பகுதி - I தமிழ்ப் பாடத்திட்டம் (2015 - 2016) முகல்பருவம்

இளநிலை அறிவியல் பட்ட வகுப்புகளுக்குரியது) (For I-UG Science Degree Classes)

15LSU101

பாடத்திட்டப் பொதுநோக்கம்

- கற்றல் வழி சிந்தனைத் திறனையும், கருத்து வெளிப்பாட்டுத் திறனையும், மேம்படுத்துதல்.
- ஆய்வுநோக்கை மேம்படுக்குகல்.
- இலக்கியங்கள் உணர்த்தும் வாழ்வின் நுட்பமான பகுதிகளை உணர்த்துதல்.
- மனித மனத்தினைப் பக்குவப்படுத்துதலில் இலக்கியம் தரும் பங்கினை உணர்த்துதல்.
- வளர்ந்து வரும் சமூகத்தில் அறஉணர்வு, பண்பாடு போன்றவை குறித்து அறிவூட்டல்.
- அரசுக் தேர்வுகளுக்கு மாணவர்களை ஆயத்தமாக்குதல்.

பாடத்திட்டப் பயன் விளைவு

- _____ இந்திய குடியுரிமைப் பணி முதலான போட்டித் தேர்வுகளில், விருப்பப் பாடமாக இடம்பெறுகின்ற, 'தமிழ் இலக்கிய வரலாறு' குறித்த முழுமையான அறிமுகம் பெற்றிருத்தல்
- கல்வெட்டியல், ஒலைச்சுவடியியல் ம்றைய தொல்லியல் • ஆவணத் தேடலுக்குரிய ஆய்வுமனப்பான்மையுடன், சார்ந்த இலக்கியங்களை அணுகுதல்.
- தமிழின் வளர்ச்சித் துறையாகிய, 'அறிவியல் தமி**ம்**' 'இன்ணய தமிழ்' குறித்த பன்நோக்கு அணுகுமுறையிலான ஆய்வுச் சிந்தனை மேம்பாடு
- வேலைவாய்ப்புக்குரிய சுயதிறன் மேம்பாட்டுடன், படைப்பாக்கத்திறன் மேம்பாடும் பெற்றிருத்தல்
- சமுதாய மற்றும் வாழ்வியல் மதிப்புகளைப் பேணுவதற்குக் இலக்கியங்களை நாடுகின்ற மனப்பான்மை கருவியாக வளர்ச்சி.
- மொழிபெயப்புத் துறைசார்ந்த வேலைவாய்புத் திறன் பெற்றிருத்தல்

15LAU101	:	தமிழ் முதல் தாள்	5-H,5-C
ຸ ພາຍ//ສໄ ` @	خجتوی کو		
ချစစ္ – ၊ . အျ	ையல் இவ கக்கலம்	ശത്തലല `ഗക്കോറി പന്നടിലാന് – പരാഭരംഗംഭ്യം ഉശങ്ങ	
	ഉഉള്വബ്ഥ .	, மகாகவ் பாரதுமார் – பலைகவனுக்கு அருள்ளா கவினர் நபிச்சுயர்க்கி – கிளிக்கூண்டு	ш.
	இயற்கை	: பாவேந்தர் பாரதிதாசன் – அழகின் சிரிப்பு – ஒ	5ாயிறு.
	சமுதாயம்	் கவிக்கோ அப்துல் ரகுமான் – இன்றைய நின	ົ້
	அறிவியல்	ல் : கவிஞர் சிற்பி பாலசுப்பிரமணியன் – காலம்.	
	பெண்ணி	யம் : கவிஞர் சிவரமணி – வையகத்தை வெற்றிெ	காள்ள
	சூழலியல் காகல் ் ப) : அனபாதவன - மரணம வைரயக்கட - காகல் உயில்	
	கள்ளம்பி	கைப்படிற்று காறல் உடல் ககை பா.விஜய் - கன்னம்பிக்கை	
அலகு–∥∶அ	– µற இலக்கி	است	
-, 0 -	′∽∞ 1. திருக்கு	5றள் - தேர்ந்தெடுக்கப்பட்ட குறள்கள் 20	
	2. நான்ம	ணிக்கடிகை - தேர்ந்தெடுக்கப்பட்ட ஐந்து பாடல	ப்கள்
	3. திரிகடு)கம் - தேர்ந்தெடுக்கப்பட்ட ஐந்து பாடல்கள்	
அலகு - III : ச	ிற்றிலக்கிய	பம்	
	1. நரிவிரு	த்தம் - அறன் வலியுறுத்தல்	
	2. தமிழ் வ	ıிடு தூது - தமிழின் சிறப்புரைத்தல்	
	3. மதுரை	[.] மீனாட்சியம்மைப் பிள்ளைத்தமிழ் - தொடுக்கும்	கடவுள் பழம்பாடல்
அலகு – IV : ச	சிறுகதை		
	1. புதுமை	ப்பித்தன் - நிகும்பலை	
	2. தனுஷ்	கோடி ராமசாமி - கந்தகக் கிடங்கிலே	
	3. கந்தர்வ	பன் - துண்டு	
	4. வாஸந்	தி - வடிகால்	
	5. சி.ஆர்.	ரவீந்திரன் - வழுக்குமரம்	
அலகு- V : பெ	மாழிப்பயி	ற்சி	
	1. விண்	ணப்பங்கள் எழுதுதல் மற்றும் கடிதப் பயிற்சி	
	2. மொழி	ிபெய ர் ப்புப் பயிற்சி	
பாட நூல்: கழ	ற்பகச்சோல	லை – தமிழ் ஏடு. கற்பகம் பல்கலைக்கழகத் தமிழ்	த் துறை வெளியீடு.

15ENU101

ENGLISH - I

Course Objectives:

- To enable the learners to acquire English language skills at a faster pace.
- To introduce different kinds of literary works •
- To familiarize different genres of Literature
- To instruct moral values through literature. •
- To improvise their productive and receptive skills •
- To strengthen the basic knowledge about grammar. •

Course Outcomes:

- Learn to reflect on the literary works and communicate flexibly.
- Reading and comprehending literary works
- Genres of literature to provide moral education
- Develop communication skills in business environment
- Interpersonal skills will be developed.
- Betterment of language competence

UNIT I:

Prose: Google Guys (Extract) – Richard L Brandt **Poetry:** The Blind Pedlar – Osbert Sitwell Short Story: A Garden So Rich – Christie Craig Vocabulary: Prefixes, Antonyms, Sentence Completion Grammar: Articles, Adverbs, Pronouns **Composition:** Proverb Expansion

UNIT II:

Prose: Happiness 101 – Geeta Padmanabhan Poetry: An Old Woman – Arun Kolatkar Vocabulary: Suffixes, Analogies Grammar: Nouns, Adjectives **Composition:** Dialogue Writing

UNIT III:

Prose: Structured Procrastination – John Perry Short Story: The Umbrella Man – Roald Dahl **One-Act Play:** The Boy Who Stopped Smiling – Ramu Ramanathan Vocabulary: Synonyms, Euphemisms, Word Definitions Grammar: Verbs, Conjunctions and Interjection, Indirect/Reported Speech

UNIT IV:

Poetry: No Sentence – Anjum Hassan One-Act Play: While the Auto Waits- O' Henry Vocabulary: Words Often Confused, Anagrams Grammar: Prepositions, Voice- Active and Passive Composition: Letter Writing- Informal

UNIT V:

Short Story: The Bird – Amar Jalil One-Act Play: The Cellphone Epidemic – Claudia I. Haas Vocabulary: Portmanteau Words, One Word Substitute Grammar: Questions, Pronunciation Composition: Letter Writing- Formal

Text Book

Rao, G. Chandralekha and et al. 2013, Spring, Emerald Publishers: Chennai.

Reference

Syamala, V, 2006, English for Communication., Emerald Publishers: Chennai

		Semester-I
		LTPC
15CTU101	Computer Concepts and Problem Solving Using C	5005

- To impart adequate knowledge on the need of programming languages and problem solving techniques.
- To develop programming logic.
- To develop programming skills using the fundamentals and basics of C Language.
- To enable effective usage of arrays, structures, functions, pointers and to implement the memory management concepts.
- To understand memory allocation concepts through pointers
- To teach the issues in file organization and the usage of file systems

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Gain experience about structured programming
- 2. Develop efficient algorithms for solving a problem.
- 3. Use the various constructs of a programming language viz. conditional, iteration and recursion.
- 4. Implement the algorithms in C" language.
- 5. Use simple data structures like arrays, stacks and linked list in solving problems.
- 6. Handle file in C.

UNIT-I

Computer Concepts and Problem Solving: Computer Fundamentals: Definition, Block diagram along with computer components, Characteristics & classification of computers, Hardware & software, Types of software, Firmware.

Introduction to Computer based Problem Solving- Problem definition – Problem Solvinggoals and objectives – problem identification and definitions. Algorithms for Problem definition – Program design and Implementation issues. Programming Environment – Computer Programming Languages – Types of Programming Languages – Compilers – interpreters.

UNIT-II

Introduction to C: Introduction - An Overview of C – Keywords and Identifier – Variables - Declarations of Variables - User Defined Type Declarations - Typedef – Enum - Constants – Data Types – Operators – Expressions - C Formatted I/O Operations. Decision Making and Branching Statements – Decision Making and Looping Statements - Arrays-Strings - String Handling Functions.

UNIT-III

Functions, Structures and Union: Functions - Introduction - Definition of Functions -Function Declaration - Category of Functions - Nesting of Functions – Recursion - Passing Arrays to Function. Storage Classes – Auto-extern-static-register. Structures and Unions – Introduction - Defining a Structure - Declaring Structure Variables - Accessing Structure Members - Arrays of Structure – Unions.

UNIT-IV

Pointers: Pointers – Introduction – Declaring Pointer Variables - Pointer and Arrays - Pointers and Strings – Array of Pointers - Functions and Pointers - Function Returning Pointers -Pointers to functions - Pointers and Structures

UNIT-V

File Management : File Management in C – Introduction - Opening a File - Closing a file – Input/output operations on files - Error handling during I/O Operations - Random Access to Files - Command Line Arguments - Dynamic Memory Allocation

Text Books

Ashok N. Kamthane, 2013, ITL Education Solutions Limited, C Programming, 1st Edition, Pearson education, New Delhi. [Page Nos.: 1-18, 29-37,259-261,269-282,291-310,317-334,341-365,373-404,415-452,467-473,481-500,519-540,551-559,581-597, 617-631,673-719]

Balagurusamy .E, 2007, Programming in ANSI C, 4^{th} Edition, Tata McGraw Hill Publishers, New Delhi.[Unit – I (23-81), Unit – II (114-259), Unit – III (262-348), Unit – IV (351-388), Unit – V (389-442)]

Balagurusamy .E, 2012, Programming in ANSI C, 6th Edition, Tata McGraw Hill Publishers, New Delhi.

References

Vikas Gupta, 2009, Computer Concepts and C Programming, Dream tech Press, Wiley India.

Ashok N. Kamthane, 2004, Programming with ANSI and Turbo, 1^{st} Edition, Pearson education, New Delhi.[Unit – I (7-60), Unit – II (63-277), Unit – III (318-446), Unit – IV (281-315), Unit – V (451-525)]

Yeswanth Kanetkar, 2007, Let Us C, 8th Edition, BPB Publications, New Delhi. [Unit – I (1-39,489-513), Unit – II (49-312,335-362), Unit – III (155-392), Unit – IV (155-198), Unit – V (423-462)]

Web Sites

http://www.cs.cf.ac.uk/Dave/C/CE.html http://www2.its.strath.ac.uk/courses/c/ http://www.iu.hio.no/~mark/CTutorial/CTutorial.html

Semester – I LTPC 15CTU111 0 0 5 3 **Problem Solving Lab**

Course Objectives (CO)

- To impart adequate knowledge on the need of programming languages and problem solving techniques.
- To develop programming logic
- To develop programming skills using the fundamentals and basics of C Language.
- To enable effective usage of arrays, structures, functions, pointers and to implement the memory management concepts.
- To understand memory allocation concepts through pointers •
- To teach the issues in file organization and the usage of file systems

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Gain experience about structured programming
- 2. Develop efficient algorithms for solving a problem.
- 3. Use the various constructs of a programming language viz. conditional, iteration and recursion.
- 4. Implement the algorithms in C language.
- 5. Use simple data structures like arrays, stacks and linked list in solving problems.
- 6. Handle file in C.
- 1. Write a C program to find the area of a circle using the formula. Area = PI * r2
- 2. Write a C program to convert decimal to binary.
- 3. Write a program to print Multiplication table using for and Do While Loops
- 4. Write a program to find the roots of quadratic equation
- 5. Write a program to find Maximum number without using arrays
- 6. Write a C program to arrange the accepted numbers in ascending order and descending order.
- 7. Write a program to calculate SIN(x) without using library function
- 8. Write a program
 - to find the length of a string (i)
 - concatenation of two strings (ii)
- 9. Write a program to reverse the given string
- 10. Write a program to check the given string is palindrome or not
- 11. Write a program to perform matrix multiplication
- 12. Using any one sorting method to sort given 'n' numbers using pointers.

- 13. Write a program to prepare an employee pay slip using structures
- 14. Write a program for Electricity Bill Preparation using files
- 15. Write a program for the Odd and even numbers are stored in separate files the original files.

		Semester - I
		LTPC
15CTU102	Digital Electronics	4 0 0 4

- To enable the students to gain knowledge on the architecture of modern computer.
- To understand how computer stores positive and negative numbers and to perform arithmetic operation of positive and negative numbers.
- To learn about logic gates and solve problems using Boolean algebra.
- To understand the simplification of circuits like adders, subtractors, multiplexers, encoders.
- To understand the basic computer organization and design.
- To learn Cache memory and its importance

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. To provide a strong foundation in construction of Sequential and Combinational Circuits.
- 2. To familiarize with the function of Gates, Flip Flops, Shift Registers, Counters, A/D& D/A Converters and its Applications.
- 3. Solve the problems using Boolean algebra
- 4. Understand the basic computer organization and design.
- 5. learn about Cache memory and its importance
- 6. Solve the binary arithmetic problems and conversion among the number systems

UNIT I – Number System and Codes

Introduction to Digital concepts – Number Systems: Decimal, Binary, Octal and Hexadecimal Numbers – Conversion – 1's and 2's Complements of Binary Numbers – Binary Arithmetic with Signal and Unsigned Numbers – Codes: Binary Coded Decimal (BCD) — Excess-3 – Gray Code — ASCII Codes —Error Detection and Correction Codes.

UNIT II -Logic Gates and Boolean Algebra

Introduction to Logic Gates – OR, AND, NOT, NAND, NOR, EX-OR and EX-NOR Gates. Boolean Logic and Expression, Laws and Rules of Boolean Algebra, DeMorgan's Theorem – Simplification using Boolean Algebra – Karnaugh Map.

UNIT III – Combinational Logic Circuits

Basic overview of Logic functions – Basic Adders & Subtractor – Parallel Binary Adder – 4bit Binary Adder/Subtractor – Comparators –Encoders and Decoders – Code Converters – Multiplexers and Demultiplexers — Parity Generators/Checkers.

UNIT IV – Sequential Logic Circuits

Flip-flops: RS – Clocked RS – Edge-triggered RS, D, and JK – JK Master-Slave flip flops – Registers and it's Types –SISO, SIPO, PISO, PIPO - Shift Registers and its Types – Ring Counters – Asynchronous and Synchronous Counter – UP/DOWN Counter- Ring Counter.

UNIT V – D/A, A/D Converters

Digital to Analog converters: Resistor Networks - Binary Ladder – Analog to Digital converters: Counter type – Ramp type – Successive Approximation Type.

Text Books

Salilvahanan, 2014, Digital Electronics and its Principles, Seventh Edition, Tata McGraw Hill.

Albert Paul Malvino, Donald P. Leach and Goutam Saha, 2010, Digital Principles and Application, Seventh Edition, Tata McGraw Hill.

Morris Mano, 2013, Digital Design: With an Introduction to Verilog HDL, Fifth Edition, Pearson Education.

References

Jain R.P, 2012, Modern Digital Electronics, Fourth Edition, Tata McGraw Hill Company.

Botkar K.R, 2008, Integrated Circuits, Fourth Edition, Khanna Publications.

		Semester - I	
		LTPC	
15CTU112	Digital Electronics Lab	0 0 3 2	

(Any 8 Experiments)

Course Objectives (CO)

- To enable the students to gain knowledge on the architecture of modern computer.
- To understand how computer stores positive and negative numbers and to perform arithmetic operation of positive and negative numbers.
- To learn about logic gates and solve problems using Boolean algebra.
- To understand the simplification of circuits like adders, subtractors, multiplexers, encoders.
- To understand the basic computer organization and design.
- To learn Cache memory and its importance

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. To provide a strong foundation in construction of Sequential and Combinational Circuits.
- 2. To familiarize with the function of Gates, Flip Flops, Shift Registers, Counters, A/D& D/A Converters and its Applications.
- 3. Solve the problems using Boolean algebra
- 4. Understand the basic computer organization and design.
- 5. learn about Cache memory and its importance
- 6. Solve the binary arithmetic problems and conversion among the number systems
- 1. Verification of basic gates
- 2. Realization of Logic Gates Using Universal Gates
- 3. Adder using Gates
- 4. Subtractor using Gates.
- 5. Multiplexer
- 6. Demultiplexer
- 7. Encoder
- 8. Decoder
- 9. Study of Flip-flops
- 10. Binary to Gray and Gray to Binary Converter

12 Bachelor of Computer Technology 2015 Karpagam Academy of Higher Education, Coimbatore-21, India

Semester - I15FCA101FOUNDATION COURSE A - VALUE EDUCATION2H - 1C

Instruction Hours/week: L: 2 T: 0 P: 0 Marks: Internal: 100 External: Nil Total: 100

Course Objectives (CO)

- To teach and inculcate the importance of value based living and sustainable lifestyle.
- To give students a deeper understanding about the purpose of life.
- To teach and inculcate the essential qualities to become a good leader.
- To be responsible citizens with clear conviction to practice values and ethics in life.
- To create awareness about the values and their significance and role
- To imbibe the concept of discipline and freedom

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Students will understand the importance of value-based living.
- 2. Students will gain deeper understanding about the purpose of their life.
- 3. Students will understand and start applying the essential steps to become good leaders.
- 4. Students will emerge as responsible citizens with clear conviction to practice values and ethics in life.
- 5. Students will become value-based professionals
- 6. Students will contribute in building a healthy nation

UNIT – I

Concept of Self, self-esteem and self-confidence. Concept of personality, determinants and disorgiansation of it. Personality development – meaning.

UNIT – II

Goal setting – meaning and importance; steps in goal setting Manners and Etiquette – meaning need and importance; means to improve. Positive thinking.

UNIT – III

Discipline – meaning. Concept of Roles and Responsibility Time Management – Meaning and steps for effective time management.

$\mathbf{UNIT} - \mathbf{IV}$

Interpersonal relationship – meaning and importance; means to improve it. Healthy friendship.

