Fifth Edition], Pearson.

REFERENCE BOOK:

1. *Behrouza Forouzan*, 2008. **Data Communications and Networking**, [Fourth Edition], Eleventh Reprint, Tata McGraw-Hill.

15UIT6EB	ELECTIVE II: MOBILE COMPUTING	SEMESTER - VI

Total Credits: 4

Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To learn the basic concepts, aware of the GSM, SMS, GPRS Architecture.
2. To gain the Knowledge of CDMA and 3G Technology.

CONTENTS

UNIT - I

Introduction: Mobility of Bits and Bytes –Wireless The Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services- Developing Mobile computer Applications – security in mobile computing –Standards Why is it necessary – Standard bodies. M**obile Computing Architecture:** History of computers and Internet – Architecture for mobile computing – Three-tier architecture – Design considerations for mobile computing – Mobile computing through Internet – Making exiting applications mobile enabled .

UNIT - II

Mobile Computing through Telephony: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI.

UNIT - III

Emerging Technologies: Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card. **GSM** : Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations – Authentications and Security. SMS

UNIT - IV

GPRS – GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- Limitations – Billing and Charging. **WAP:** MMS – GPRS Applications

UNIT - V

CDMA and 3G: Spread spectrum technology – Is 95 – CDMA vs. GSM – Wireless Data – Third generation networks – Applications on 3G **WIRELESS LAN:** Wireless LAN advantages – IEEE 802.11 standards – Architecture – Mobile in Wireless LAN – Deploying wireless LAN – Mobile adhoc networks and sensor networks – Wireless LAN Security – Wi-Fi vs. 3G.

TEXT BOOK:

1. *Asoke.K Talukder, RoopaRYavagal,* 2009. **Mobile Computing**, TMH.

REFERENCE BOOKS:

1. *Raj Kamal*, 2012. **Mobile Computing**, Oxford Higher Education, [Second Edition].
2. *Jochen Schillar,2008.* **Mobile Communications,** [Second Edition], Pearson Education.

15UIT6EC	ELECTIVE II: WEB PROGRAMMING	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Basics of Internet Communication.
2. To gain knowledge on HTML, Java Scripting and web applications.

CONTENTS

UNIT - I

Basics of Internet communication - Hardware elements associated with internet - Internet Services - Internet Protocols - TCP/IP, UDP, HTTP - other Protocols - Telnet - Gopher - Mail and its types - FTP - Remote access and Transaction - Web Indexes - Search Engines.

UNIT - II

Introduction to HTML - Tags and Documents - Link documents using Anchor Tags - Images and Pictures - Tables -HTML Forms - Frames - Framesets.

UNIT - III

Introduction to Scripting - Java Script - Data types - Operators - Variables - Conditional Statements - Functions -Objects - Document object - Image Object - Event Handling - Introduction to VBScript and Perl Script.

UNIT - IV

Introduction to XML - Well formed XML – CSS - XSL - Valid XML - DTD - XSD - Introduction to DOM and SAX.

UNIT - V

Introduction to Dynamic web applications -Active Server Page Basics - ASP Object Model - Collections - Introduction to PHP.

TEXT BOOKS:

1. *Deitel & Deitel*, 2010. **Internet and www How to program?**, Prentice Hall.
2. *David Hunter et al.,* 2011. **Beginning XML**, Wrox Publications.

REFERENCE BOOKS:

1. *Daniel C.Lynch, Marehall T. Rose*, 1993. **Internet Systems Handbook**, Addison Wesley.
2. *Thomas Penny, 2000.***How to do everything with HTML**.

15UIT6ED	ELECTIVE III: SOFT COMPUTING	SEMESTER - VI

Total Credits: 4

Hours Per Week: 6

OBJECTIVE:

The subject aims to build the concepts regarding:

1. To learn about Soft Computing, Artificial Neural Networks, Back propagation Networks, ART, Fuzzy Systems, Neuro Fuzzy modeling

CONTENTS

UNIT - I

Soft Computing: Introduction of Soft Computing-Soft Computing vs. Hard Computing-various types of Soft Computing techniques-applications of Soft Computing. Artificial Intelligence: Introduction-various types of production systems-characteristics of production systems- characteristics of production systems-breadth first search, and depth first search techniques.