$\mathbf{UNIT} - \mathbf{V}$

Family Relationship importance of it; Means to improve. Spirituality – meaning. Its relationship with Altruism, sacrifice, self control, tolerance and truthfulness.

TEXT BOOKS

1. Karpagam Academy of Higher Education, Study Material, 2015.

Instruction Hours / week: L: 2 T: 0 P: 0 Marks: Internal: 100 External: Nil Total: 100

Course Objectives (CO)

- Students will be able to apply quantitative reasoning and mathematical analysis methodologies to understand and solve problems.
- To achieve the analytical and reasoning competencies and to improve their communication and presentation skills
- To impact knowledge on both Aptitude and Soft skills to the students
- To actively do mathematics—such as analyzing data, constructing hypotheses, solving problems, reflecting on their work, and making connections.
- To critically evaluate and demonstrate various principles involved in solving mathematical problems and to adopt new and faster methods of calculations.
- To reinforce competencies in soft skills which are crucial in a social setting

Course Outcomes (COs)

On successful completion of the course the students will be able to:

- 1. Understand the basic concepts of QUANTITATIVE ABILITY
- 2. Understand the basic concepts of LOGICAL REASONING Skills
- 3. Acquire satisfactory competency in use of VERBAL REASONING
- 4. Actively do mathematics—such as analyzing data, constructing hypotheses, solving problems, reflecting on their work, and making connections.
- 5. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
- 6. Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc.

UNIT - I

Introduction to Quantitative Aptitude, Speed Maths, Problems on Numbers, Averages,

Ratios and Proportions, Problems on Ages

UNIT - II

Number Series, Blood Relation, Image Analysis, Direction Sense, Syllogism, Coding and

Decoding

UNIT – III

Percentages, Data Interpretation, Profit and Loss, Simple Interest and Compound Interest

UNIT - IV

Parts of Speech, Tense, Subject Verb Agreement, Active and Passive Voice, Articles,

Prepositions

UNIT - V

Conditional Clause, Degrees of Comparison, Goal Setting, Interpersonal Skills

பகுதி - I தமிழ்ப் பாடத்திட்டம் (2015 - 2016)

(இளநிலை அறிவியல் பட்ட வகுப்புகளுக்குரியது)

(For I-UG Science Degree Classes) 15LSU201

_____**பொதுநோக்கம்**

- கற்றல் வழி சிந்தனைத் திறனையும், கருத்து வெளிப்பாட்டுத் திறனையும், மேம்படுத்துத 🗆 🗆 .
- _____டேத்துத____
- இலக்கியங்கள் உணர்த்தும் வாழ்வின் நுட்பமான பகுதிகளை • உணர்த்துதல்.
- மனித மனத்தினைப் பக்குவப்படுத்துதலில் இலக்கியம் தரும் • பங்கினை உணர்த்துதல்.
- வளர்ந்து வரும் சமூகத்தில் அறஉணர்வு, பண்பாடு போன்றவை • குறித்து அறிவூட்டல்
- அரசுத் தேர்வுகளுக்கு மாணவர்களை ஆயத்தமாக்குதல்.

பகுதி – I, தமிழ்		பருவம் II	
15LAU201 :	தமிழ் இரண்டாம் தாள்	5-H,5-C	

அலகு - I : பக்தி இலக்கியம்

சைவம் - மூவர் தேவாரத்திலிருந்து தேர்ந்தெடுக்கப்பெற்ற15 பாடல்கள்

2. வைணவம் – ஆண்டாள் நாச்சியாரின் திருப்பாவையிலிருந்து 11 பாடல்கள்

அலகு – II : சங்கஇலக்கியம்

அ). எட்டுத்தொகை

நற்றிணை: 1. இலை இல பிடவம், திணை – முல்லை, ஆசிரியர் – விழிக்கட் பேதைப் பெருங்கண்ணனார். 2. மடல் மா ஊர்ந்து, திணை – குறிஞ்சி, ஆசிரியர் – மடல் பாடிய மாதங்கீரனார்.

குறுந்தொகை : 1. உள்ளார் கொல்லோ, திணை – பாலை, ஆசிரியர் – பெருங்கடுங்கோ. 2. யாரினும் இனியன், திணை – மருதம், ஆசிரியர் – வடமவண்ணக்கன் தாமோதரனார்.

ஐங்குறுநூறு : 1. நுண்ணேர் புருவத்த, திணை – குறிஞ்சி, ஆசிரியர் – கபிலர். 2. அவறொறுந் தேரை, திணை – முல்லை, ஆசிரியர் - பேயனார்.

பதிற்றுப்பத்து – ததைந்த காஞ்சி, ஆசிரியர் - பாலைக் கௌதமனார்.

பரிபாடல் - வையை - திரை இரும் பனிப் பௌவம், ஆசிரியர் 🛛 மையோடக் கோவனார்.

கலித்தொகை – கடும் புனல் கால் பட்டு, திணை – பாலை, ஆசிரியர் - பெருங்கடுங்கோ.

புறநானூறு - 1. சிறப்பில் சிதடு முறுப்பில், திணை – பொதுவியல், ஆசிரியர் – உறையூர் முதுகண்ணன் சாத்தனார். 2.இளையரு முதியரும் வேறுபுலம் படா – ஆசிரியர் – கயமனார்.

ஆ). பத்துப்பாட்டு - சிறுபாண் ஆற்றுப்படை – கடையெழு வள்ளல்களின் சிறப்பு, நல்லியக்கோடனின் சிறப்பு, ஈகைத் திறம்.

அலகு - III : காப்பியங்கள்

1.மணிமேகலை –பாத்திரம் பெற்ற காதை – தீவதிலகை, மணிமேகலைக்குச் சொல்லியது, சிறைக்கோட்டம் அறக்கோட்டமாக்கிய காதை – மணிமேகலை வேண்ட, மாவண்கிள்ளி, சிறைக்கோட்டத்தை அறக்கோட்டமாக்கியது.

கம்பராமாயணம் - இலக்கியநயம் மிக்க, தேர்ந்தெடுக்கப்பெற்ற 41 பாடல்கள்.

அலகு - IV : கட்டுரைகள்

திருக்குறளில் மனிதவள மேலாண்மைக் கருத்துக்கள் - திருமிகு ஹரி விஜயலட்சுமி.

2. தமிழர் வளர்த்த நுண்கலைகள்: சிற்பமும் ஓவியமும் – தொ.மு. பாஸ்கரத் தொண்டைமான்.

சமயமும் தமிழும் – பேராசிரியர் அ.ச.ஞானசம்பந்தன்.

4.தமிழில் அறிவியல் – ஒரு பார்வை - பேராசிரியர் சிவகுமார்.

இன்றைய நெருக்கடிப் பிரச்சனைகள் - நீர்வளம் - முனைவர் ச. முத்துக்குமரன்.

அலகு - V : இலக்கணமும் மொழிப்பயிற்சியும் 1.எழுத்து, சொல், பொருள் இலக்கண எழுத்துப்பயிற்சிகள் 2.பொதுக் கட்டுரைகள் பாட நூல்: கற்பகச்சோலை – தமிழ் ஏடு. கற்பகம் பல்கலைக்கழகத் தமிழ்த் துறை வெளியீடு.

Part I TAMIL 2015. Karpagam University, Coimbatore - 21, India

ENGLISH - II

Course Objectives (CO)

- To enable the learners to acquire English language skills through literature.
- To familiarize them with English literature.
- To acquire Grammar knowledge.
- To help learners imbibe cultural values.
- To acquire skill of making correct sentences.
- To reflect originality on the application of soft skills and express in writing their views.

Course Outcome (COs)

After the completion of this course, a successful student will be able to:

- 1. Learn to enjoy the ecstasy of literature.
- 2. The select literary pieces will develop the confidence level of the learners.
- 3. To get the social values.
- 4. To know the importance of communication
- 5. Get sound knowledge in English
- 6. Trained to communicate well for business purpose.

UNIT I:

Prose: The Unexpected- Robert Lynd **Poetry**: The Village Schoolmaster – Oliver Goldsmith **Short Story:** The Lion's Share – Arnold Bennett **Vocabulary:** Homonyms **Grammar:** Irregular Verbs

UNIT II:

Prose: Travel by Train – J. B. Priestly **Poetry:** The Gift of India – Sarojini Naidu **Grammar:** Sentence patterns **Composition:** Reading Comprehension

UNIT III:

Prose: Women's Education is Almost More Important than the Education of Boys and Men – Indira Gandhi
Short Story: The Necklace – Guy De Maupassant
One-Act Play: The Referee – W.H. Andrews and Geoffrey Dearmer
Vocabulary: Similes
Grammar: Discourse Markers
Composition: Report Writing

UNIT IV:

Poetry: Ozymandias – P.B. Shelley **One-Act Play:** The Pot of Broth- W.B. Yeats **Vocabulary:** Collective Nouns **Grammar:** Correction of Sentences **Composition:** Picture Reading

UNIT V:

Short Story: The Silver Butterfly– Pearl S. Buck One-Act Play: The Bear – Anton Chekov Vocabulary: Acronyms Grammar: Question Tags Composition: Drafting Advertisement

Text Book

Board of Directors, 2014, Wings of Communication, Emerald Publishers: Chennai

Reference

Syamala, V, 2006, English for Communication, Emerald Publishers: Chennai.

- To understand how C models ++ improves C with object-oriented feature.
- To learn how transpose the physical problem domain into a hierarchy of objects.
- To learn the syntax and semantics of classes in C++ programming language.
- Objects, their behaviors, and their relationships, will be modeled and these will be programmed into a functional application that the student will compile, modify, enhance and run.
- The student will program in a structured style whereby reinforcing the concepts of software quality, reliability and maintainability.
- To learn file handling in C++.

Course Outcomes (COs)

After completion of this course the students will be able to :

- 1. Understand the difference between top-down and bottom-up approach.
- 2. Apply the concepts of object-oriented programming in constructor and destructor.
- 3. Understand how to apply the major object-oriented concepts to implement inheritance and polymorphism.
- 4. Apply pointer concepts in C++
- 5. Understand how to manage console I/O operations.
- 6. Use the concepts of preprocessor directives and macros.

UNIT – I

Introduction: Principles of object oriented programming: Basic concepts of object oriented programming – Benefits of OOP – Applications of OOPs – Structure of C++ Program C++ Tokens – Control Statement – Decision Making Statements- Loop Statements - Inline Functions – Function Overloading.

UNIT – II

Control Structure, Functions and Constructors: Classes and Objects: Specifying a class – Creating Objects – Accessing Class Members – Defining Member Functions – Static Data Members – Static Member Functions - Array of Objects – Friend Functions. Constructors and Destructors:- Constructors – Parameterized Constructors - Multiple Constructors in a Class – Constructors with Default Arguments - Copy Constructor - Dynamic Constructor – Destructors.

UNIT – III

Operator Overloading and Inheritance: Operator overloading: Defining operator overloading – overloading unary operators – overloading binary operators – overloading binary operators using friends – type conversions. Inheritance :- Inheritance – defining derived classes – single, multilevel, multiple, hierarchical inheritance - hybrid inheritance – virtual base classes – abstract classes.

$\mathbf{UNIT} - \mathbf{IV}$

Pointers and I/O Operations: Pointers: Pointers to objects – this pointer – pointers to derived classes – virtual functions- Pure Virtual Functions. Managing console I/O operations :- C++ streams – C++ stream classes – unformatted I/O operations – formatted console I/O operations – Managing output with manipulators.

UNIT – V

File Management: Files: Classes for file stream operations – Opening and Closing a file – sequential input and output operations – updating a file random access – Command Line Arguments. Templates and Exceptions:- Templates – class templates – function templates – member function templates – exception handling.

Text Books

K.R.Venugopal and Rajkumar Buyya, 2013, Mastering C++, 2nd Edition, Tata Mc Graw Hill Education, New Delhi.

Balagurusamy. E, 2007, Object Oriented Programming with C++, 3^{rd} Edition, Tata McGraw Hill publishing company Ltd, New Delhi. [Unit-I(7-14, 26 – 27, 32-52, 59- 82), Unit-II(88-147), Unit-III(151-207), Unit-IV(222-270), Unit V(277-340)].

Balagurusamy. E, 2013, Object Oriented Programming with C++, 6th Edition, Tata McGraw Hill publishing company Ltd, New Delhi.

References

Yashavant Kanetkar, 2000, Let Us C++, 2nd Edition, BPB Publications. [Unit-I(2-13, 19-80), Unit-II(87-96,177-182), Unit-III(187-197,261-304), Unit-IV(321-360),Unit V(385-463,540-566,571-586)].

Nabajyothi Barkakoti, 2001, OOPS in C++, 2nd Edition, Tata McGraw Hill Publishers. [Unit-I(3-39), Unit-II(161-179,189-206), Unit-III(209-223,231-254), Unit-IV(277-289),Unit V(295-325)].

Pearl software, 2002, OOP in C++, First Edition, Khanna Book Publishing co(p) Ltd. Delhi. [Unit-I(1-67,83-92), Unit-II(185-220,223-237), Unit-III(241-247,251-265,293-307), Unit-IV(269-289),Unit V(309-319,321-333,337-345,347-369)].

Web Sites

www.daniweb.com www.eships.com www.allexperts.com

- To understand how C models ++ improves C with object-oriented feature. •
- To learn how transpose the physical problem domain into a hierarchy of objects. •
- To learn the syntax and semantics of classes in C++ programming language.
- Objects, their behaviors, and their relationships, will be modeled and these will be programmed into a functional application that the student will compile, modify, enhance and run.
- The student will program in a structured style whereby reinforcing the concepts of software quality, reliability and maintainability.
- To learn file handling in C++.

Course Outcomes (COs)

Upon completion of this course the students will be able to :

- 1. Understand the difference between top-down and bottom-up approach.
- 2. Apply the concepts of object-oriented programming in constructor and destructor.
- 3. Understand how to apply the major object-oriented concepts to implement inheritance and polymorphism.
- 4. Apply pointer concepts in C++
- 5. Understand how to manage console I/O operations.
- 6. Use the concepts of preprocessor directives and macros.

Write a C++ Program for the Following Concepts

Object and classes:

- 1. Create a class to implement the data structure STACK. Write a constructor to initialize the top of the stack to zero .Write a member function PUSH() to insert an element and a member function POP() to delete an element.
- 2. Create a class ARITH which consists of a FLOAT and an INTEGER variable. Write member functions ADD(),SUB(),MUL(),DIV(),MOD() to perform addition, subtraction, multiplication, division and modulus respectively. Write member functions to get and display MAT() object values.

Operator overloading:

- 3. Create a class MAT as a 2D matrix and R, C represents rows and columns of the matrix. Overload the operators +,-,* to add, subtract, multiply two matrices. Write member functions to get and display MAT() object values.
- 4. Create a class STRING. Write member functions to initialize to get and display strings. Overload the operator + to concatenate two strings, == to compare two strings and a member function to find the length of the strings.

Inheritance:

5. Create a class which consist of EMPLOYEE detail like eno, ename, dept, basic salary, grade. Write member functions to get and display them. Derive a class PAY from the above class and Write member functions to calculate da, hra, pf depending on the grade and display the pay slip in a neat format using console I/O.

- 6. Create a class SHAPE which consist of two virtual functions cal_Area() and cal_Peri() to calculate area & perimeter of various figures. Derive three classes SQUARE,RECTANGLE and TRIANGLE from the class SHAPE and calculate area and perimeter of each class separately and display the result.
- 7. Create two classes which consist of two private variables, one integer and one float variable in each class. Write member functions to get and display them. Write a FRIEND function common to both classes which takes the object of the above two classes as arguments and the integer and float values of both the objects separately and display the result.

Console I/O:

8. Write a user-defined function USERFUN() which has the formatting commands like setw(), showpos(), precision(). Write a program which prints a multiplication table and uses userfun() for formatting.

Files:

- 9. Write a program to perform insertion, deletion and updation of records using files.
- 10. Write a program which takes a file as argument and copies into another file with line numbers using command line arguments.

Templates:

11. Write a Program to swap the numbers using the concept of function template.

- To have knowledge about the basic working of a microcontroller system and its programming in assembly language.
- To provide experience to integrate hardware and software for microcontroller • applications systems.
- To learn the various Concepts of Embedded System
- To acquire knowledge about microcontrollers embedded processors and their applications.
- T o develop the Programming Skills in 8051 Microcontroller.
- To provide a strong knowledge in the field of Real Time Operating System. •

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Ability to understand the internal architecture and interfacing of different peripheral devices with Microcontrollers.
- 2. Ability to write the programs for microcontroller.
- 3. Understand the concepts of embedded systems
- 4. Understand the role of embedded systems in industry.
- 5. Understand the design concept of embedded systems
- 6. Integrate hardware and software for microcontroller applications systems.

UNIT I – 8051 Microcontroller

Introduction to Microcontroller and Embedded Processors - Microcontroller for Embedded Systems - Overview of 8051 Family - 8051 Architecture - 8051 flag bits and PSW Register -Register Bank and Stack.

UNIT II –8051 Programming

8051 Assembly and C Programming - Instruction Set -Address Modes - Loop and Jump Instructions - Arithmetic Instruction - Logic Instructions - Single Bit Instructions. Data Types and Directives - I/O Port Programming.

UNIT III – Internal Peripherals of 8051

Basic Registers of Timer - Programming 8051 Timer-Counter Programming - Basics of Serial Communication - 8051 Connection to RS232 - 8051 Serial Communication Programming – 8051 Interrupts - Programming External Hardware Interrupts.

UNIT IV – Applications

Interfacing LCD to the 8051 - Interfacing ADC - Sensors to 8051- Interfacing Stepper Motor - 8051 Interfacing to the Keyboard - Interfacing DAC to the 8051.

UNIT V – Real-Time Operating System

Survey of Software Architecture: Round Robin-Round Robin with Interrupts-Function -Queue Scheduling Architecture - Introduction of RTOS - RTOS Architecture - Task and Task States - Task and Data - Semaphores and Shared Data - Message Queues, Mailboxes and Pipes - Timer Function – Events - Memory Management.

Text Books

Mohammed Ali Mazidi and Janice Gillispie Mazidi , 2008, The 8051 Microcontroller and Embedded Systems, 3rd edition, Pearson Education, Singapore.

Ayala. 2010. The 8051 Architecture and its Applications, Sixth Edition, Prentice Hall of India, New Delhi.

References

Embedded Microcontroller, 2008, Intel Manual – Volume I and II.

Dr. Rajiv Kapadia, 2004, The 8051 Microcontroller and Embedded Systems, First Edition, Jaico, Publishing House, Mumbai.

- To learn the fundamentals of PC Hardware.
- To develop base knowledge in the installation of peripheral devices.
- To get a detailed knowledge of all the hardware components that make up a computer
- To understand the different interfaces required for connecting the hardware devices.
- To understand the components on the motherboard
- To provide a strong knowledge in Trouble shooting of PC

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Understand the modern computer organization, processor and memory concept, Peripherals and recent system architecture
- 2. Identify the existing configuration of the computers and peripherals for upgrading the same as and when required.
- 3. Develop base knowledge in the installation of peripheral devices.
- 4. Learn the hardware components that make up a computer
- 5. Understand the different interfaces required for connecting the hardware devices.
- 6. Trouble shoots PC when required.