UNIT - II

Fundamentals of Neural Networks: Basic Concepts of Neural Network-Model of an Artificial Neuron-Neural Network Architectures-Characteristics of Neural Networks-Learning Methods-Taxonomy of Neural Network Architectures-History of Neural Network Research-Early Neural Network Architectures-some applications domain.

UNIT - III

Backpropagation Networks: Architecture of Back propagation Network-Back propagation Learning –illustrations-applications-Effect of Tuning Parameters of the Back propagation Neural Network-Selection of various parameters in Back propagation Neural Network-Variations of Standard Back propagation algorithms.

UNIT - IV

Supervised Learning Neural Networks – Perceptrons - Adaline – Backpropagation Multilayer Perceptrons – Radial Basis Function Networks – Unsupervised Learning Neural Networks – Competitive Learning Networks – Kohonen Self-Organizing Networks – Learning Vector Quantization – Hebbian Learning. Adaptive Resonance Theory (ART): Introduction-classical ART networks-simplified ART architecture.

UNIT - V

Fuzzy logic: Fuzzy Set Theory- Fuzzy Sets-Fuzzy Relations. Fuzzy Systems: Fuzzy Logic-Fuzzy Rule based system-Defuzzification Methods-Applications. Fuzzy Back propagation Networks: LR-Type Fuzzy Numbers-Fuzzy Neuron-Fuzzy Back propagation Architecture.

TEXT BOOKS:

1. *Elaine Rich Kevin Knight & Shivashankar B Nair,* 2010. **Artificial Intelligence**, [Third Edition], Tata MC- Graw Hill, Fourth Reprint. [Unit – I]
2. *Rajasekaran. S and Vijayalakshmi Pai,* 2011. **Neural Networks, Fuzzy Logic and Genetic Algorithms,** [Fifteenth Edition], PHI, New Delhi. [Units II, III, V]
3. *J.S.R. Jang, C.T. Sun, E. Mizutani,* 2010. **Neuro Fuzzy and Soft Computing , A Computational Approach to Learning and Machine Intelligence**, PHI Learing, Private Limited, New Delhi. [Unit – IV]

REFERENCE BOOKS:

1. *Fakhreddine O. Karray, Clarence De Silva*, 2009. **Soft Computing and Intelligent Systems Design,** Pearson.
2. *Sivanandam. S. N and Deepa S. N*, 2008. **Principles of Soft Computing,** Wiley India.

15UIT6EE	ELECTIVE III: DATA MINING	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To gain knowledge on data mining and Warehousing.
2. To learn the mathematical and algorithmic details of various data association techniques to discover patterns in underlying data (namely mining data).

CONTENTS

UNIT – I

Introduction: Data mining application –- the future of data mining – data mining software - **Association rules mining: Introduction-** data mining techniques and algorithms - K-Nearest Neighbor – Decision Trees – Association Rules – Neural Networks – Genetic Algorithms –basics- task and a naive algorithm- apriori algorithm – improve the efficient of the apriori algorithm – mining frequent pattern without candidate generation (FP-growth) – performance evaluation of algorithms.

UNIT - II

Classification: Introduction – decision tree – over fitting and pruning - DT rules—naïve bayes method- estimation predictive accuracy of classification methods – other evaluation criteria for classification method – classification software

UNIT - III

Cluster analysis: cluster analysis – types of data – computing distances- types of cluster analysis methods - partitioned methods – hierarchical methods – density based methods – dealing with large databases – quality and validity of cluster analysis methods – cluster analysis software. KDD Process – Data Selection – Cleaning – Enrichment – Coding.

UNIT - IV

Web data mining: Introduction- web terminology and characteristics- locality and hierarchy in the web- web content mining-web usage mining- web structure mining – web mining software - **Search engines:** Search engines functionality- search engines architecture – ranking of web pages. OLAP Tools-Data mining case studies.