UNIT I – Micro Computer System

Introduction to Micro Computer System - Computer Organization - Number Systems and Codes Memory – Arithmetic and Logic Unit – Control Unit.

UNIT II – Peripheral Devices

Introduction to Peripheral Devices – Keyboard – CRT Display monitor – Printer – Magnetic Storage Devices - Floppy Disk Drive - Hard Disk Drive - Peripherals Interfaces and Controller – Keyboard Interface

UNIT III – Display Adapter

CRT Display - CRT Controller -Auxiliary Subsystems - Data Communication fundamentals - Serial Port in PC - Real time clock (RTC) - Magnetic Tape Subsystems -LAN – Memory Expansion Options

UNIT IV – Installation and Preventive Maintenance

Pre Installation Planning - Installation Practice - Routine Checks - Special Configurations -Memory Up Gradation

UNIT V – Trouble shooting

Troubleshooting - Computer faults - Nature of faults - Types of Faults Diagnostic Programs and Tools — Faults in Elimination Process – Systematic Troubleshooting – POST (Power on Self Test)

Text Books

27 Bachelor of Computer Technology 2015 Karpagam Academy of Higher Education, Coimbatore-21, India

B. Govindarajalu, 2011, IBM PC and Clones, Second Edition, Tata McGraw Hill Publishing Company.

Michael Meyers, 2003, Introduction to PC Hardware and Troubleshooting, First Edition, The Mike Meyers' Computer Skills, McGraw Hill.

Reference

Sanjay K. Bose , 1999, Hardware and Software of Personal Computers, New Age International Publishers.

Semester IIL T P C15CTU202C Allied Elective I – Microprocessor and its Application4 0 0 4

Course Objectives (CO)

- To apply the fundamentals of assembly level programming of microprocessors.
- To build a program on a microprocessor using arithmetic & logical instruction set of 8086.
- To develop the assembly level programming using 8086 loop instruction set.
- To write programs based on string and procedure for 8086 microprocessor.
- To analyze abstract problems and apply a combination of hardware and software to address the problem
- To make use of standard test and measurement equipment to evaluate digital interfaces

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Apply the fundamentals of assembly level programming of microprocessors.
- 2. Build a program on a microprocessor using arithmetic & logical instruction set of 8086.
- 3. Develop the assembly level programming using 8086 loop instruction set.
- 4. Write programs based on string and procedure for 8086 microprocessor.
- 5. Analyze abstract problems and apply a combination of hardware and software to address the problem
- 6. Make use of standard test and measurement equipment to evaluate digital interfaces

UNIT I – Introduction to 8-bit Microprocessor

Introduction to 8085 – Pin Diagram –Architecture – Demultiplexing the Bus –Generation of Control Signals – Fetching, Decoding and Execution of Instruction – Instruction Timing and Status Flag.

UNIT II – Addressing Modes

Instruction Set – Addressing Modes – Instruction Format – Simple Program – Memory Read Machine Cycle – Memory Unit s Machine Cycle.

UNIT III- Interfacing Concepts

Peripheral I/O Instructions – Device Selection And Data transfer – Types of Data Transfer – Input Interfacing – Input Interfacing Using Decoders – Output Interfacing: LED and 7 Segment Display – Interfacing Memory.

UNIT IV Peripheral Devices

Introduction to Programmable Peripheral Interface 8255 – Pin Diagram –Architecture – Modes of Operation: I/O and BSR – Architecture and Operation of 8251(USART). Architecture and Operation of Programmable Interrupt Controller (8259) – Architecture of 8254(8253) Programmable Interval Timer/Counter –DMA Controller(8279).

UNIT V- Applications

Time Delay Program – Traffic Light Control System – Water Level Controller – Stepper Motor Control – Interfacing DAC –Interfacing ADC – Temperature Measurement.

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Text Books

Ramesh S Gaonkar, 2000, Microprocessor Architecture, Programming and Application with 8085, Fourth Edition , Penram International Publishing, New Delhi.

M.K.Gupta, 2006, Microprocessor, Microcomputer, Microcontroller and Interfacing, First Edition, Paragon International Publisher, New Delhi.

References

Adithya P.Mathur, 2004, Introduction to Microprocessors, Second Edition, Tata Mc Graw Hill Publishers, New Delhi.

Ram.B, 2000, Fundamentals of Microprocessor and Microcontroller, Second Edition, Dhanpat Rai Publication, Mumbai.

- To have knowledge about the basic working of a microcontroller system and its programming in assembly language.
- To provide experience to integrate hardware and software for microcontroller applications systems.
- To learn the various Concepts of Embedded System
- To acquire knowledge about microcontrollers embedded processors and their applications.
- To develop the Programming Skills in 8051 Microcontroller.
- To provide a strong knowledge in the field of Real Time Operating System.

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Understand the internal architecture and interfacing of different peripheral devices with Microcontrollers.
- 2. Write the programs for microcontroller.
- 3. Understand the concepts of embedded systems
- 4. Understand the role of embedded systems in industry.
- 5. Understand the design concept of embedded systems
- 6. Integrate hardware and software for microcontroller applications systems.

(Any 8 Experiments)

- 1. Addition of 8/16 Bit Array of Data
- 2. Subtract of 8/16 Bit Array of Data
- 3. Multiplication & Division
- 4. Ones and Two's Compliment
- 5. Data Transfer using Parallel Port
- 6. Sorting of Numbers
- 7. Stepper Motor Interface
- 8. Wave Form Generation
- 9. Biggest and Smallest Number in an Array
- 10. D/A Converter

- To learn the fundamentals of PC Hardware.
- To develop base knowledge in the installation of peripheral devices.
- To get a detailed knowledge of all the hardware components that make up a computer
- To understand the different interfaces required for connecting the hardware devices.
- To understand the components on the motherboard
- To provide a strong knowledge in Trouble shooting of PC

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Understand the modern computer organization, processor and memory concept, Peripherals and recent system architecture
- 2. Identify the existing configuration of the computers and peripherals for upgrading the same as and when required.
- 3. Develop base knowledge in the installation of peripheral devices.
- 4. Learn the hardware components that make up a computer
- 5. Understand the different interfaces required for connecting the hardware devices.
- 6. Trouble shoots PC when required.

(Any 8 Experiments)

- 1. Identifying External Ports and Interfacing
- 2. Identifying PC cards and Interfacing.
- 3. Assembling of PC
- 4. Preventive Maintenance of a PC
- 5. Trouble Shooting of SMPS
- 6. Keyboard Servicing
- 7. Study of CRT
- 8. Communication and Bus Interfacing
- 9. Partitioning and Formatting Hard disks.
- 10. Installing System And Application Software

		Semester II
15CTU212 C	Allied Elective Practical I	LTPC
	Microprocessor and Interfacing Lab	0 0 3 2

- To apply the fundamentals of assembly level programming of microprocessors.
- To build a program on a microprocessor using arithmetic & logical instruction set of 8086.
- To develop the assembly level programming using 8086 loop instruction set.
- To write programs based on string and procedure for 8086 microprocessor.
- To analyze abstract problems and apply a combination of hardware and software to address the problem
- To make use of standard test and measurement equipment to evaluate digital interfaces

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Apply the fundamentals of assembly level programming of microprocessors.
- 2. Build a program on a microprocessor using arithmetic & logical instruction set of 8086.
- 3. Develop the assembly level programming using 8086 loop instruction set.
- 4. Write programs based on string and procedure for 8086 microprocessor.
- 5. Analyze abstract problems and apply a combination of hardware and software to address the problem
- 6. Make use of standard test and measurement equipment to evaluate digital interfaces

(Any 8 Experiments)

MICROPROCESSOR LAB

- 1. Addition of 8/16-bit and Array of Data
- 2. Subtraction of 8/16-Bit Number
- 3. Multiplication of 8-Bit Number
- 4. Division of 8-bit Number
- 5. Fill and Transfer an Array of Data.
- 6. Ascending and Descending of an Array.
- 7. Data Transfer using Parallel Ports.
- 8. Stepper Motor Interface
- 9. Traffic Light Controller
- 10. A/D Convertor and D/A Convertor

SEMESTER II

FOUNDATION COURSE - B 15FCB201 **ENVIRONMENTAL STUDIES** Total hours/week: L:2 T:0 P:0 Marks: Internal: 100 External: -

2H - 1C Total:100

Course Objectives (CO)

- To create the awareness about environmental problems among people.
- To develop an attitude of concern for the environment.
- To motivate public to participate in environment protection and improvement.
- To understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
- To apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
- To reflect critically about their roles and identities as citizens, consumers and • environmental actors in a complex, interconnected world.

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Master core concepts and methods from ecological and physical sciences and their application in environmental problem solving.
- 2. Master core concepts and methods from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
- 3. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
- 4. Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.
- 5. Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
- 6. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

UNIT - I: Eco system and natural resources: Environment - Definition - components -Ecosystem -Definition, Concept, Scope, importance, structure and functions of ecosystem. Energy flow, Ecological succession. Food chains and food webs. Classification of ecosystem. Natural resources: Forest resources; water resources

UNIT - II: Environmental pollution: Cause, effects and control measures of Air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution and nuclear hazards pollution. Solid waste management.

UNIT - III: Biodiversity and its conservation: Introduction- Definition, genetic, species and ecosystem diversity, biogeographical classification of India- Value of biodiversity: Consumptive, productive uses; social, ethical, aesthetic and option values. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.

UNIT - IV: Social issues and the environment: Urban problems related to energy- water conservation and management -Rain water harvesting- water shed management. Resettlement and Rehabitilisaion. Natural resources and associated problems and sustainable utilization. Environmental Education.

UNIT - V: Environment ethics: Environmental Ethics - Gender equity, ethical basis of environment education and awareness, conservation ethic and traditional value systems of India. Valuing nature, cultures, social justice, Human heritage, equitable use of resources, preserving resources for future generation, common property resources, Ecology and its uses and its degradation, Introduction to Environmental Protection Act (EPA).

TEXT BOOKS

- 1. Agarwal, K.M., P.K. Sikdar and S.C. Deb, 2002. A Text Book of Environment, Mac Millan India Ltd, Kolkatta, India.
- 2. Kotwal, P.C. and S. Banerjee, 2002. Biodiversity Conservation In Managed forest and protected areas, Agrobios, India.

REFERENCES

- 1. Singh, M.P., B.S. Singh and Soma S. Dey, 2004. Conservation of Biodiversity and Natural Resources. Daya Publishing House, Delhi.
- 2. Uberoi, N.K., 2005. Environmental Studies, Excel Books Publications, New Delhi, India.
- 3. Shaw, R and Krishnamurthy, R.R. 2009. Disaster management: global challenges and local solutions Universities Press (India) Private Ltd, Hyderabad.
- 4. Sorokin Pitirim. A, 1942. Man and Society In Calamity. New York: Dutton, 1942
- 5. Patrick L.Abbott, 2008. Natural Disasters, Mc Graw Hill, New York. Page: 1-7.
| | | | | | | C |
|-----------------------------|----------------------------|------------------|--------|---------|-------|-------|
| 15SSD101 | Soft Skill Development – I | | | 2 | 00 | 1 |
| Instruction Hours / week: I | L: 2 T: 0 P: 0 | Marks: Internal: | 100 Ex | xternal | : Nil | Total |
| 100 | | | | | | |

Students will be able to apply quantitative reasoning and mathematical analysis methodologies to understand and solve problems.

ттрс

- To achieve the analytical and reasoning competencies and to improve their communication and presentation skills
- To impact knowledge on both Aptitude and Soft skills to the students
- To actively do mathematics—such as analyzing data, constructing hypotheses, solving problems, reflecting on their work, and making connections.
- To critically evaluate and demonstrate various principles involved in solving mathematical problems and to adopt new and faster methods of calculations.
- To reinforce competencies in soft skills which are crucial in a social setting •

Course Outcomes (COs)

On successful completion of the course the students will be able to:

- 1. Understand the basic concepts of QUANTITATIVE ABILITY
- 2. Understand the basic concepts of LOGICAL REASONING Skills
- 3. Acquire satisfactory competency in use of VERBAL REASONING
- 4. Actively do mathematics—such as analyzing data, constructing hypotheses, solving problems, reflecting on their work, and making connections.
- 5. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
- 6. Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc.

UNIT - I

Introduction to Quantitative Aptitude, Speed Maths, Problems on Numbers, Averages,

Ratios and Proportions, Problems on Ages

UNIT - II

Number Series, Blood Relation, Image Analysis, Direction Sense, Syllogism, Coding and

Decoding

UNIT – III

Percentages, Data Interpretation, Profit and Loss, Simple Interest and Compound Interest

$\mathbf{UNIT} - \mathbf{IV}$

Parts of Speech, Tense, Subject Verb Agreement, Active and Passive Voice, Articles,

Prepositions

UNIT - V

Conditional Clause, Degrees of Comparison, Goal Setting, Interpersonal Skills

37 Bachelor of Computer Technology 2015 Karpagam Academy of Higher Education, Coimbatore-21, India

- To develop confidence to respond in English during situations where the use of English is imperative.
- To develop fluency in actual conversation in the English language.
- To develop speech skills necessary for confident and intelligent participations in Group Discussions and develop skills related to teamwork in work places.
- To develop confidence to respond in English during situations where the use of English is imperative.
- To develop fluency in actual conversation in the English language.
- To develop knowledge about business communication.

Course Outcome (COs)

After the completion of this course, a successful student will be able to:

- Learn the basics and purposes of listening skill.
- Understand importance of speaking.
- Develop the speaking skills on telephone, business and also in travel
- Learnt some effective vocabulary learning strategies.
- Communicate clearly and effectively and handle their day to day affairs well with their knowledge of language skills.

UNIT I

Listening: Listening comprehension – Listening for Specific Information –Note Taking – Interpreting Charts and Diagrams.

UNIT II

Speaking: Essentials of effective communication – Greeting and Introducing – Making requests – Asking for permission – Giving and Denying Permission – Offering and Accepting Help – Asking for and Declining Help – Giving Instructions and Orders - Talking about likes and dislikes.

Telephone Skills – Understanding telephone conversation – handling calls – leaving messages –making requests - giving instructions and orders

Discussion Skills – Giving your opinion – agreeing and disagreeing – Making suggestions – Interrupting – questioning – reporting – Dealing with questions. (Completing dialogues)

UNIT III

Reading: Reading – Reading with a purpose –Skimming and Scanning – locating main points – reading critically – Sequencing of sentences – Reading comprehension.

UNIT IV

Writing: Paragraph Writing – Descriptive and Narrative. Safety Instructions/ Suggestions. Expansion of Abbreviations – Spellings- Report writing.

Translation- Translating short sentences and passages from English to Tamil and from Tamil to English.

UNIT V

Vocabulary: Improve English vocabulary: Synonyms – Antonyms – Prefixes – Suffixes – Idioms – Collocations – Different types of English – British and American (Choose the best answer type from a database of 50 words each for each topic)

Functional Grammar: Forming questions, getting answers – Articles – Parts of Speech – Punctuation – Common mistakes in English (Homophones)(Exercise based)

References

Kenneth Anderson, Language in Use, Cambridge University Press.

Kenneth Anderson, Joan MacLean and Tony Lynch, 2008, Study Speaking: A course in Spoken English for Academic Purpose, Cambridge University Press.

Spoken English Part I & II (for Tamil speakers), Orient Longman Pvt. Ltd.

Dr. J. John Love Joy, Dr.Francis M.Peter S.J., 2007, Lets Communicate – Basic English for Everyone, 1st edition, Vaigarai Publications, Dindugul.

		Semester – III
		LTPC
15CTU301	Algorithm Analysis and Data Structures	5005

- To assess how the choice of data structures and algorithm design methods impacts the performance of programs
- To choose the appropriate data structure and algorithm design method for a specified application.
- To study the systematic way of solving problems, various methods of organizing large amounts of data.
- To employ the different data structures to find the solutions for specific problems.
- To solve problems using data structures such as linear lists, stacks, queues.
- To understand the usage of Tree and Binary tree and search operations.

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Choose appropriate data structure as applied to specified problem definition.
- 2. Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
- 3. To design and apply appropriate data structures for solving computing problems
- 4. To analyze algorithms and to determine algorithm correctness and time efficiency class.
- 5. Use linear and non-linear data structures like stacks, queues, linked list etc.
- 6. Illustrate various technique to for searching and Sorting

UNIT-I

Analysis of Algorithms : Introduction to Data Structures: Introduction to the Theory of Data Structures Data Representation-Abstract Data Types-Data Types-Primitive Data Types-Difference between Abstract Data Types, Data Types, Data Structures.

Analysis of Algorithms: Introduction – Best, Worst and Average Cases - Asymptotic analysis – Upper bounds – Lower bounds – Notations , Simplified rules –Classifying functions – Calculating running time of a program – Analyzing problems..

UNIT-II

Arrays and Linked Lists: Arrays: Introduction to Linear and Non-linear Data Structures-Arrays in C- One Dimensional Arrays-Array Operations-Two Dimensional Arrays-Multi Dimensional Arrays-Pointers and Arrays. Linked List: Introduction to Lists and Linked Lists-Dynamic Memory Allocation-Basic Operations-Double Linked Lists-Circular Linked Lists-Linked List in arrays-Linked Lists versus Arrays.

Polynomials and Sparse Matrix: Introduction-Representation of Polynomials.

UNIT-III

Stack and Queues: Stack: Introduction- Representation of Stack using Arrays and Linked List-Applications of Stack-Stack and Recursion.

Queues: Introduction- Representation of Queue-Circular Queue-Double Ended Queue-Priority Queue-Application of Queue.

UNIT-IV

Searching and Trees: Searching: Introduction-Sequential Search-Binary Search -Indexed Sequential Search. Trees: Introduction-Types-Basic Definition-Properties-Representation-Operation on Binary Tree – Application of Binary Trees – Recursive Traversal of Binary Tree.

UNIT-V

Graphs and Sorting: Graphs: Introduction-Sequential Representation-Linked Representation-Traversal of Graphs-Spanning Trees-Shortest Path. Sorting: Introduction – Selection Sort – Insertion sort – Bubble- Quick- Merge- Radix-Shell- Heap-Comparison of Time Complexity

Text Books

ISRD GROUP, 2013, Data Structures Using C, 2nd Edition, [Unit-I(1-26), Unit-II(27-99), Unit III(129-206), Unit IV(210-248, 255-284, 340-344), Unit V(348-370, 308-339)].

Clifford A. Shaffer, 2012, Data Structures and Algorithm Analysis, 3rd Edition, Dover Publications.

References

Krishnamoorthy, 2008, Data Structures Using C, Tata McGraw Hill Publishing Company Limited, New Delhi.