UNIT - V

Data warehousing: Introduction – Operational data sources- data warehousing Data Warehouse – Need – Designing Decision Support Systems – Guidelines for data warehousing implementation – Data warehousing metadata – Integration with Data Mining – Client / Server and Data Warehousing –Multiprocessing Machine – Cost Justification

TEXT BOOKS:

1. *Gupta.G.K,* 2008. **Introduction to Data mining with case studies**, PHI Private limited, New Delhi.
2. *Pieter Adrians, Dolf Zantinge,* 1998. **Data Mining**, Addison Wesley.
3. *Alex Berson, Stephen J. Smith*, 2007. **Data Warehousing, Data Mining & OLAP**, [Tenth Reprint], Tata McGraw-Hill Edition.

REFERENCE BOOKS:

1. *Margaret H. Dunham*, 2009. **Data mining introductory and advanced topics**, [Sixth Impression], Pearson education.
2. *Prabhu.C.S.R,2008.* **Data warehousing concepts, techniques, products and an application**, [Second Edition], PHI.

15UIT6EF	ELECTIVE III: ENTERPRISE INFORMATION SYSTEM	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Major concepts on Supply Chain Management, ERP and CRM.

CONTENTS

UNIT - I

Business Process Re-Engineering: Innovative or Perish – Waves of Innovation – What a Difference a Century Can Make? – Value Innovation & BPR – Change Management "BPR" Philosophy – Models of "BPR".

UNIT - II

Supply Chain Management : Introduction to SCM – Evolution of Supply Chain Management – E-Business & Drivers of E-Business – Concept of Supply Chain Management – Understanding the SCM.

UNIT - III

Supply Chain Management: SCM Frame Work – EDI, IOS, ECSS – E-Sourcing and Out-sourcing. ENTERPRISE RESOURCE PLANNING**:** Introduction to ERP – Evolution of ERP – Materials Requirement Planning (MRP) – Manufacturing Resource Planning System (MRP II) and Money Resource Planning (MRP III).

UNIT - IV

Enterprise Resource Planning: ERP Packages – SAP – Relationship of ERP with other components of EIS – ERP implementation ERP Packages – SAP – Relationship of ERP with other components of EIS – ERP implementation – Personnel involved in ERP implementation.

UNIT - V

Customer Relationship Management : Introduction to customer Relationship Management (CRM) – Evolution of CRM – Understanding CRM – Framework of CRM – Models of CRM – CRM Technology – Integration with other Enterprise Wide System – CRM in Practice.

TEXT BOOKS:

1. *Balasubramaniyan.K, Usha Priya.S, Hema.K,* 2002. **Enterprise Wide Information Systems**, [Second Edition].

REFERENCE BOOKS:

1. *William, Sawyer, Hetisn,2009.* **Using Information Technology**, [Third Edition], TMH.

15UIT63P	CORE LAB VII: PROGRAMMING LAB IN OPEN SOURCE TOOLS	SEMESTER - VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To gain knowledge of PHP.
2. Various methods to implement rich internet applications using PHP.

LIST OF PRACTICALS:

1. Program to use variables and control structures.
2. Program to use PHP loops.
3. Program to use PHP arrays.
4. Program to use Passing variables between pages.
5. Creating a table and inserting records to table in MySQL.
6. Program to use Deleting and updating Operations in MySQL table.
7. Program to use How to Manipulating form elements through PHP.
8. Program to use Connecting PHP to MySQL database.
9. Program to perform the Viewing MySQL table data through PHP.
10. Program to use How to Manipulating MySQL database through PHP.
11. Program to use to check the Validating user login through PHP.
12. Program to upload a file in PHP.
13. Creating a Pay slip for an employee using PHP and MySQL
14. Download a small project module and convert into our Requirement
15. Creating a program for String Manipulation in PERL.
16. Creating a program for Environment Variables in PERL.
17. Reading a data from a file and write the data to another file using PERL.