Kruse R, 2007, Data Structures & Program Design In C, 2nd Edition, Prentice-Hall of India, New Delhi.

Muniswamy, 2007, C & Data Structures, I.K. International Publishing House.

Seymour Lipschutz and G.A.Vijayalakshmi Pai, 2007, Data Structures, Schaum's Outlines, Tata McGraw-Hill Publishing Company Limited, New Delhi.

Tanenbaum A M, 2007, Data Structures Using C, Prentice-Hall of India Pvt Ltd, New Delhi.

Web Sites

www.gatesit.org/gitdownloads/C&DS.pdf

		Semester – III
		LTPC
15CTU302	Relational Database Management System	5005

Course Outcomes (COs)

- To describe a sound introduction to the discipline of database management systems.
- To give a good formal foundation on the relational model of data and usage of Relational Algebra.
- To introduce the concepts of basic SQL as a universal Database language.
- Ability to use PL/SQL
- To demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization.
- To provide an overview of physical design of a database system, by discussing Database indexing techniques and storage techniques.

Course Outcomes (COs)

Upon completion of the course, students will be able to

- 1. Explain the features of database management systems and Relational database.
- 2. Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra.
- 3. Create and populate a RDBMS for a real-life application, with constraints and keys, using SQL.
- 4. Retrieve any type of information from a data base by formulating complex queries in SQL.
- 5. Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database.
- 6. Build indexing mechanisms for efficient retrieval of information from a database

UNIT - I

Understanding Database Fundamentals: Origin of Database – Database elements – Design concepts – components of DBMS – Advantages and Disadvantages of DBMS. Database Models: Flat-file-hierarchical model – network model – relational model – object oriented model – Features of Object oriented Database Management system – Features of distributed DBMS – Comparison of DBMS & DDBMS - Object relational model. ER-model: entities – relationships – ERD symbols – cardinalities – sample ERD.

UNIT – II

Entities and Entity Relationships: Relational Model: Introduction – Relational database: attributes and domains – Tuples – Relation and their schemes – Relation representation – keys – relationships – relational operations – Integrity rules. Relational Algebra: Basic operations – Additional relational algebraic operations – some Relational algebra queries. Functional dependency: Reasoning about FD's – closure of set of FD's – Attribute closure.

UNIT – III

Objects: Relational database manipulation: Introduction – SQL: Data definition – Data manipulation: Basic data retrieval – condition specification – Arithmetic and aggregate

operations. SQL joins – Set manipulation – categorization – updates – views – index. Data Control language: grant – revoke – simple privileges. Simple flashback queries.

UNIT – IV

Overview of PL/SQL: Declaration section – executable command section: conditional logic, loops, CASE statements – exception handling section: predefined and user defined exceptions. Triggers: definition – types: row level, statement level, before and after, instead of – syntax – enabling and disabling triggers - replacing and dropping triggers. Cursors – definition – open – fetch – close – cursor attributes- select for update – types : implicit, explicit. Procedures, Functions: Local and global – procedures vs. functions – stored procedures, functions – create procedure syntax - create function syntax – calling procedures, functions. Replacing and dropping procedures, functions.

UNIT - V

Packages: Package header – package body – calling package members - Replacing and dropping package. Overview of Normalization: advantages - disadvantages. Normal forms: first normal form – second normal form – third normal form – denormalization. Parallel Databases: Introduction – Design of Parallel Databases – Advantages and Disadvantages of Parallel Database.

Text Books

Bipin C. Desai, 2013, An Introduction to Database Systems, Galgotia Publications, New Delhi [Unit-I (20-30, 45-72, 660-663, 821-826), Unit – II (145-184, 293-306), Unit- III (208-242)]

Rajiv chopra, 2013, Database Management Systems, 3rd revised edition, S.Chand publication [Unit I (404 – 432), Unit V (460-463)]

Kevin Loney and George Koch, 2002, Oracle 9i The Complete Reference, 1st Edition, Tata Mcgraw-Hill, New Delhi [Unit-IV(489-508), Unit – V (509-550)]

Alexis Leon, Mathews Leon, 2007, SQL Complete Reference[Unit-III (83-98, 103-118,132-139,153-165), Unit-IV (287-289,218-227,312-330), Unit – V (47-57)]

References

Shio Kumar Singh, 2011, Database Systems Concepts Design and Application, 2nd Edition, Pearson Education, New Delhi.

Ragu Ramakrishnan and Gehrke, 2003, Database Management Systems, Third Edition, McGraw-Hill, New Delhi, [Unit-I(26-47, 611-642), Unit-III(57-126, 130-173)].

Gerald V. Post, 2005, Database Management Systems Designing and Building Business Applications, 2nd Edition, Tata McGraw-Hill, New Delhi [Unit-I(30-76), Unit-II(77-140), Unit-III(159-181, 182-220)]

Case study

Project: University System Project: Course Registration System Project: Airline Reservation System Web Sites www.databasedir.com www.rdbms.org

		Semester – III
		LTPC
15CTU311	RDBMS and Data Structures Lab	0 0 4 2
~ ~ ~		

Course Outcomes (COs)

- To describe a sound introduction to the discipline of database management systems.
- To give a good formal foundation on the relational model of data and usage of Relational Algebra.
- To introduce the concepts of basic SQL as a universal Database language.
- Ability to use PL/SQL
- To demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization.
- To provide an overview of physical design of a database system, by discussing Database indexing techniques and storage techniques.

Course Outcomes (COs)

Upon completion of the course, students will be able to

- 1. Explain the features of database management systems and Relational database.
- 2. Design conceptual models of a database using ER modeling for real life applications and also construct queries in Relational Algebra.
- 3. Create and populate a RDBMS for a real life application, with constraints and keys, using SQL.
- 4. Retrieve any type of information from a data base by formulating complex queries in SOL.
- 5. Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database.
- 6. Build indexing mechanisms for efficient retrieval of information from a database

List of Programs

1. Create a table with following fields: Employee table:

Field name	Constraint	Туре	Size
Employee_no	Primary key	Character	6
Employee_name		Character	30
Address		Character	25
Designation		Character	15
Dob		Date	
Gender	Check	Character	1
Doj		Date	
Salary		Number	10,2

Oueries:

a) Display name of the employees whose salary is greater than "10,000".

b) Display the details of employees in ascending order according to Employee Code

c) Display the details of the employee earning the highest salary.

d) Display the names of the employees who earn more than "Ravi"

2. Create a table named **Student** with the following fields and insert the values:

Field name	field type	field size
Student Name	character	15
Gender	character	6
Roll No.	character	10
Department Name	character	15
Address	character	25
Percentage of Marks	number	4,2

Queries:

a) Calculate the average mark percentage of the students.

- b) Display the names of the students whose percentage marks are greater than 80%
- c) Display the details of the student who got the highest percentage of marks.
- d) Display the details of the students whose mark percentage is between 50 and 70.
- e) Display the details of the students whose mark percentage is greater than the mark percentage of Roll No = 12CA01

3. Create a table with following fields: Staff table

Stall table.			
Field name	Constraint	Туре	Size
Staff_no	Primary key	Character	6
Staff_name		Character	30
Dob		Date	
Dept_code	Foreign key	Character	4
Designation		Character	15
Basic Salary		Number	7,2

Department table:

Field name	constraint	Туре	Size
Dept_code	Primary key	Character	4
Dept_name		Character	30

Execute the following queries:

- 1. To list the staff who joined 2 years back.
- 2. To list the staff in computer science dept.
- 3. To list the staff name and the dept name in which he/she works.
- 4. To list the maximum and minimum salary in each dept.
- 5. To list the dept along with the total amount spent on salary
- 6. To list the name of the employees who draw the salary more than the average salary.

4. Create a table with the following fields:

Book table:

Field name	Constraint	Туре	Size
Access_no	Primary key	Character	6
Title		Character	30
Author		Character	30
Publisher		Character	30
Subject		Character	10
Price		Number	6,2

Execute the following queries:

- 1. The title of C and C++ books.
- 2. The books written by a particular author.

- 3. The books which cost between Rs.300/- and Rs.500/-
- 4. The number of books available in each subject.
- 5. The books in the decreasing order of the cost.

5. Create a table with the following fields:

Account table:

Field name	Constraint	Туре	Size
Acc_no	Primary key	Number	4
Cust_name		Varchar2	30
Branch_name		Varchar2	30
Cust_city		Varchar2	30

Borrower table:

Field name	Constraint	Туре	Size
Acc_no	Foreign key	Number	30
Branch_name		Varchar2	30
Amount		Number	8,2

Write a Query to perform different types of Join.

6. Create two tables course & batch with following fields:

COURSE: coursecodeno number(5), course name varchar(20), syllabus varchar(20) **BATCH**: bcode number(5), coursecode number(5), starting_date date, duration number(3), coursefee number(10,2)

Perform the following queries:

 \Box \Box Insert the details for course and batch tables with 10 records

 $\Box \Box$ Show the description of the two tables

 \Box \Box Select all the fields from course & batch tables

 \Box \Box Select all the fields from course & batch tables where coursecode=10

 \Box \Box Select all the fields from batch table where starting date=march 10th

 \square \square Select batch code from batch table where net income>50000

 \Box Select course name, batch code & starting date from batch & course tables where course code in batch table and course code in course table are equal

 \Box \Box Select a syllabus from course where coursecode=5

7. Create table with following fields:

Product table:

Field name	Constraint	Туре	Size
Product_code	Primary key	Varchar2	7
Product_name		Varchar2	30
Price		Number	6,2
Quantity		Number	4

Vendor table:

Field name	Constraint	Туре	Size
Vendor_name		Varchar2	30
Vendor address		Varchar2	30
Product_code	Foreign Key	Varchar2	7

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Create a trigger to fire when the Record is deleted and inserted.

8. Write a PL/SQL trigger to update the records while deleting the one record in another table.

voters_master:

Field name	Constraint	Туре	Size
voterid	Primary key	Number	5
name		Varchar2	30
Ward_no	Primary key	Number	4
dob		Date	
address		Varchar2	150

new_list

Field name	Constraint	Туре	Size
voterid		Number	5
ward_no		Number	4
name		Varchar2	30
Description		Character	50

9. Create a table to store the salary details of the employees in a company. Declare the cursor id to contain empno, employee name and net salary. Use cursor to update the employee details.

Salary:

Field name	Constraint	Туре	Size
emp_no	Primary key	Number	4
emp_name		Varchar2	30
designation		Varchar2	25
dept		Varchar2	30
basic		Number	5

10. Write the PL/SQL program to find the factorial and Fibonacci series of given number.

Implement the Following programs using C

- 11. To perform the operations of Linked List.
- 12. To perform Stack operations using arrays
- 13. To perform Infix-postfix operations
- 14. To search an element in an array using Linear Search
- 15. To Sort an array using Bubble Sort.

		Semester-III
		LTPC
15CTU303	Numerical Methods	4 2 0 4

- To understand the basic concepts of numerical methods
- To develop the mathematical skills in the areas of numerical methods.
- To understand numerical techniques as powerful tool in scientific computing.
- To provide suitable and effective methods called Numerical Methods, for obtaining approximate representative numerical results of the problems.
- To solve problems in the field of Applied Mathematics, Theoretical Physics and Engineering which requires computing of numerical results using certain raw data.
- To solve complex mathematical problems using only simple arithmetic operations. The approach involves formulation of mathematical models of physical situations that can be solved with arithmetic operations.

Course Outcomes (COs)

On completion of the course students will be able to

- 1. Apply Numerical analysis which has enormous application in the field of Science
- 2. Familiar with numerical integration and differentiation, numerical solution of ordinary differential equations.
- 3. Familiar with calculation and interpretation of errors in numerical method.
- 4. Develop and apply the appropriate numerical techniques for the problem, interpret the results, and assess accuracy.
- 5. Understand the basics of Numerical Differentiation & Integration and numerical solutions of ordinary differential equations.
- 6. Understand the concepts of difference operators and the use of Interpolation.

UNIT I

Relations: Properties of Binary relations – Equivalence relations - composition of relations, Closure of relations – Order relations – Partial order relations.

Functions: one-to-one, onto, one-to-one-onto functions – composition of functions, Inverse functions.

UNIT II

Mathematical Logic: Connectives, well-formed formulae, tautology, equivalence of formulas, tautological implications, duality law, normal forms, predicates, variables, quantifiers, Free and bound variables. Theory of inference for statement calculus and predicate calculus.

UNIT III.

Transcendental and polynomial equation – Bisection method, Regula Falsi method, Newton – Raphson method. Polynomial equation – Graffe's root squaring method.

UNIT -IV

System of linear algebraic equations – Gauss Elimination, Gauss Jordan and Gauss Seidel methods.

Interpolation – Newton's Forward and Backward formula – Lagrange's interpolation formula.

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UNIT- V

Numerical Differentiation : Newton's Forward Difference and Backward Difference. Numerical Integration: Trapezoidal rule and Simpson's rule.

Text Books

Venkataraman M.K., 2001, Numerical methods in science & Engineering, National Publication Co. Chennai.

Tremblay.J.A and R. Manohar., 2000, Discrete Mathematical structures with applications to Computer Science, Tata Mcgraw Hill Book Company, New Delhi.

References

Sundaresan V., Ganapathy Subramanian K.S., and Ganesan K., 2002. Discrete Mathematics, A.R. Publications, Nagapatinam.

Kandasamy P., Thilagavathy K., and Gunavathy K., 2003, Numerical methods, S.Chand & Company Ltd, New Delhi.

Veerarajan T., 2007, Discrete mathematics with graph theory and combinatorics, Tata Mcgraw hill companies, New Delhi.

15CTU304 A	Core Elective I
	Cloud computing

- To learn how to use Cloud Services.
- To implement Virtualization
- To implement Task Scheduling algorithms.
- To apply Map-Reduce concept to applications.
- To build Private Cloud.
- To know the impact of engineering on legal and societal issues involved •

Course Outcomes (COs)

Upon completion of this course, the students will be able to

- 1. Analyze the Cloud computing setup with it's vulnerabilities and applications using different architectures.
- 2. Design different workflows according to requirements and apply map reduce programming model.
- 3. Apply and design suitable Virtualization concept, Cloud Resource Management and design scheduling algorithms.
- 4. Create combinatorial auctions for cloud resources and design scheduling algorithms for computing clouds
- 5. Assess cloud Storage systems and Cloud security, the risks involved, its impact and develop cloud application
- 6. Broadly educate to know the impact of engineering on legal and societal issues involved in addressing the security issues of cloud computing.

UNIT I

Introduction to Cloud Computing -Characteristics of Cloud Computing -Paradigm shift -Benefits of cloud computing - Disadvantages of cloud computing- Role of Open Standards-Cloud Computing Architecture: Cloud computing stack-Public cloud -Private cloud -Hybrid cloud -Community cloud

UNIT II

Virtualization Technologies -Load Balancing and Virtualization -Advanced load balancing -The Google cloud - Hypervisors -Virtual machine types -VMware vSphere - Machine Imaging -Porting Applications -The Simple Cloud API - AppZero Virtual Application Appliance

UNIT III

Infrastructure as a Service (IaaS) -Platform as a Service (PaaS) -Software as a Service (SaaS) -Identity as a Service (IDaaS) -Compliance as a Service (CaaS)- Cloud storage.

UNIT IV

Cloud Information Security Objectives -Confidentiality, Integrity, and Availability -Cloud Security Services - Relevant Cloud Security Design Principles -Cloud Computing Risk Issues -The CIA Triad Privacy and Compliance Risks -Threats to Infrastructure, Data, and Access Control -Cloud Access Control Issues -Database Integrity Issues -Cloud Service Provider

Risks Architectural Considerations General Issues- Trusted Cloud Computing -Identity Management and Access Control

UNIT V

Case Study on Open Source and Commercial Clouds: Microsoft Azure- Amazon EC2-Google Web services.

Text Books

Barrie Sosinsky, 2010, Cloud Computing Bible, Wiley- India.

Ronald L. Krutz, Russell Dean Vines, 2010, Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Wiley –India.

References

Aravind Doss, Rajeev Nanda, 2013, Cloud computing – A Practitioner's Guide, Tata Mc Graw Hill Publication, New Delhi

Dr Kumar Saurabh, 2012, Cloud Computing, 2nd Edition, Wiley India.

- To know the basic concepts involved in mobile development environment
- To describe the limitations and challenges of working in a mobile and wireless environment
- To facilitate students to understand android SDK .
- To help students to gain a basic understanding of Android application development.
- To inculcate working knowledge of Android Studio development tool
- To integrate multimedia, camera and Location based services in Android Application.

Course Outcomes (COs)

After completion of this course, the students will be able to:

- 1. Identify various concepts of mobile programming that make it unique from programming for other platforms,
- 2. Critique mobile applications on their design pros and cons
- 3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces
- 4. Describe and work within the capabilities and limitations of a range of mobile computing devices.
- 5. Program mobile applications for the Android operating system that use basic and advanced phone features
- 6. Understand various Mobile security issues.

UNIT I

Introduction to Mobile Development: What is mobile computing? History of mobile environments - early mobile phones to smartphones and tablets, Development for mobile environments, Differences from traditional application development, Trends in mobile development.

UNIT II

Mobile Development : Introduction, Advantages, Limitations, Features useful for mobiles -Geolocation, offline web applications, offline web storage, animations, 2D/3D graphics, Audio/Video etc., Frameworks -- HTML5, Phone Gap (Apache Cordova) framework and jQuery Mobile framework.

UNIT III

Introduction to Android : Android Overview -- Features, Architecture, Applications, Application frameworks, Libraries, Runtime, Kernel, Android Ecosystem - Application stores, publishing, Android Development Tools - Android SDK, Android emulator, Development on hardware devices

UNIT IV

Basic Android Development: Writing Android Applications, Activity Lifecycle, Multi device support, Fragments, Data storage, Intents, Data sharing, Audio playback, Photo capture

UNIT V

Advanced Android Development : Animations. OpenGL ES, Wireless connections, Data syncing, Location aware applications, Best practices for development, Security, Distribution and Monetizing

Lab: Exercises using PhoneGap and the Android SDK using various features of Android.

Text Book

Ed Burnette, 2010, Hello Android: Introducing Google's Mobile Development Platform, 3rd Edition, The Pragmatic Programmers.

References

Wallace Jackson, 2012, Android Apps for Absolute Beginners, 2nd Edition, Apress,

Jeff Mc Wherter, Scott Gowell, 2012, Professional Mobile Application Development, 1st Edition.

- To know the need, advantages and disadvantages of Open Source software.
- To know the basic concepts of Open Source Database
- To understand how server-side programming works on the web.
- To receive and process form submission data by creating session
- To learn Open Source Server Applications and Open Source Desktop Applications
- To introduce the concepts of basic SQL as a universal Database language

Course Outcomes (COs)

After completion of this course, the students will be able to:

- 1. To understand the history and characteristics of open source software.
- 2. To understand the architecture and life cycle of OSS
- 3. To know the applications of Open source software.
- 4. To understand the basic concepts of PHP and MySQL programming.
- 5. Analyze and solve SQL database tasks using the PHP language.
- 6. Analyze and solve common Web application tasks by writing PHP programs

UNIT I

Overview of Free Open Source Software: The Open Source Definition - Examples of OSD Compliant Licenses - Examples of Open Source Software Product – The Open Source Software Development Process – A History of Open Source software: The Berkeley Software Distribution – The Free Software Foundation – Linux – Apache – Mozilla – Open Source Software.