15UIT63V	CORE XI: PROJECT AND VIVA VOCE	SEMESTER - VI

Total Credits: 4
Hours Per Week:6

OBJECTIVES:

The subject aims to build the concepts regarding:

1. Enables the students to enhance their research skills for software development.
2. The project is oriented towards developing the skills, knowledge and attitude needed to make an effective start as a member of the computer / IT profession.

COURSE INPUTS:

- Project is an integral and important component in the last semester (6th semester) and passing the UG Degree. Project is mandatory for all students.
- Project is basically meant for the implementation of the various technologies learned during the five semesters in the real life scenario.

Following guidelines are hereby enlisted for all the students based on the necessity and

IMPORTANCE OF THE PROJECT:

Each student in the UG final year shall compulsorily undergo Project Work in the 6th semester. Projects shall be done individually. Project work shall be done only in the lab provided by the college. Three Project Reviews shall be conducted in which the progress of project work shall be strictly evaluated by respective Project Guides and Project Coordinator. Viva-Voce shall be conducted only in the presence of Industrialists or academicians. Out of the Total of 100 marks, 40% of mark shall be allocated for CIA and 60% for ESE VIVA VOCE

BASIC FRAMEWORK:

The stages in Project Work are given below:

- The student has to select a project in a related field of Computer Science / Computer Application / Information Technology / Computer Technology.
- Students should do the project in the College.
- We allotted project hours during that semester and students can do their own project or collect data from the organization and get approval from the organization.
- After obtaining the approval from project guide, the student has to carry out the project work.
- Student has to maintain the project work diary. The Project Work carried out should be in accordance with the approved project proposal.
- All communication must be in writing. No verbal communication will be accepted.
- Student should adhere to the timings for submission of various reports as mentioned in the guidelines. No excuse will be entertained in any case.
- Student should prepare a Project Report at the end of his/her work, which his /her supervisor would certify and approve for submission (the Project Report should conform to the Standard Format laid down for Project Report).

The student should submit the Project Report to the college

GUIDE FOR THE PROJECT:

- Project guide will be allotted by the department to each student.
- Student must report to his/her project guide regularly.

The student can also have a guide who could be the person under whose supervision the student is doing the project in the industry

SELECTION OF PROJECT:

- The selection of the project can be done in consultation with the project guide.
- Group of the students are not allowed to do a single project at a time.

It is possible that a group of students are doing different modules of the same project. In such cases, the student is required to do 3-5 modules of the large project.

SUBMISSION OF PROJECT PROPOSAL:

- Students are expected to submit an initial project proposal or broad outlines of the project area to the respective guide, who will then forward it to the head of the department.
- All students must submit a synopsis/abstract, preferably, of about 1-2 pages, as project proposal. The content should be as brief as is sufficient enough to explain the objective and implementation of the project.
- If Student get data from the organization, the student should get Confirmation Letter from the organization is required along with the project proposal.

SUBMISSION OF PROJECT REPORT:

- The student will submit his/her project report in the prescribed format.
- Project Report will be submitted in triplicate (Hard Bound Copies) with the proper certification by the organization concerned in the specified format and color. None of copies of the project report will be returned to the student.
- The project reports along with a CD should be submitted to the HOD/Supervisor/ Controller of examinations, twenty days prior to the final semester examination.

A certificate from the supervisor should also be enclosed in the Project Report as provided in the format for project report.