UNIT II

Qualification: Defining Open Source Software – Categorizing Defining Open Source Software – Specific Characteristics of Open Source Software Transformation: The OSS Development Process – Taboos and Norms in OSS Development – The OSS development Life Cycle – Deriving a Framework for Analyzing OSS – Zachmans Framework for IS Architecture – CATWOE and Soft System Method – Deriving the Analytical Framework for OSS.

UNIT III

Environment: The "where" of OSS – the "when" of OSS – World View: A Framework for classifying OSS Motivations – Technological Micro-level (individual) motivation – Economic Micro-level and Macro-level (individual) Motivation – Socio-political Micro-level and Macro-level (individual) Motivation. Open Source Server Applications: Infrastructure Services – Web Services – Database Servers – Mail Servers – Systems Management – Open Source Desktop Applications: Introduction – Graphical Desktops – Web Browsers – The Office Suite – Mail and Calendar Clients – Personal Software – Cost of OSS: Total Cost of Ownership – Types of Costs Licensing: Types of Licenses – Licenses in Use – Mixing Open and Close Code – Dual Licensing.

UNIT IV

PHP Programming Basics - PHP - Introduction, PHP Basics: - Syntax- Variables- Controls and functions - Strings. Arrays: - Using Arrays, Manipulating Arrays, Associative Arrays. OOP with PHP –Advanced Array functions-Sessions-cookies and HTTP.

UNIT V

MySQL: Introduction-Connecting to and Disconnecting from the Server-Entering Queries. Creating and Using a Database-Creating and Selecting a Database-Creating a Table- Loading Data into a Table-Retrieving Information from a Table-Selecting All Data-Selecting Particular Rows-Selecting Particular Columns-Sorting Rows-Date Calculation-Working with NULL Values-Pattern Matching-Counting Rows-Using More Than one Table.

Text Books

Joseph Feller, Brain Fitzgerald, Eric S. Raymond, 2001, Understanding Open Source Software Development, 1st Edition, Addison-Wesley Professional.

Philipp K. Janert, 2011, Data Analysis with Open Source Tools, O'Reilly.

Kevin Tatroe, Peter MacIntyre, Rasmus Lerdorf, 2013, Programming PHP, O'Reilly.

Gayanath Jayarathne, 2013, Mysql Basics with PHP,. Lean Publishing

Reference

Tim Converse and Joyce Park with Clark Morgan, 2006, PHP 5 and MySQL Bible, Wiley Dreamtech India Pvt. Ltd .

Instruction Hours / week: L: 2 T: 0 P: 0 Marks: Internal: 100 External: Nil Total: 100

Course Objectives (CO)

- Students will be able to apply quantitative reasoning and mathematical analysis methodologies to understand and solve problems.
- To achieve the analytical and reasoning competencies and to improve their • communication and presentation skills
- To impact knowledge on both Aptitude and Soft skills to the students
- To actively do mathematics—such as analyzing data, constructing hypotheses, • solving problems, reflecting on their work, and making connections.
- To critically evaluate and demonstrate various principles involved in solving mathematical problems and to adopt new and faster methods of calculations.
- To reinforce competencies in soft skills which are crucial in a social setting

Course Outcomes (COs)

On successful completion of the course the students will be able to:

- 1. Understand the basic concepts of QUANTITATIVE ABILITY
- 2. Understand the basic concepts of LOGICAL REASONING Skills
- 3. Acquire satisfactory competency in use of VERBAL REASONING
- 4. Actively do mathematics—such as analyzing data, constructing hypotheses, solving problems, reflecting on their work, and making connections.
- 5. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
- 6. Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc.

UNIT - I

Time, Speed and Distance, Time and Work, Pipes and Cisterns, Geometry, Data Arrangement

$\mathbf{UNIT} - \mathbf{H}$

Analogy, Logic based Venn diagram, Probability, Permutation and Combination, Logarithms

UNIT – III

Data Sufficiency, Clocks, Calendar, Reading Comprehension, Sentence Correction, Sentence Completion, Spotting the Errors, Jumbled Sentences

UNIT – IV

Synonyms, Antonyms, Verbal Analogy, Statements and Assumptions, Group Discussion

UNIT - V

Resume Writing, Introduction to HR rounds, Time Management, Attitude and Behaviour

		LTPC
15ENU401	English - IV	4 0 0 4

Semester-IV

Objectives

- To train the students in understanding the concepts of communication.
- To train the students in developing their written communication and
- presentation skills.

UNIT I – Concept of Communication – Barrier to Communication –Body language – Personality Development – Etiquette and Manners- Soft Skills – Emotional Intelligence

UNIT II - Listening Comprehension - Reading Comprehension - Paragraph writing -Precise Writing – Writing Resume and Covering Letter -Speaking – Welcome Address, Vote of Thanks, Compering, Debates, Role Play, Dialogues – Vocal Communication Techniques. Voice, Quality, Volume, Pitch

UNIT III – Dicto Composition – Letter Writing (Informal, Letters to the Editor etc) – Term paper – Book reviews

UNIT IV - Business Correspondence - Layout of Business Letter - Formal Styles of Business Letters - Letters of Acceptance, Appointment, Resignation, Complaint, Sending E-mails.

UNIT V - Effective Presentation - Planning - Audience Analysis - Logical Sequencing -Timing of the Presentation - Conclusion - Answering Queries - Group Discussion -Interview.

Text Book

Juneja. P. Om and Aarati Mujumdar, 2010, Business Communication -Techniques and Methods, Orient Blackswan Pvt. Ltd., Hyderabad.

References

Badi, R.V and K. Aruna, 2008, Business Communication, Vrinda Publications: New Delhi.

Balasubramanian M and G Anbalagan, 2007, Performance in English, Anuradha Publications: Kumbakonam

Mohan, Krishna and Meenakshi Raman, 2008, Effective English Communication, Tata McGraw Hill: New Delhi.

Selley, John, 2005, Oxford Guide to Effective Writing and Speaking. 2005. OUP: New Delhi.

		Semester IV
		LTPC
15CTU401	Operating Systems	6006

- To understand the main components of an OS & their functions.
- To study the process management and scheduling.
- To understand various issues in Inter Process Communication (IPC) and the role of OS in IPC. To understand the concepts and implementation Memory management policies and virtual memory.
- To understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS
- To understand the structure and organization of the file system
- To learn case studies based on different operating system.

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Describe the important computer system resources and the
- 2. Perform the role of operating system in their management policies and algorithms.
- 3. Understand the process management policies and scheduling of processes by CPU
- 4. Evaluate the requirement for process synchronization and coordination handled by operating system
- 5. Describe and analyze the memory management and its allocation policies.
- 6. Identify use and evaluate the storage management policies with respect to different storage management technologies, identify the need to create the special purpose operating system.

UNIT – I

Introduction: What is an OS? – Mainframe systems Desktop Systems – Multiprocessor systems – distributed systems – real time systems. Process: - Process concepts – Operation on process – cooperation process - Inter process Communication - - Mutual Exclusion - Critical sections- primitives – Semaphores – Deadlock: Deadlock prevention, avoidance, detection, recovery from deadlock.

UNIT – II

Storage management: Memory Management - swapping- Contiguous memory allocation – paging, segmentation – segmentation with paging – Virtual memory :Virtual storage organization – Demand Paging, Process Creation – Page replacement – Thrashing.

UNIT – III

Processor Scheduling: preemptive scheduling : - Scheduling Criteria – Scheduling Algorithms – FCFS- SJF- Priority – RoundRobin –Multilevel Queue – Multilevel Feedback Queue .

UNIT – IV

File systems: Introduction – File System Concepts – Access Methods – Directory structure – File Sharing – Allocation Methods – Free space management –Efficiency and performance –

59

Recovery Disk Performance Optimization: Introduction – Disk structure – Disk scheduling – Disk management.

UNIT – V *Case studies*

LINUX, Windows 2000, Windows XP : History- Design principles- File systems- Memory.

Text Book

Silberschatz Galvin Gagne, 2012, Operating system concepts, 9th Edition, Wiley India (pvt), Ltd, New Delhi. [(Unit 1: 3-14,17,95,103,1-7,109,191,201,145-164), (Unit 2: 280-309,320-330,348), (Unit 3: 155, 157-168), (Unit 4: 371-383,395,421-437,491-498), (Unit 5: 695-700, 716-724, 743,744,766,789,791,823)]

References

Deitel H.M, 2005, Operating systems, 3rd Edition, Addison Wesley Publication, New Delhi.[(Unit-1:-3, 49, 54, 75, 76, 77, 89, 160, 164, 168, 170),(Unit-2:- 187, 201, 190, 221, 230, 237, 264, 253), (Unit-3:- 290, 289, 292, 295, 291, 293, 296), (Unit-4:- 389, 394)]

Pramod Chandra P. Bhatt, 2007, An Introduction to Operating Systems, 2nd Edition, Prentice Hall India, New Delhi.[(Unit-1:-101, 104, 105, 108, 109), (Unit-2:-56, 67, 74, 69, 71)]

Tanenbaum Woodhull, 2005, Operating Systems, 2nd Edition, Pearson Education (LPE), New Delhi. [(Unit-1:- 3,59,58,66,166,173,175,172), Unit-2:- 310, 313, 319, 348, 352, 319),(Unit-3:- 85,84,87)]

William Stallings, 2009, Operating Systems internals and Design Principles, 6th Edition, Prentice Hall India, New Delhi.

Web Sites

www.webopedia.com searchwindowsserver.tech.target.com www.ghu.org www.computerhope.com www.answers.com www.osdata.com

		Semester IV
		LTPC
15CTU402	.NET Programming	6006

- To design, formulate, and construct applications with VB.NET
- To integrate variables and constants into calculations applying VB.NET •
- To determine logical alternatives with VB.NET decision structures
- To implement lists and loops with VB.NET controls and iteration •
- To separate operations into appropriate VB.NET procedures and functions •
- To assemble multiple forms, modules, and menus into working VB.NET solutions

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Grasp the fundamentals of a programming language and know the basic differences between programming languages
- 2. Choose the architecture based on the problem to be solved.
- 3. Differentiate between the types of applications supported by .Net
- 4. Build, compile and execute a VB .Net program
- 5. Apply techniques to develop error-free software
- 6. To build integrated VB.NET solutions using files and structures with printing capabilities. Translate general requirements into data-related solutions using database concepts

UNIT - I

Introduction to .NET: NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. The environment: Editor tab, format tab, general tab, docking tab. visual development & event driven Programming -Methods and events.

UNIT - II

The VB.NET Language: The VB.NET Language- Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Structure Programming – Modularity – Information Hiding - Abstraction - Events - subroutines and functions- Message box - Input box. Control flow statements: conditional statement, loop statement.

UNIT - III

Working with WPF: Introduction : Understanding Windows Graphics - WPF: A Higher-Level API - The Architecture of WPF. - ,XAML: Basics, Properties and Events in XAML -Loading and compiling -Layout-. Classic Controls: The Control Class - Content Controls -Text Controls - List Controls - Range-Based Controls.

UNIT – IV

Objects and collections: Understanding objects, Properties, Methods. Understanding collections. Files : Introduction - Classification of files - Processing files - handling files and folder using class - Directory class - file class.

UNIT - V

Database programming with ADO.NET: Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid. Generate Reports Using CrystalReportViewer.

Text Books

Shirish Chavan, 2007, Visual Basic .Net, 1st Edition, Pearson Education, New Delhi.

Bryan Newsome, 2012, Beginning Visual Basic 2012, John Wiley & Sons, Inc.

Matthew MacDonald, 2008, Windows Presentation Foundation with .NET 3.5, Apress.(Chapters 1,2,4 and 7 only).

Duncan Mackenzie and Kent Sharkey, 2006, Sams Teach Yourself Visual Basic.Net, 1st Edition, Techmedia, New Delhi.

References

Ian Griffiths, Chris Shells, 2005, Programming Windows Presentation Foundation. 1st Edition, O'Reilly Publishers.

Jeffrey R. Shapiro, 2002, The Complete Reference Visual Basic.Net, Tata -McGraw-Hill Edition, New Delhi.

Web Sites

www.startvbdotnet.com www.functionx.com www.devarticles.com www.dotnetspider.com www.developerfusion.com http://www.wpftutorial.net/hellowpf.html

		Semester – IV
		LTPC
15CTU411	VB .NET Programming Lab	0 0 6 3

- To design, formulate, and construct applications with VB.NET
- To integrate variables and constants into calculations applying VB.NET
- To determine logical alternatives with VB.NET decision structures
- To implement lists and loops with VB.NET controls and iteration
- To separate operations into appropriate VB.NET procedures and functions
- To assemble multiple forms, modules, and menus into working VB.NET solutions •

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Grasp the fundamentals of a programming language and know the basic differences between programming languages
- 2. Choose the architecture based on the problem to be solved.
- 3. Differentiate between the types of applications supported by .Net
- 4. Build, compile and execute a VB .Net program
- 5. Apply techniques to develop error-free software
- 6. To build integrated VB.NET solutions using files and structures with printing capabilities. Translate general requirements into data-related solutions using database concepts
- 1. Write a VB.NET program to calculate Simple interest and compound Interest
- 2. Write a VB.NET program to implement Calculator.
- 3. Write a VB.NET program to implement Notepad
- 4. Write a VB.NET program to draw several shapes and fill with color.
- 5. Write a VB.NET program to perform the following in list box
 - a) Add an item
 - Delete an item b)
 - c) List count
 - d) Clear the List
- 6. Write a program to calculate the total marks of the student and print the grades
- 7. Write a VB.NET Program to implement Employee Payroll System.
- 8. Write a VB.NET program to create and manipulate a File.
- 9. Write a Program to implement a Web Browser
- 10. Write a program to maintain the details of doctors in a hospital with their specialization.
- 11. Write a program to animate the picture using Timer Control.
- 12. Write a program to move the object from one location to another. Change the color and size of object at different time interval.

- 13. Write a program to place ten pictures in the list box. Using timer control take the picture from List box and change the form background after specific time interval.
- 14. Write a program to implement speaking program. Get the text input from the user and convert into voice.
- 15. Write a program to implement chatting.

		Semester – IV
		LTPC
15CTU403 A	Allied Elective II - Operations Research	4 2 0 4

This course enables the students to

- To learn the basic concepts and applications of linear programming. •
- To impart knowledge in concepts and tools of Operations Research.
- To know the constructive techniques to make effective business decisions •
- Define and formulate linear programming problems and appreciate their limitations
- To Identify and develop operational research models from the verbal description of the real system
- To Solve network models like the shortest path, minimum spanning tree, and maximum flow problems

Course Outcomes (COs)

On successful completion of the course, students will be able to

- 1. Understand the basic concepts and application of operation research in various fields.
- 2. Understand and analyze managerial problems in industry so that they are able to use resources (capitals, materials, staffing, and machines) more effectively
- 3. Define and formulate linear programming problems and appreciate their limitations
- 4. Recognize the importance and value of Operations Research and mathematical modeling in solving practical problems in industry
- 5. Identify and develop operational research models from the verbal description of the real system
- 6. Solve network models like the shortest path, minimum spanning tree, and maximum flow problems

UNIT I

Linear Programming: Formulation of LPP - Graphical solution to LPP -Simplex method -Big M method and Duality in LPP.

UNIT II

Transportation model: Introduction - Mathematical Formulation -Finding initial Basic Feasible solutions - Optimum solution for non degeneracy and degeneracy model -Unbalanced Transportation problems and Maximization case in Transportation problem

UNIT III

The Assignment problem - Mathematical formulation of the problem - Hungarian method -Unbalanced Assignment problem- Maximization case in Assignment problem.

Queuing theory : Introduction - Characteristics of queuing system. Problems in $(M/M/1):(\infty/FIFO)$ and (M/M/1):(N/FIFO) models.

UNIT IV

Inventory Control: Introduction – Costs involved in inventory – Deterministic EOQ models - Purchasing Model without and with shortage, Manufacturing Model without and with shortage -Price break.

UNIT V

PERT and CPM: Network representation - Calculation of Earliest expected time, latest allowable occurrence time. CPM - various floats for activities - critical path.

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PERT –Time estimates in PERT- Probability of meeting scheduled date of completion of projects .

Text Book

Kanthi Swarup, Gupta P.K., Man Mohan., 2006, Operations Research, Sultan Chand & Sons, New Delhi. (For Unit I – V)

References

Sharma J.K., 2009, Operations Research: Theory and Applications, Macmillan publishers India Ltd, New Delhi.

Sundaresan V., Ganapathy Subramanian K.S., and Ganesan K., 2005, Resource Management Techniques, 3rd edition A. R. Publications, Nagapatinam.

Shanthi Sophia Bharathi D.,1999, Operations Research/Resource management techniques, 2nd edition, Charulatha Publications.

		Semester – IV
		LTPC
15CTU403 B	Allied Elective II – Statistical Methods	4 2 0 4

- To recognize the error in the number generated by the solution.
- To compute solution of algebraic and transcendental equation by numerical methods like Bisection method and Newton Rapshon method.
- To apply method of interpolation and extrapolation for prediction.
- To recognize elements and variable in statistics and summarize qualitative and quantitative data.
- To calculate mean, median and mode for individual series.
- To outline properties of correlation and compute Karl-Pearson's coefficient of correlation

Course Outcomes (COs)

Upon completion of the course students shall be able to:

- 1. Recognize the error in the number generated by the solution.
- 2. Compute solution of algebraic and transcendental equation by numerical methods like Bisection method and Newton Rapshon method.
- 3. Apply method of interpolation and extrapolation for prediction.
- 4. Recognize elements and variable in statistics and summarize qualitative and quantitative data.
- 5. Calculate mean, median and mode for individual series.
- 6. Outline properties of correlation and compute Karl-Pearson's coefficient of correlation.

UNIT-I

Meaning and definition of statistics - Classification of data - Frequency distribution -Diagrammatic Presentation - Bar diagram and Pie diagram - Graphic Presentation -Histogram, Frequency Polygon, Frequency curve and Ogives.

UNIT - II

Measures of central tendency - Arithmetic mean, median and mode. Measures of dispersion-Range, standard deviation, Coefficient of variation.

UNIT – III

Correlation - Meaning and definition - Scatter diagram -Karl pearson's correlation coefficient. Rank correlation.

Regression: Regression in two variables - Regression coefficient problems - uses of regression.

UNIT – IV

Probability theory : Axioms of Probability-Addition theorem - Multiplication theoremconditional Probability.

Theoretical Distribution: Basic Concepts - Binomial distribution, Poisson Distribution & Normal distribution (No derivations) and simple problems.

$\mathbf{UNIT} - \mathbf{V}$

Test of significance: Tests based on Means only-Both Large sample and Small sample tests - Chi square test - goodness of fit.

Text book

R.S.N.Pillai, Bagavathy, 2002, Statistics, S. Chand & Company Ltd. New Delhi.

References

Jerrold H.Zar, 2003, Bio-Statistical Analysis, Fourth Edition, Pearson Education, (Pvt) .Ltd, New Delhi.

PA.Navnitham, 2006, Business Mathematics and Statistics, Jai Publishers, Trichy - 21,

S.P. Gupta, 2001, Statistical methods, Sultan Chand & Sons, New Delhi.

		Semester – IV	
		LTPC	
15CTU403 C	Allied Elective II – Discrete Mathematics	4 2 0 4	
Course Objecti	ves (CO)		

- To learn the basic concepts of sets, types of sets, functions and relations
- To understand about Pigeonhole principle, Permutation and Combination, Mathematical Induction
- To solve the problems using Recurrence relations and generating functions.
- To know the basic concepts of Logical Connectives, Graphs and Trees.
- To express ideas using mathematical notation
- To solve problems with the help of tools of mathematical analysis.

Course Outcomes

On successful completion of the course, students will be able to

- 1. Familiar with elementary algebraic set theory.
- 2. Acquire a fundamental understanding of the core concepts in growth of functions.
- 3. Describe the method of recurrence relations.
- 4. Get wide knowledge about graphs and trees
- 5. Initiate to knowledge from inference theory
- 6. Solve problems with the help of tools of mathematical analysis.

UNIT-I

Mathematical logic: Connections well formed formulas, Tautology, Equivalence of formulas, Tautological implications, Duality law, Normal forms, Predicates, Variables, Quantifiers, Free and bound Variables.

UNIT-II

Relations: Properties of Binary relations – Equivalence relations - composition of relations, Closure of relations – Order relations – Partial order relations.

Functions: one-to-one, onto, one-to-one-onto functions – composition of functions, Inverse functions.

UNIT-III

Formal languages and Automata: Grammars: Phrase–structure grammar, context-sensitive grammar, context-free grammar, regular grammar. Finite state automata- Deterministic finite automata and Non deterministic finite automata-conversion of non deterministic finite automata to deterministic finite automata.

UNIT-IV

Lattices and Boolean algebra: Partial ordering, Poset, Lattices, Boolean algebra, Boolean functions, Theorems, Minimization of Boolean functions.

UNIT-V

Graph Theory: Directed and undirected graphs, Paths, Reachability, Connectedness, Matric representation, Eular paths, Hamiltonian paths, Trees, Binary trees simple theorems, and applications.

Text Books

Tremblay J.P., and R.P Manohar., 1975, Discrete Mathematical Structures with applications to computer science, Tata Mc.Graw Hill, New Delhi. (For Unit I – V)

Sundaresan V., Ganapathy Subramanian K.S., and Ganesan K., 2002, Discrete Mathematics, A.R. Publications, Nagapatinam.

Veerarajan T.,2007, Discrete mathematics with graph theory and combinatorics, Tata Mcgraw hill companies, New Delhi.

Sharma.J.K, 2005, Discrete Mathematics, Second Edition, Macmillan India Ltd.

		Semester – IV
		LTPC
15SSD201	Soft Skill Development – II	2 0 0 1

- Students will be able to apply quantitative reasoning and mathematical analysis methodologies to understand and solve problems.
- To achieve the analytical and reasoning competencies and to improve their communication and presentation skills
- To impact knowledge on both Aptitude and Soft skills to the students •
- To actively do mathematics—such as analyzing data, constructing hypotheses, solving problems, reflecting on their work, and making connections.
- To critically evaluate and demonstrate various principles involved in solving mathematical problems and to adopt new and faster methods of calculations.
- To reinforce competencies in soft skills which are crucial in a social setting

Course Outcomes (COs)

On successful completion of the course the students will be able to:

- 1. Understand the basic concepts of QUANTITATIVE ABILITY
- 2. Understand the basic concepts of LOGICAL REASONING Skills
- 3. Acquire satisfactory competency in use of VERBAL REASONING
- 4. Actively do mathematics—such as analyzing data, constructing hypotheses, solving problems, reflecting on their work, and making connections.
- 5. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
- 6. Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc.

UNIT - I

Time, Speed and Distance, Time and Work, Pipes and Cisterns, Geometry, Data Arrangement

UNIT - II

Analogy, Logic based Venn diagram, Probability, Permutation and Combination, Logarithms

UNIT – III

Data Sufficiency, Clocks, Calendar, Reading Comprehension, Sentence Correction, Sentence Completion, Spotting the Errors, Jumbled Sentences

$\mathbf{UNIT} - \mathbf{IV}$

Synonyms, Antonyms, Verbal Analogy, Statements and Assumptions, Group Discussion

UNIT - V

Resume Writing, Introduction to HR rounds, Time Management, Attitude and Behaviour

- To understand the fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
- To understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To use the Java SDK environment to create, debug and run simple Java programs.
- To use Java in various technologies in different platforms.
- To understand the fundamental of Packages and access modifiers and interface in java.
- To understand the fundamental of Exception Handling and SWING component and classes.

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Obtain knowledge of the structure and model of the Java programming language
- 2. Understand the benefits of Multithreading and Portability
- 3. Develop robust, object oriented, dynamic and scalable java applications.
- 4. Develop GUI based applications that responds to user events. Using Java
- 5. Employ a hierarchy of Java classes to provide a solution to a given set of requirements
- 6. Understand various Java Utilities Package and JDBC connectivity

UNIT - I

Introduction to Java Applications and Applets: Printing a line of text – Displaying text in a Dialog Box – Adding integers – Arithmetic – Decision Making – Drawing a String – Adding Floating Point Numbers. Control Statements: Pseudocode – Control Structures - if, if/else, while – Formulating Algorithms: Case studies: 1, 2 & 3 – Compound Assignment – Increment and Decrement Operators – Primitive types – for, do/while – switch –break and continue statements (simple & labeled) – Logical Operators - selection statements. Methods: Program Modules in Java – Method Declarations – Argument Promotion – Java API Packages – Scope of Declarations – Method Overloading – Recursion. Arrays: Declaring and Creating Arrays – Reference Parameters – Passing Arrays to Methods – Multidimensional Arrays.

UNIT - II

Object-Based Programming: Implementing a Time Abstract Data Type with a Class – Class Scope – Controlling Access to members – 'this'- Constructors – Overloaded Constructors – set and get methods – Composition – Static Class Members – Creating Packages – Package Access. Object-Oriented Programming: Superclasses and Subclasses – protected Members – Constructors and Finalizers in Subclasses – Invoking Superclass Method from Subclass Objects - Using Superclass with Subclass-Type Variables – Subclass Method Calls via Superclass-Type Variables – Inheriting Interface and Implementation – final Methods and classes Nested Classes – Type-Wrapper Classes for Primitive Types. String and Characters: Fundamentals – Class String – Class StringBuffer – class Character – class StringTokenizer – Regular Expressions, Class Pattern and Class Matcher.
UNIT - III

Graphics and Java2D: Graphics Contexts and graphics Objects - Color Control - Font Control – Drawing Lines, Rectangles, Ovals, Arcs, Polygons and Polylines – Java2D API. Graphical User Interface Components: Overview of Swing Components- JLabel -EventHandling - Textfields - How event handling works - JButton - JCheckBox and JRadioButton - JComboBox - JList - Multiple-Selection Lists - Mouse Event Handling -Adapter classes - Key Event Handling - Layout Managers - Panels - JTextArea - JPanel -JSlider – Using Menus with Frames – JPopupMenu – Pluggable Look-and-Feel. Exception Handling: Java Exception Hierarchy - Rethrowing and Exception - finally Clause printStackTrace, getStackTrace and getMessage – Chained Exceptions.

UNIT - IV

Multithreading: Life Cycle of a Thread – Thread Priorities and Thread Scheduling – Creating and Executing Thread – Thread Synchronization – Daemon Threads – Runnable Interface. Files and Streams: Data Hierarchy - Files and Streams - Class File - Creating a Sequential-Access File - Reading Data from a Sequential-Access File - Random-Access Files -Creating/Writing/Reading Random-Access Files - New I/O APIs for the Java Platform. Networking: Manipulating URLs - Reading a File on a Web Server -Client/Server Interaction with Stream Socket Connections. Multimedia: Loading, Displaying and Scaling Images – Animating a series of Images – Image Maps – Loading and Playing Audio Clips.

UNIT - V

Java Utilities Package and Bit Manipulation: Vector Class and Enumeration Interface – Stack Class of Package java.util - Hashtable Class - Properties Class - Bit Manipulation and the Bitewise Operators - BitSet Class. Collections: Collections Overview - Class Arrays -Interface Collection and Class Collections – Lists – Sets – Maps. Java Database Connectivity with JDBC: Relational Database Overview – SQL – Manipulating Databases with JDBC – Stored Procedures. Servlets: Servlet Overview and Architecture – Handling HTTP get /post Requests - Redirecting Requests to other Resources - Multi-Tier Applications. JavaServer Pages: JavaServer Pages Overview - Implicit Objects - Scripting - Standard Actions -Directives.

Text Books

Deitel & Deitel, 2007, Java How to Program, 6th Edition, Pearson Education Asia, New Delhi.

Poornachandra Sarang, 2012, Java Programming, McGraw Hill Professional.

References

Herbert Schildt, 2014, Java Complete Reference, 9th Edition, Tata McGraw Hill, New Delhi.

Aaron walsh, Justin couch & Daniel H.Steinberg, 2000, Java 2 Programming, IDG Books India (P) Ltd., New Delhi.

Balagurusamy.E,. 2000, Programming with Java, Tata Mc-Graw Hill, New Delhi.

ISRD Group, 2007, Introduction to Object Oriented Programming through Java, 1st Edition, Tata Mc- Graw Hill, New Delhi.

Web sites

java.sun.com/docs/books/tutorial/ www.en.wikipedia.org/wiki/Java www.java.net/

		Semester V
		LTPC
15CTU502	Internetworking with TCP/IP	5 0 0 5

- To understand fundamental concepts of computer networking.
- To familiarize with the basic taxonomy and terminology of the computer networking • area.
- To understand the function of each layer of the TCP/IP protocol suite •
- To understand why a protocol is essential for communication between computers
- To familiarize the functions of IP protocol
- To learn the requirements of IP routing and choose appropriate routing methods •

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Independently understand basic computer network technology.
- 2. Understand and explain Data Communications System and its components.
- 3. Identify the different types of network topologies and protocols.
- 4. Identify the different types of network devices and their functions within a network.
- 5. Understand and building the skills of subnetting and routing mechanisms.
- 6. Able to analyze IP addressing requirements and design an addressing scheme

UNIT - I

Introduction: History of internet - Interconnecting devices - Protocols and Standards -TCP/IP protocol suite - Internetworking Devices - Routing Concept - Classful IP Addressing - Subnetting - Supernetting - Classless Addressing

UNIT - II

ARP & RARP - Proxy ARP - ARP over ATM - ARP and RARP Protocol Format. IP Datagram - Fragmentation - Options - IP Datagram Format - Routing IP Datagrams -Checksum. ICMP - Types of Messages - Message Format - Error Reporting - Query -Checksum.

UNIT - III

Group Management - IGMP Message - IGMP Operation - Process to Process Communication - UDP Operation - TCP Services - Flow Control.

UNIT - IV

BOOTP - DHCP - Address Discovery and Binding. DNS - Name Space - DNS in Internet -Resolution – Resource Records.

UNIT - V

Remote Login - FTP - SMTP - SNMP. IP over ATM Wan - Cells - Routing the Cells -ATMARP – Logical IP Subnets-VPN.

Text Book

Behrouz A. Forouzan, 2010, TCP/IP Protocol Suite, 4th Edition, Tata McGraw Hill Publication, New Delhi.

References

Andrews S Tanenbaum, 2003, Computer Networks. 4th Edition, Prentice Hall of India Private Ltd, New Delhi.

Buck Graham, 2007, TCP/IP Addressing, 2nd Edition, Harcount India Private Limited, New Delhi.

Douglas E Comer, 2000, Computer Networks and Internets, 4^{th} Edition, Pearson Education Asia, New Delhi .

William Stallings, 2007, Data and Computer Communication Network, 8th Edition, Tata McGraw Hill, New Delhi.

Web Sites

en.wikipedia.org/wiki/Internet_protocol_suite www.yale.edu/pclt/COMM/TCPIP.HTM www.w3schools.com/tcpip/default.asp

L T P C 15CTU503 Object Oriented Software Engineering 5.0.0.5			Semester-V
15CTU503 Object Oriented Software Engineering 5.0.0.5			LTPC
15C10505 Object Oriented Software Engineering 5 0 0 5	15CTU503	Object Oriented Software Engineering	5 0 0 5

- To learn the behavior and flow of the software
- To learn the essential and fundamental aspects of object-oriented concepts along with their applications
- To analyze, design and implement object oriented software systems
- To learn various modelling techniques to model different perspectives of objectoriented software design (UML)
- Understand the fundamental Software engineering Concepts like Analyzing, coding, and Testing.
- To learn applications of software architectures in various setting including the application of design patterns, frameworks and toolkits

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Identify and select suitable process model for the application
- 2. Understand software development life cycle development activities
- 3. Understand various aspects involved in analyzing and design software development process
- 4. Work effectively as leader/member of a development team to deliver quality software artifacts.
- 5. Analyze, specify and document software requirements for a software system.
- 6. Design, select and apply the most appropriate software engineering process for a given project, plan for a software project, identify its objectives and risks, and estimate its cost and time.

UNIT I

Introduction: System Concepts - Software Engineering Concepts - Software Life Cycle-Development Activities - Managing Software Development - Unified Modeling Language -Project Organization - Communication.

UNIT II

Analysis: Requirements Elicitation – Use Cases – Unified Modelling Language, Tools – Analysis Object Model (Domain Model) - Analysis Dynamic Models - Non-functional requirements - Analysis Patterns.

UNIT III

System Design: Overview of System Design – Decomposing the system Design Concepts - System Design Activities - Addressing Design Goals - Managing System Design.

UNIT IV

Implementation and Managing Change : Programming languages and coding- Human computer interaction-Reusing Pattern Solutions – Specifying Interfaces – Mapping Models to Code – Testing Rationale Management – Configuration Management – Project Management -real time interface design(eg: mobile design)

UNIT V

Aspect Oriented Software Development : Design Principles -Separations of Concerns, Subject Oriented Decomposition, Traits, Aspect Oriented Decomposition, Theme Approach, Designing Base and Crosscutting Themes, Aspect-Oriented Programming using Aspect-J.

Text Books

Bernd Bruegge, Alan H Dutoit, 2004, Object-Oriented Software Engineering, 2nd Edition Pearson Education.

David Kung, 2013, Object-Oriented Software Engineering: An Agile Unified Methodology, 1st Edition, McGraw-Hill Higher Education

Reference

Yogesh Singh, Ruchika Malhotra, 2012, Object-Oriented Software Engineering, 1st Edition, PHI Learning Private Limited Haryana, India..

		Semester-V
		LTPC
15CTU504	Animation Techniques	5 0 0 5

- To understand the basic animation principles,
- To analyze of the multimedia streaming,
- To perform and establish multimedia communication terminals,
- To present multimedia communications
- To Explore adobe and flash software in creating 3D animation and content creation,
- To Analyze instructional and informational media (print materials, audio/visual materials and/or web-based materials, games/simulations, etc.)

Course Outcomes (COs)

After completion of this course, the students will be able to:

- Understand basic Animation concepts.
- Acquire basic knowledge on Multimedia devices.
- Understand current trends in multimedia by experiencing a variety of applications and development packages.
- Be able to design different application in multimedia and use different tools like adobe Photoshop and macromedia flash.
- understand and explore drawing and basic animation within the Flash interface

Objectives

The main objective of this course is to have students develop an understanding of fundamental techniques used for computer animation. At the end of this course, students will be able to identify the advantages and disadvantages of using simulation, procedural animation, motion capture, and hand designed animations, with respect to both online and offline applications. The student also will be able to implement animation techniques, using common software languages and tools. Finally, in addition to an understanding of current practices in computer animation, a general objective is for students to better recognize current important challenges in computer animation.

UNIT-I

Introduction to Animation – History of Animation – Uses of Animation – Types of Animation – Principles of Animation – Some Techniques of Animation – Animation on the WEB - 3D Animation - Special Effects - Creating Animation.

UNIT-II

Creating Animation in Flash: Introduction to Flash Animation - Introduction to Flash -Working with the Timeline and Frame-based Animation - Working with the Timeline and Tween-based Animation – Understanding Layers - Action script.

UNIT-III

3D Animation & its Concepts – Types of 3D Animation – Skeleton & Kinetic 3D Animation - Texturing & Lighting of 3D Animation - 3D Camera Tracking - Applications & Software of 3D Animation.

UNIT-IV

Motion Caption – Formats – Methods – Usages – Expression – Motion Capture Software's – Script Animation Usage – Different Language of Script Animation Among the Software.

UNIT-V

Concept Development –Story Developing –Audio & Video – Color Model – Device Independent Color Model – Gamma and Gamma Correction - Production Budgets - 3D Animated Movies.

Text Books

Ranjan Parekh, 2013, Principles of Multimedia, 2nd Edition, Tata Mc Graw Hill publishers, New Delhi.

William Heldman, 2013, Adobe Flash Professional CS6 Essentials, 1st Edition, Wiley Publishers.

Reference

Ashok Banerji, Ananda Mohan Ghosh, 2010, Multimedia Technologies, 1st Edition McGraw Hill Publication.

		Semester V
		LTPC
15CTU511	Java Programming Lab	0 0 5 3

- To understand the fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
- To understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To use the Java SDK environment to create, debug and run simple Java programs.
- To use Java in various technologies in different platforms.
- To understand the fundamental of Packages and access modifiers and interface in java.
- To understand the fundamental of Exception Handling and SWING component and • classes.