FIELDS FOR PROJECT:

- **GUI Tools** (**Front End)** - Visual Basic, Power Builder, X-Windows (X/lib, X/motif, X/Intrinsic), Oracle Developer 2000,VC++, Builder
- **RDBMS(Back End) -** Oracle, Ingres, Sybase, Progress, SQL Plus, Versant, MY SQL, SQL Server, DB2
- **Languages -** C, C++, Java, VC++, C#
- **Scripting Languages -** PERL, SHELL Scripts (Unix), TcL/TK, PHP

- **.NET Platform -** Dialog APL, VB.Net, C#.Net, Visual C#.Net, Net, ASP.Net, Delphi
- **Middle Ware (Component) Technologies -** COM/DCOM, Active-X, EJB, WINCE, MSMQ, BEA, MessageQ, MTS, CICS
- **Unix Internals -** Device Drivers, RPC, Threads, Socket programming
- **Architectural Concepts -** CORBA, TUXEDO, MQ SERIES
- **Internet Technologies -** DHTML, Java script, VB Script, Perl & CGI script, HTML, Java, Active X, RMI, CORBA, SWING, JSP, ASP, XML, EJB, Java Beans, Servlets, Visual Age for JAVA, UML, VRML, WML, Vignette, EDA, Broad vision, Ariba, iPlanet, ATG, Big Talk, CSS, XSL, Oracle ASP server, AWT, J2EE, LDAP, ColdFusion, Haskell 98
- **Wireless Technologies -** Blue Tooth, 3G, ISDN, EDGE
- **Real time Operating System/ Embedded Skills -** QNX, LINUX, OSEK, DSP, VRTX, RTXC, Nucleus
- **Operating Systems -** WINDOWS 2000/ME, WINDOWS NT, WINDOWS XP, UNIX, LINUX, IRIX, SUN SOLARIS, HP/UX, PSOS, VxWorks, AS400, AIX, DOS
- **Application Areas -** Financial/ Insurance/ Manufacturing/ Multimedia/ Computer Graphics/ Instructional Design/ Database Management System/ Internet/ Intranet / Computer Networking-Communication Software development/ E-Commerce/ ERP/ MRP/ TCP-IP programming/ Routing protocols programming/ Socket programming.

NOTE:

1. Projects should not be developed using the packages like Dbase III plus, FoxPro, Visual FoxPro and MS-Access. Also, projects should not be developed using the combination of Visual Basic as the front end and MS-Access as the back end.

Students can also develop applications using tools/languages/software not listed above, if they are part of latest technologies.

PHASES OF TRAINING PERIOD:

- At the time of Review – I, students should present Title, Synopsis/Abstract of the project and module description.
- Students should present the Mid Term Report at the time of Review – II.
- Students should present the implementation and testing Report at the time of Review – III

- Students should submit the complete Project Report at the time of Model Viva-Voce.

An external Viva-Voce will be conducted for all the students

FORMATTING OF PROJECT:

- The whole project report should be nicely composed and presented.
- The dimension of the project report should be in A4 size only.
- Page Specification : (Written paper and source code)
  Left margin - 3.0 cms/1.18 inches
  Right margin- 2.0 cms/0.78 inches
  Top margin 2.54 cms/1 inch
  Bottom margin 2.54 cms/1 inch
- The project report should be typed in good word processor and should avoid spellings and grammatical mistakes.
- The impression on the typed copies should be black in color.
- **Normal Body Text: Font Size**: 12, Times New Roman, 1.5 lines Spacing, Justified.
- **Paragraph Heading Font Size:** 14, Times New Roman, Left Aligned. 12 points above & below spacing.

Chapter Heading Font Size: 16, Times New Roman, Centre Aligned, 30 points above and below spacing.

Coding Font size: 10, Courier New, Normal

- Students should use only one side of paper for printing.
- Page numbers - All text pages as well as Program source code listing should be numbered at the bottom center of the page.

Cover Page - Attractive and appealing cover page containing the Project Title, program details, Student & Guide details, month of submission etc.

Color - Cover Page color is Silver Gray

Letter of Authentication - To be submitted by students declaring that the Project Report is the original work of student and no reward had been attained for same project ever before. Students are advised not to **COPY** the project report from other students.
Authorization from Organization where such Project have been implemented with certificate showing the student name, register number and project name.

Certificate from Project Guide - Certificate from the Project Guide certifying the project work done under his/her guidance along with course, student, and project details is complete in all respects.

Draft of Project Report

The size of the project report can be approximately 100 pages, which include the following details:

Certificate of the project guide
Certificate of the Organization
Acknowledgement
Synopsis / Abstract

Table of Contents

Bibliography and Web References
Appendices
Forms (input screen shots)
Sample Source Code
Output Screen shots
Reports

- Along with it, if the student feels to add on any other topics as per the demand of the project or want to include the functionalities as per the SDLC (Software Development Life Cycle) or the Software Engineering model used, that can be done and included in the Project Report.
  The project report must include all the components as per the SDLC. It is highly recommended to follow the approaches of Software Engineering methodology

ARRANGEMENT OF CONTENTS:

- Cover Page & Title Page
- Bonafide Certificate from College /Organization
- Synopsis / Abstract
- Table of Contents
- Chapters
- List of Tables
- List of Figures
- List of Symbols, Abbreviations and Nomenclature
- Appendices
- References

The table and figures shall be introduced in the appropriate places.

PREPARATION FORMAT:

- **Cover Page & Title Page** – The Cover page & Title page of the project report should be according to the specification.
- **Bonafide Certificate & Declaration –** The Bonafide Certificate and declaration shall be with double line spacing using Font Style Times New Roman and Font Size 14**.**
- **Abstract –** Abstract should be one page synopsis of the project report typed with double line spacing, Font Style Times New Roman and Font Size 14.
- **Table of Contents –** The table of contents should list all material following it, as well as any material which precedes it. The title page and Bonafide Certificate will not find a place among the items listed in the Table of Contents but the page numbers of which are in lower

case Roman letters. One and a half spacing should be adopted for typing the matter under this head. The Table of Content of project should be as specified above.

- **List of Tables –** The list should use exactly the same captions as they appear above the tables in the text. One and a half spacing should be adopted for typing the matter under this head.
- **List of Figures –** The list should use exactly the same captions as they appear below the figures in the text. One and a half spacing should be adopted for typing the matter under this head.
- **List of Symbols, Abbreviations and Nomenclature** – One and a half spacing should be adopted for typing the matter under this head. Standard symbols, abbreviations etc. should be used.
- **Chapters –** The chapters may be broadly divided into 3 parts. Introductory chapter, Chapters developing the main theme of the project work and Conclusion.

The main text will be divided into several chapters and each chapter may be further divided into several divisions and sub-divisions.

- ❖ Each chapter should be given an appropriate title.
- ❖ Tables and figures in a chapter should be placed in the immediate vicinity of the reference where they are cited.

Footnotes should be used sparingly. They should be typed with single space and placed directly underneath in the very same page, which refers to the material they annotate.

- **Appendices** – Appendices are provided to give supplementary information, which is included in the main text as they may serve as a distraction and cloud the central theme.
- ❖ Appendices should be numbered using Arabic numerals.
- ❖ Appendices, Tables and References appearing in appendices should be numbered and referred to an appropriate place just as in the case of chapters.
- ❖ Appendices shall carry the title of the work reported and the same title shall be made in the contents page also.
- **List of References** –The listing of references should be typed 4 spaces below the heading "REFERENCES" in alphabetical order in single spacing and left justified. The reference material should be listed in the alphabetical order of the first author. The name of the author/authors should be immediately followed by the year and other details.

A typical illustrative list given below relates to the citation example quoted above.

REFERENCE BOOKS:

1. *Roger S Pressman,* 2012. **Software Engineering – A Practitioner's Approach,** [Sixth Edition, Fifth Reprint], Tata McGraw-Hill.
2. *Richard Fairley,* 2006. **Software Engineering Concepts,** [Twenty Third Reprint], Tata McGraw Hill.
3. *William.E.Perry,* 2006. **Effective Methods for Software Testing,** [Third Edition], Willey India.

29/7/15
BoS Chairman/HoD
Department of Information Technology
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Dr. P. R. MUTHUSWAMY
PRINCIPAL
Dr. NGP Arts and Science College
Dr. NGP - Kalapatti Road
Coimbatore - 641 048
Tamilnadu, India