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Obtain knowledge of the structure and model of the Java programming language
- 2. Understand the benefits of Multithreading and Portability
- 3. Develop robust, object oriented, dynamic and scalable java applications.
- 4. Develop GUI based applications that responds to user events. Using Java
- 5. Employ a hierarchy of Java classes to provide a solution to a given set of requirements
- 6. Understand various Java Utilities Package and JDBC connectivity

List of Programs

- 1. Write a program to find the sum of series $1+x+x^2+x^3+...$
- 2. Define a class for Employee with name and date of appointment. Create employee objects and sort them as per their date of appointment.
- 3. Write a program to find factorial of number using recursion.
- 4. Write a program to find maximum and sum of an array.
- 5. Write a program to perform string operations.
- 6. Write a program to accept more strings and arrange them in alphabetical order.
- 7. Write a program to create a window and draw cross lines.
- 8. Write a program to create an applet and draw the shapes.
- 9. Write a program to create a window with a background color and display a message.
- 10. Write a program for multiplication tables by multithreading.
- 11. Write a program to create an exception for marks out of bounds. If mark is greater than 100 throw an exception.
- 12. Write an applet program to create menus.
- 13. Write an applet program to perform operations in list box

15CTU505 A Core Elective II - Spatial Databases

Course Objectives (CO)

- To distinguish between various spatial distance metrics.
- To use SQL operations to query databases
- To learn Query language for graphs
- To inculcate knowledge on data mining query languages.
- To know in detail about data mining algorithms
- To learn the special nature of spatial data and how they are different from non-spatial data

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Develop a sound understanding of the principles and techniques of database design and development as they apply to geospatial data
- 2. Understand the strengths and limitations of various database and non-database structures for spatial data
- 3. Use SQL fragments and/or statements as appropriate, to interrogate (geo)databases
- 4. Collect and manage spatial data in both file formats and databases
- 5. Identify appropriate data mining algorithms to solve real world problems
- 6. use geospatial databases to perform common types of queries and geospatial analyses; and publish spatial data to the internet

UNIT I

Introduction to Spatial Databases: Overview – GIS and SDBMS – Query Language – Query Processing – File Organization – Data Mining – Spatial Concepts and Data Models – Models of Spatial Information – Fixed based models – Object based models – Spatial data Types – Operations in Spatial objects – Dynamic spatial Operations Mapping spatial objects into java.

UNIT II

Spatial Query Languages: Standard Database Query Languages – World Database – The Select and project operations – Basic SQL Primer – DDL – DML – Extending SQL for Spatial Data – Object Relational SQL – Spatial Storage and Indexing – Storage disk and files – Buffer Manager – Clustering.

UNIT III

Query Processing: Query Processing and Optimization – Evaluation of Spatial Operation – Spatial operations – Techniques for spatial selection – General spatial selection – Query Optimization – Analysis of Spatial Index Structure – Distributed DBMS architecture – Parallel spatial database systems.

UNIT IV

Spatial Networks: Spatial Networks – Query language for graphs – graph algorithms – access methods – Graph algorithms

UNIT V

Introduction to Spatial Data Mining: Pattern discovery – the data mining concepts – Statistics and Data Mining – Data Mining as a search problems – features – classification techniques- Association rule discovery Techniques – Clustering – Trends in Spatial databases

Text Book

Shashi Shekhar Sanjay Chawla, 2009, Spatial Databases – A Tour Prentice Hall publication.

Reference

Albert K.W Yeung G. Brent Hall, 2007, Spatial Database Systems Design Implementation and Project Management, Springer.

- To learn terminologies, types and phases involved in ethical Hacking.
- Learn about basic system defense infrastructure
- Learn about the hacker mindset and the history of hackers
- To learn web application vulnerabilities involved in web server hacking
- To learn computer network threat and vulnerability and overview of digital crime.
- To learn the interrelationships among elements that comprise a modern security system. including hardware, software, policies, and people

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Understand the core foundations of ethics in regards to computer security
- 2. Identify information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fields and number theory.
- 3. Understand basic networking and security technologies
- 4. Gain a basic understanding of security policy
- 5. Understand how intruders escalate privileges.
- 6. Understand the cryptography and it application and some of the important terms used in information security

UNIT I

Introduction To Ethical Hacking : Introduction-Ethical hacking Terminology-types of hacking technologies-phases of ethical hacking-Foot printing-Social Engineering-Scanning and enumeration.

UNIT II

System Hacking : Understanding the password hacking techniques-Rootkits-Trojans-Backdoors-Viruses and worms-sniffers-denial of service-Session hijacking.

UNIT III

Web Server Hacking : Hacking web servers-web application vulnerabilities –Buffer overflow-Wireless hacking Physical Security.

UNIT IV

Wireless Hacking Wep: WPA Authentication mechanism-wireless sniffers-Physical Security-factors affecting physical security-honeypots-Firewall types.

UNIT V

Penetration Testing Cryptography-overview of MD5, SHA, RC4-penetration testing methodologies- steps-pen test legal framework-penetration testing tools.

Text Book

Michael T. Simpson, 2013, Hands-On Ethical Hacking and Network Defense, Course Technology PTR.

84 Bachelor of Computer Technology 2015 Karpagam Academy of Higher Education, Coimbatore-21, India

References

Steven DeFino, Barry Kaufman, Nick Valenteen, Official Certified Ethical Hacker Review Guide

The Basics of Hacking and Penetration Testing: Ethical Hacking and Penetration Testing Made Easy (Syngress Basics Series)

Hands on Ethical Hacking and Network Defense, Kindle Edition.

- To learn the basic categories of virtual reality technology.
- To learn about different theoretical foundations of virtual reality.
- To learn about existing and potential virtual reality applications in education and training.
- To learn about basic components of virtual environment
- To learn emerging possibilities of environmentally sensed information.
- To learn basic system concept and definitions of system simulation and modeling

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Understand the basic concepts of computer graphics and virtual reality environment
- 2. Understand and apply the concepts of 3D modeling and VR
- 3. Understand the principles within computer modelling and simulation
- 4. Analyze key performance factors in virtualized systems.
- 5. Compare and contrast traditional e-learning environments with virtual environments
- 6. Understand the process of creating virtual environments, by developing a complete VR application

UNIT I

Introduction - Computer graphics - Real time computer graphics - Flight Simulation -Virtual environments - requirement - benefits of virtual reality- 3D Computer Graphics : Introduction – The Virtual world space – positioning the virtual observer – the perspective projection – human vision – stereo perspective projection – 3D clipping – Colour theory – Simple 3D modeling – Illumination models – Reflection models – Shading algorithms.

UNIT II

Geometric Modeling : Introduction – From 2D to 3D – 3D space curves – 3D boundary representation - Geometrical transformations: Introduction - Frames of reference -Modeling transformations - Instances - Picking - Flying - Scaling the VE - Collision detection - A Generic VR system: Introduction - The virtual environment - the Computer environment – VR Technology – Model of interaction – VR System.

UNIT III

Virtual Environment: Animating the Virtual Environment: Introduction – The dynamics of numbers - Linear and Non-linear interpolation - The animation of objects - linear and non-linear translation - shape & object in-betweening - freeform

deformation - particle system- Physical Simulation : Introduction - Objects falling in a graphical field -Rotating wheels - Elastic collisions - projectiles - simple pendulum springs – Flight dynamics of an aircraft.

UNIT IV

VR Hardwares & Softwares : Human factors : Introduction – the age- the ear- the somatic senses - VR Hardware : Introduction – sensor hardware – Head-coupled displays – Aquatic hardware - Integrated VR systems-VR Software: introduction - Modeling virtual world -Physical simulation- VR toolkits - Introduction to VRML.

UNIT V

VR Application : Introduction – Engineering – Entertainment – Science – Training – The Future: Introduction – Virtual environments – modes of interaction.

Text Books

John Vince, 2007. Virtual Reality Systems, 1st Edition, Dorling Kindersley publishers, India.

Matjaz Mihelj, Domen Novak, Samo Begus, 2013, Virtual Reality Technology and Applications, 1st Edition, Springer Publication.

Reference

William R. Sherman, Alan B. Craig, 2002, Understanding Virtual Reality: Interface, Application, and Design, 1st edition, Morgan Kaufmann publication.

		Semester – V
		LTPC
150EU501	Open Elective – Intranet Technology	0 0 0 3

- Able to share and view information within the organization
- To have access to the intranet all the time.
- Promote fundamental concepts within the company over intranet
- Cost effective, saves money this is one of the greatest benefits of the intranet.
- Messages, event and information can be placed on the intranet as they are quick. This saves time.
- To learn to maintain database and its applications

Course Outcomes (COs)

After completion of this course, the students will be able to:

- 1. Understand the advantage of intranet over groupware technologies
- 2. Understand the concept of sharing of files over Intranet
- 3. Work on Intranet chat tools and Intranet phones
- 4. Gain knowledge over the Intranet usage of Group scheduling, Message boards, News Feeds and other applications
- 5. Understand how to integrate intranet with existing applications
- 6. Understand impact to f security issues and its mechanisms

UNIT – I

Introducing Intranets: Internet Definition – The Internet in Action – Intranets Versus traditional Groupware – Client server basics and Theory. Building Intranet – Server Software - Starting with the Server - Connectivity - wide area networks - Selecting an Intranet Service Provider - Client Issues - Security..

UNIT – II

Applications: Business applications - Viewing corporate Information with HTML -Authoring Tool - Creating a Dynamic & Functional site - Presentations: PDF - SGML-Audio – Video.

UNIT – III

Intranet: Intranet Corporate data - Sharing files - using databases - Direct access. Communication – E-Mail – Intranet chat tools – Intranet phones.

UNIT - IV

Intranet applications : Developing Intranet applications – Intranet tools – Creating real word applications - Group scheduling - Message boards - Contact Databases - Alert messaging and real time chat - News Feeds - Group Document creation and Editing - Private Messaging areas – Document submission – Search functions – Help Desk – Reference Desk.

UNIT - V

Administering Intranet: Integrating existing applications – Maintaining a user Databases – Designing a successful file structure - Maintaining Security - Hardware and software upgrades – the Future of Intranets.

Text Book

David Garrett, 1998, Intranet Unleased. 2nd Edition, New Delhi: Techmedia publication.[Unit-I(3-220), Unit-II(299-390), Unit-III(393-499), Unit-IV(513-698), Unit-V(701-802)]

References

Dasgupta, Subhasish. 2001. Managing Internet and Intranet Technologies in Organizations: Challenges and opportunities, 1st Edition, Idea Group Publishing.

Rolf Oppliger, 2002, Internet and Intranet Security, 2nd edition, Artech House Inc.

		Semester VI
		LTPC
15CTU601	Web Technology	5005

Course Objectives (CO)

- To learn client and server-side scripting languages
- Understand the technologies used in Web designing.
- Know the importance of object-oriented aspects of Scripting.
- To understand and practice embedded dynamic scripting on client-side Internet Programming
- To master the theory behind scripting and its relationship to classic programming
- To gain some fluency programming in HTML, ASP, JavaScript and related languages, to design and implement one's own scripting language.

Course Outcomes (COs)

After completion of this course, the students will be able to:

- 1. Choose, understand, and analyze any suitable real time web application
- 2. Design simple web pages using markup languages like HTML and XHTML
- 3. Create dynamic web pages using ASP and java script that is easy to navigate and use.
- 4. Program server-side web pages that have to process request from client-side web pages.
- 5. Develop web pages using ASP, JSP and VBScript.
- 6. Develop embedded dynamic scripting on client-side Internet Programming

UNIT – I

Introduction to HTML: Introduction-HTML Browsers-History of HTML and SGML-HTML Command Tags-Quotation Marks-Spacing-Special Symbols-Tags with Automatic Line Breaks-URLs-Understanding Domain Names-Links-Defining Web Page-Main Body of Text- Headers-Adding Paragraph-Formatting Text-Font Type, Size, Predefined Fonts, Bold, Italic-Setting Colors-Text Color, Superscripts and Subscripts-Underlining Text-Preformatted Text-Blinking Text-Block Quotes-Margins-Line Breaks-Ordered and Unordered List-Links-Scaling an Image-Images Alignment

More on HTML: Creating Table-Dividing Table into Columns-Dividing Table into Rows-Creating Headers- Adding Border -Putting a Background Image- Heading across two or More Columns-Changing Color of a Cell-Aligning the Contents of a Cell-Display of Tables.

UNIT - II

HTML, Forms, Frames and Style Sheets: HTML : Working with Forms-Creating Forms-Working with Menus-Working with Radio Buttons-Check Boxes-Text Boxes- Text Areas-Password Boxes-Submit Button-Resetting the Form-Working with Frames-Creating Frameset-Creating Columns-Creating Rows and Columns-Combining Framesets-Giving Colors to the Borders-Space between Frames-Nesting Framesets-Showing or Hiding Scrollbars-Alternatives to Frames

Cascading Style Sheets: Introduction to CSS-Creating Style Sheets-Common Tasks with CSS-Colors-The Font Family-Assigning Classes-The Layer Tag-CSS Tags

UNIT – III

eXtensive Markup Language: Introduction-Features of XML-XML Support and Usage-Compatibility of XML with Others-Structure of XML Document-Common Errors-Structures in XML-Creating Document Type Declarations-Flow Objects-Length-Colour and **Background Properties**

UNIT – IV

ASP: How Active Server Pages Really Work?-Variables-Procedures-ASP Forms-Date Types-Operators. More on ASP: Introduction to Object Hierarchies-Getting Information from the Visitor-Sending Information to Visitors-ASP Applications-Getting in at the Top (Server Object)-Response Object Methods.

UNIT - V

Java Script and VB Script : Java Script: Introduction-Operators-Assignments-Comparisons-Reserved Words-Browsers to Use-Software Requirement-Starting with Java Script-Using Ouotes, Alert-Functions-Eval Function-Using Statements in Java Script-Working with Objects-Properties-Browser objects-Date object-Math Object-String Object-Defining Objects-Handling Events in Java Script-Event Handling Attributes-Window Events-Working with Forms-Form Elements-User Actions-windows and Frames-Window Object-Frame Object-Document Object-Navigator Object-Screen Object-Using Images and Math-Images and Animation-Area Object-Math Object-Java Script Objects.

VB Script: Introduction-Adding VB Script code to HTML- Adding VB Script code to Documents-Data Types-Getting the Message Across.

Text Books

Thomas A.Powell, 2010, The Complete Reference HTML and CSS, 5th Edition, Tata MC-Graw Hill Publications, New Delhi.

Ramesh Bangia, 2010, Web Technology, 1st Edition, Firewall Media Publications, New Delhi.

David Flanagan, 2011, Javascript: The Definitive Guide, 6th Edition, O'Reilly Media.

References

Abbey Deitel, Harvey Deitel, Paul Deitel, 2012, Internet and World Wide Web: How to Program, 5th Edition, Prentice Hall.

Rohit Khurana, 2002, JavaScript, 1st Edition, A.P.H Publishing, New Delhi.

Xavier C, 2008, World Wide Web With HTML, 1st Edition, Tata MC-Graw Hill Publications, New Delhi.

Danny Goodman, 2003, Javascript Bible, 3rd Edition, IDG Books India(p) Ltd. New Delhi.

Achyut S. Godbole, 2003, Web Technologies, 2nd Edition, Tata Mc Graw Hill.

Chris Bates, 2007, Web programming Building Internet Applications, 3rd edition, Wiley.

Xavier C., 2003, Web Technology & Design, 1st edition, New Age Publication.

Web Sites

www.w3schools.com/ www.htmlcodetutorial.com/ alexle.net/archives/category/web-technolgy jmarshall.com/easy/

		Semeste	r VI
		LTP	С
15CTU602	Network Security	5 0 0	5

- To learn the concepts of classical encryption techniques and concepts of finite fields and number theory.
- To explore the working principles and utilities of various cryptographic algorithms including secret key cryptography, hashes and message digests, and public key algorithms
- To explore the design issues and working principles of various authentication protocols, PKI standards.
- To explore various secure communication standards including Kerberos, IPsec, and SSL/TLS and email.
- To learn the ability to use existing cryptographic utilities to build programs for secure communication.
- To know the concepts of cryptographic utilities and authentication mechanisms to design secure applications

Course Outcomes (COs)

After successful completion the student will be able to:

- 1. Identify information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fields and number theory.
- 2. Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
- 3. Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes
- 4. Apply different digital signature algorithms to achieve authentication and create secure applications
- 5. Apply network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols.
- 6. Apply the knowledge of cryptographic utilities and authentication mechanisms to design secure applications

UNIT I

Introduction to Cryptography – Security Attacks – Security Services – Security Algorithm – Stream cipher and Block cipher – Symmetric and Asymmetric – Key Cryptosystem; Symmetric Key Algorithms: Introduction – DES – Triple DES – AES – IDEA – Blowfish – RC5.

UNIT II

Public Key Cryptosystem: Introduction to Number Theory – RSA Algorithm – Key Management – Diffie-Hell man key exchange – Introduction to Elliptic Curve Cryptography; Message Authentication and Hash functions – Hash and Mac Algorithm – Digital Signatures and Authentication Protocol.

UNIT III

Network Security Practice: Authentication Applications – Kerberos – X.509 Authentication Services and Encryption Techniques:; E-mail security – PGP – s/MIME – IP Security.

UNIT IV

Web Security – Secure Socket Layer – Secure Electronic Transaction; System Security – Intruders and Viruses – Firewalls – Password Security.

UNIT V

Case Study: Implementation of Cryptographic Algorithms – RSA – DSA – ECC (C / JAVA Programming). Network Forensic – Security Audit; Other Security Mechanism: Introduction to Stenography – Quantum Cryptography – Water Marking – DNA Cryptography

Text Book

William Stallings, 2011, Cryptography and Network Security, 5th Edition. Pearson Education, New Delhi.

References

Bruce Schneir, 2002, Applied Cryptography, 1st Edition. CRC Press, New Delhi.

A.Menezes, P.Van Oorschot and S.Vanstone, 1997, Hand Book of Applied Cryptography, 1st Edition. CRC Press, New Delhi.

Ankit Fadia, 2003, Network Security, 1st Edition. McMillan India Ltd, New Delhi.

Web Sites

williamstallings.com/Crypto3e.html u.cs.biu.ac.il/~herzbea/book.html

		Semester VI
		LTPC
15CTU611	OS and Network Lab	0 0 5 3

- To study the basic taxonomy and terminology of the computer networking and enumerate the layers of OSI model and TCP/IP model.
- To acquire knowledge of Application layer and Presentation layer paradigms and protocols.
- To study Session layer design issues, Transport layer services, and protocols.
- To gain core knowledge of Network layer routing protocols and IP addressing.
- To study data link layer concepts, design issues, and protocols.
- To read the fundamentals and basics of Physical layer, and will apply them in real time applications.

Course Outcomes (COs)

After successful completion the student will be able to:

- 1. Describe the functions of each layer in OSI and TCP/IP model.
- 2. Explain the functions of Application layer and Presentation layer paradigms and Protocols.
- 3. Describe the Session layer design issues and Transport layer services.
- 4. Classify the routing protocols and analyze how to assign the IP addresses for the given network.
- 5. Describe the functions of data link layer and explain the protocols.
- 6. Explain the types of transmission media with real time applications

Implement the following Program

- 1. To print the IP Address of the Machine
- 2. Implementation Of TCP/IP Echo
- 3. To convert Binary notation to Hexa Decimal
- 4. To simulate Sliding Window Protocol
- 5. To perform PC to PC communication using RS232 port.
- 6. To capture the Packets in the Network
- 7. Concurrent TCP/IP Day-Time Server
- 8. To implement Chatting using TCP Protocol
- 9. Design TCP Client and Server application to transfer file.
- 10. Design UDP Client Server to transfer a file.
- 11. Program to set and get socket options
- 12. To simulate ICMP Protocol

	Semester VI
	LTPC
15CTU603 A Core Elective III Satellite Communications	5 0 0 5

- To provide an in-depth treatment of satellite communication systems operation and planning.
- To provide in-depth understanding of modern satellite multiple access, modulation and coding schemes.
- To learn the basics of satellite Networks
- To Review the state of the art in new research areas such as speech and video coding, satellite networking and satellite personal communications.
- To Understand the Digital carrier modulation and Quantization
- To Enhance the knowledge in communication with satellite and network systems

Course Outcomes (COs)

After completion of this course, the students will be able to:

- 1. Understand the background components required for efficient satellite communications
- 2. Analyze the satellite orbits
- 3. Understand Wave Propagation and Polarization
- 4. Analyze the earth segment and space segment
- 5. Analyze the satellite Link design
- 6. Understand the applications of satellites

UNIT I

Introduction: General background, frequency allocations for satellite services, basic satellite system, system design considerations, applications.

UNIT II

Satellite Orbits: Introduction, laws governing satellite motion, orbital parameters, orbital perturbations, Doppler effects, geostationary orbit, antenna look angles, antenna mount, limits of visibility, Earth eclipse of satellite, sun transit outage, inclined orbits, sun-synchronous orbit, launching of geostationary satellites.

UNIT III

Wave Propagation and Polarization: Introduction, atmospheric losses, ionospheric effects, rain attenuation, other impairments, antenna polarization, polarization of satellite signals, cross polarization discrimination, ionospheric depolarization, rain depolarization, ice depolarization.

UNIT IV

Satellite Antenna: Antenna basics, aperture antennas, parabolic reflectors, offset feed, double reflector antennas, shaped reflector systems.

UNIT V

Link Design: Introduction, transmission losses, link power budget equation, system noise, carrier to noise ratio for uplink and downlink, combined uplink and downlink carrier to noise ratio, inter modulation noise

Text Books

Dennis Roddy, 2002, Satellite Communications, 3rd edition, Mc-Graw Hill publication.

Michael Olorunfunmi Kolawole, 2014, Satellite Communication Engineering, Second Edition, CRC Press.

Reference

Gerard Maral, Michel Bousquet, 2009, Satellite Communications Systems: Systems, Techniques and Technology, 5th Edition, Wiley Publishers.

			Semester VI
			LTPC
15CTU603 B	Core Elective III	Geographical Information System	5 0 0 5

- To learn about the key components of a GIS, including users, databases, software, and networks
- To learn basic to advanced spatial analytical methods, including interpolation and clustering
- To provide details of spatial data structures and input, management and output processes.
- To learn the need of data quality and standards to be followed in GIS
- To learn Vector Based GIS Data Processing method
- To learn the basic concepts of Principles of Electro Magnetic Remote Sensing

Course Outcomes (COs)

After completion of this course, the students will be able to:

- 1. Understand the basic concepts and components of GIS
- 2. Analyze various techniques used for storage of spatial data and data compression
- 3. Understand how to provide for input, manage and get output of spatial data
- 4. Concepts of spatial data quality and data standards
- 5. Understand integration of remote sensing and GIS model
- 6. Understand Digital Terrain Modeling

UNIT I

Definition of GIS And Related Terminology – The Evolution of GIS – Components of GIS – Approaches To The Study Of GIS. Maps and GIS: Map Scale – Classes of Map – The Mapping Process – Plane Coordinate Systems And Transformations – Geographic coordinate System of Earth – Map Projection - Establishing For A Spatial Frame Work For Mapping Locations on Earth : Geo referencing – Attribute Data For Thematic Mapping Digital Representation of Geographic Data Technical Issues Pertaining to Digital Representation of Geographic Data And Database Management.

UNIT II

Data Quality And Data Standards: Introduction – Concepts and Definitions of Data Quality -Components of Geographic Quality – Assessment Of Data quality – Managing Spatial Errors – Geographic Data Standards – Geographic Data Standards And GIS Developments

Raster Based GIS Data Processing: Introduction – Acquiring And Handling Raster Geographic Data – Raster Based GIS Based Analysis – Output Functions Of Raster Data Processing – Cartographic Modeling

UNIT III

Vector Based GIS Data Processing: Introduction – Characteristics Of Vector Based GIS Data Processing – Vector Data Input Functions – Non topological GIS Analysis Function – Feature Based Topological Functions – Layer Based Topological Functions – Vector Based Output Functions – Application Programming

UNIT IV

Remote Sensing And GIS Integration : Introduction – Principles Of Electro Magnetic Remote Sensing –Remote Sensing System Classifications – Imaging Characteristics Of Remote Sensing Systems – Extraction Of Metric Information From Remotely Sensed Images – Extraction Of Thematic (Descriptive Attribute) Information From Remotely Sensed Images – Integration Of Remote Sensing And GIS

UNIT V

Digital Terrain Modeling : Introduction – Definitions And Terminology – Approaches To Digital Terrain Data Sampling – Acquisition Of Digital Terrain Data – Applications Of Digital Terrain Models Spatial Analysis And Modeling : Introduction – Descriptive Statistics – Spatial Autocorrelation – Quadrant Counts And Nearest Neighbor Analysis – Trend Surface Analysis – Gravity Models – Network Analysis – GIS Modeling

Text Books

C.P.Lo.Albert K.W.Yeung, 2002, Concepts and Techniques of Geographic Information Systems, 1st Edition, Prentice Hall of India, New Delhi.

Paul A. Longley, Mike Goodchild, David J. Maguire, David W. Rhind, 2011, Geographic Information Systems and Science, Third edition, John Wiley & Sons.

References

Lan Heywood, Sarah Cornelius, Steve Carver, Srinivasa Raju, 2006, An Introduction to Geographical Information Systems, 2nd Edition, Pearson Education, New Delhi.

Kang-Tsung Chang, 2006, An Introduction to Geographical Information System, 3rd Edition, Tata Mcgraw Hill Edition, New Delhi.

			Semester VI
			LTPC
15CTU603 C	Core Elective III	Real Time System Design	5 0 0 5

- To develop an understanding of various Real Time systems Application
- To obtain a broad understanding of the technologies and applications for the emerging and exciting domain of real-time systems
- To get in-depth hands-on experience in designing and developing a real operational system.
- To acquire knowledge about concepts related to OS such as Scheduling techniques, threads, memory management.
- To learn design techniques and perform Intertask communication.
- To learn role on real time database in various applications

Course Outcomes (COs)

After completion of this course, the students will be able to:

- 1. Understand concepts of Real-Time systems and modeling
- 2. Recognize the characteristics of a real-time system
- 3. Understand and develop document on an architectural design of a real-time system
- 4. Develop and document task scheduling, resource management, real-time operating systems and fault tolerant applications of Real-Time Systems.
- 5. Understand how synchronization can be done in real-time based system
- 6. Analyze evaluation techniques applied over Realtime system to measure its performance

UNIT I

Real Time Specification And Design Techniques: Introduction– Structure of a Real Time System – Task classes – Performance Measures for Real Time Systems – Estimating Program Run Times – Issues in Real Time Computing – Task Assignment and Scheduling – Classical uniprocessor scheduling algorithms – Fault Tolerant Scheduling.

UNIT II

Real Time Specification And Design Techniques: Natural languages – mathematical specification – flow charts – structured charts – pseudocode and programming design languages – finite state automata – data flow diagrams – petri nets – Warnier Orr notation – state charts – polled loop systems – phase / sate driven code – coroutines – interrupt – driven systems – foreground/background system – full featured real time operating systems.

UNIT III

Intertask Communication And Synchronization: Buffering data – mailboxes – critical regions – semaphores – deadlock – process stack management – dynamic allocation – static schemes – response time calculation – interrupt latency – time loading and its measurement – scheduling is NP complete – reducing response times and time loading – analysis of memory requirements – reducing memory loading – I/O performance.

UNIT IV

Real Time Databases: Real time Databases – Basic Definition, Real time Vs General Purpose Databases, Main Memory Databases, Transaction priorities, Transaction Aborts, Concurrency control issues, Disk Scheduling Algorithms, Two – phase Approach to improve

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Predictability – Maintaining Serialization Consistency – Databases for Hard Real Time Systems.

UNIT V

Evaluation Techniques: Reliability Evaluation Techniques – Obtaining parameter values, Reliability models for Hardware Redundancy – Software error models. Clock Synchronization – Clock, A Nonfault – Tolerant Synchronization Algorithm – Impact of faults – Fault Tolerant Synchronization in Hardware – Fault Tolerant Synchronization in software.

Text Books

Rajib Mall, 2007, Real-time systems: theory and practice, Pearson Education.

Hermann Kopetz, 2011, Real-Time Systems: Design Principles for Distributed Embedded Applications, Springer.

References

Philip.A.Laplante, 2004, Real Time System Design and Analysis, 3rd Edition, Prentice Hall of India.

Allen Burns, Andy Wellings, 2003, Real Time Systems and Programming Languages, Pearson Education.

		Semester V
		LTPC
15CTU506	Core : Internet Protocol Version 6(IPv6)	0004

- To develop an understanding of the modern network technologies in common use today
- To identify potential and actual limitations with existing networks and identify advances in technology that may solve them
- To appreciate how computer networks can format and transfer data at high speed and over both the local and wide area
- To know the design principles of internetworking protocols
- To know the implementation details of IPv4, IPv6, and TCP
- To adapt the IP for Mobile applications

Course Outcomes (COs)

After completion of this course, the students will be able to:

- 1. Familiarize with the basic taxonomy and terminology of the computer networking area.
- 2. Understand various transmission media, their comparative study, fiber optics and wireless media
- 3. Understanding the concepts of IPv6, and how is it better than IP v4
- 4. Describe the devices and services used to support communications in data networks and the Internet
- 5. Understand the importance of security over internet and how IPv6 provide security mechanism to handle various vulnerabilities
- 6. Understand the role of Ipv6 over mobile computing technology.

UNIT I

The History of IPv6 - What's New in IPv6? - Why Do We Need IPv6? - Common Misconceptions - IPv6 Status and Vendor Support IPv6 Addressing - The IPv6 Address Space - Address Types - Unicast, Multicast and Anycast Addresses - Some General Rules - Address Notation - Prefix Notation - Global Routing Prefixes- Global Unicast Address - International Registry Services and Current Address Allocations - The Interface ID - Address Privacy - Special Addresses - IPv6 Addresses with Embedded IPv4 Addresses - 6to4 Addresses

UNIT II

The Structure of the IPv6 Protocol : General Header Structure - The Fields in the IPv6 Header - Extension Headers - Hop-by-Hop Options Header - Routing Header - Fragment Header - Destination Options Header - New Extension Header Format - Processing of Extension Headers and Header Chain Length ICMPv6 - General Message Format - ICMP Error Messages - Destination Unreachable - Packet Too Big - Time Exceeded - Parameter Problem - ICMP Informational Messages - Echo Request Message - Echo Reply - Router Solicitation and Router Advertisement - Neighbor Solicitation and Neighbor Advertisement - The ICMP Redirect Message - Inverse Neighbor Discovery - Neighbor Discovery Options - Secure Neighbor Discovery

UNIT III

Security with IPv6: General Security Concepts - General Security Practices - IPsec Basics - Security Associations - Key Management - IPv6 Security Elements - Authentication Header -

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Encapsulating Security Payload Header - Combination of AH and ESP - Interaction of IPsec with IPv6 Elements - IPv6 Security "Gotchas" - Native IPv6 - Transition and Tunneling Mechanisms - Enterprise Security Models for IPv6 - The New Model - Using Directory Services for Controlling Access - IPv6 Firewall Filter Rules

UNIT IV

Transition Technologies - Dual-Stack - Tunneling Techniques - How Tunneling Works - Automatic Tunneling Configured Tunneling - Encapsulation in IPv6 - Tunneling Mechanisms - Network Address and Protocol Translation - Stateless IP/ICMP Translation - NAT to Extend IPv4 Address Space - NAT as an IPv6 Translation Mechanism - NPTv6 and NAT66 - Other Translation Techniques - Load Balancing - Comparison - Dual-Stack - Tunneling - Translation

UNIT V

Mobile IPv6: Overview – Mobile Ipv6 Terms – How Mobile Ipv6 Works – The Mobile Ipv6 Protocol – Mobility Header and Mobility Messages – The Binding Update Message – The Binding Acknowledgment – The Binding Revocation – Mobility Options – Routing Header Type 2 – ICMPv6 and Mobile Ipv6 – Home Agent Address Discovery – Mobile Prefix Solicitation – Changes in Neighbor Discovery (ND) – Mobile Ipv6 Communication – Binding Cache – Binding Update List – Return Routability Procedure – Home Agent Operation – Mobile Node Operation – Security – Extensions to Mobile Ipv6

Text Book

Silvia Hagen, 2014, IPv6 Essentials, 3rd Edition, O'Reilly Media, Inc, United States of America

References

Rick Graziani, 2013, IPv6 Fundamentals: A Straightforward Approach to Understanding IPv6, 1st Edition, Cisco Press, United States of America

Peter Loshin, 2004, IPv6: Theory, Protocol, and Practice, 2nd Edition, Elsevier Publication.

		Semester VI
		ГТРС
15CTU604	Core: Information Security	0 0 0 4

- To provide students with basic concepts in information system and the benefits with these systems in modern society
- To differentiate between data, information, and knowledge
- To understand systems definition, systems requirements, and information needed for decision maker
- To understand several requirement and operations that the analyst needed to analyze, design, and implement the systems in what is called system development life cycle (SDLC)
- Appraise the interrelationships among elements that comprise a modern security system, including hardware, software, policies, and people
- Assess the role of strategy and policy in determining the success of information security

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. The students can understand the basic of computer network threat and vulnerability and overview of digital crime.
- 2. The students can understand the various types of cyber-attacks and criminals planning activities for cracking the system.
- 3. The students can understand the cryptography and its application and some of the important terms used in information security
- 4. Understand various Information Security Policies
- 5. Identify, Assess and control risk that occur while handling information transmission
- 6. Understand various security technologies available to handle different types of threats

UNIT I

INTRODUCTION : History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC

UNIT II

SECURITY INVESTIGATION : Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and obstacles to security, Ten steps to building a secure organization.

UNIT III

SECURITY ANALYSIS : Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk

UNIT IV

LOGICAL DESIGN : Blueprint for Security, Information Security Policy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security

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Architecture, Planning for Continuity

UNIT V

PHYSICAL DESIGN : Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel

Text books

Michael E Whitman and Herbert J Mattord, 2003, Principles of Information Security, Vikas Publishing House, New Delhi.

John R. Vacca, 2013, Computer and Information Security Handbook, Elsevier.

References

Micki Krause, Harold F. Tipton, 2004, Handbook of Information Security management", Vol 1-3, CRC Press LLC.

Stuart Mc Clure, Joel Scrambray, George Kurtz, 2003, Hacking Exposed, Tata McGraw-Hill.

Matt Bishop, 2002, Computer Security Art and Science, Pearson/PHI.

Semester V L T P C

15CTU507 Knowledge Management and Information Technology 0 0 0 5

Course Objectives (CO)

- To know the fundamentals of Knowledge Managements and its applications.
- To understand the basics of Information Security
- To know the legal, ethical and professional issues in Information Security
- To know the aspects of risk management
- To learn the Evolution of Knowledge management.
- To learn and assess various types of security threats in information security

Course Outcomes (COs)

After the completion of this course, a successful student will be able to

- 1. Identify and analyze the applications of knowledge management (KM)
- 2. Understand knowledge management models and technologies to business situations.
- 3. Create a KM system to capture and evaluate knowledge of Expert
- 4. Understand the basic concepts in information system and the benefits with these systems in modern society
- 5. Analyze information security needs of an organization.
- 6. Understand the need of security mechanism and risk management.

UNIT I

Knowledge Management Km Myths – KM Life Cycle – Understanding Knowledge – Knowledge, intelligence – Experience – Common Sense – Cognition and KM – Types of Knowledge – Expert Knowledge – Human Thinking and Learning.

UNIT II

Knowledge Management System Life Cycle Challenges in Building KM Systems – Conventional Vs KM System Life Cycle (KMSLS) – Knowledge Creation and Knowledge Architecture – Nonaka's Model of Knowledge Creation and Transformation. Knowledge Architecture.

UNIT III

Capturing Knowledge Evaluating the Expert – Developing a Relationship with Experts – Fuzzy Reasoning and the Quality of Knowledge – Knowledge Capturing Techniques, Brain Storming – Protocol Analysis – Consensus Decision Making – Repertory Grid- Concept Mapping – Blackboarding

UNITIV

Information Security History, What is Information Security ?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC.

UNIT V

Security Investigation Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues – Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk

Text Books

Elias.M. Award & Hassan M. Ghaziri, 2008, Knowledge Management, 2nd Edition Pearson Education, India.

Michael E Whitman and Herbert J Mattord, 2011, Principles of Information Security,2nd Edition, Vikas Publishing House, New Delhi.

References

C.W. Holsapple, 2009, Handbooks on Knowledge Management, 1st Edition, International Handbooks on Information Systems.

Guus Schreiber, 2001, Knowledge Engineering and Management, 3^{rd} Edition University Press.

		Semester VI
		LTPC
15CTU605	Core: Simulation and Modeling	0 0 0 5

- To learn basic system concept and definitions of system simulation and modeling
- To learn various methods to generate and test random variable
- Techniques to model and to simulate various systems
- The ability to analyze a system and to make use of the information to improve the performance.
- To learn Discrete, Poisson, Geometric, Gamma distribution methods to design a simulation model
- To learn simulation language and generate model

Course Outcomes (COs)

After the completion of this course, a successful student will be able to:

- 1. Understand the principles within computer modelling and simulation
- 2. Generate and test random number by applying various techniques
- 3. Understand and evaluate various distribution models
- 4. Create a manual simulation even scheduling
- 5. Design and evaluate simulation experiments
- 6. Implement simulation case studies and analyze the result

UNIT I

Principle of computer modeling and simulation, Monte Carlo simulation. Nature of computer modelling and simulation. Limitations of simulation, areas of application. System and environment – components of a system – Discrete and continuous systems. Models of a system – A variety of modelling approaches.

UNIT II

Random number generation, technique for generating random numbers – Midsquare method – The midproduct method – Constant multiplier technique – Additive ongruential method – Linear congruencies method – Tests for random number – The Kolmogorov Smirnov test – The chi-square test. Random variable generation – Inverse transform technique – Exponential distribution –Uniform distribution – Weibull distribution, empirical continuous distribution – Generating approximate normal variates.

UNIT III

Empirical discrete distribution – Discrete uniform distribution – Poisson distribution – Geometric distribution – Acceptance – Rejection technique for Poisson distribution – Gamma distribution.

UNIT IV

Design and evaluation of simulation experiments – Input – Output analysis – Variance reduction technique – Verification and validation of simulation models. Discrete event simulation – Concepts in discrete – event simulation – Manual simulation using event scheduling, single channel queue, two server queue, simulation of inventory problems.

UNIT V

Simulation languages - GPSS - SIMSCRIPT - SIMULA - Programming for discrete

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event systems in GPSS and C. Case Study : Simulation of LAN – Manufacturing system – Hospital management system.

Text Books

Jerry Banks and John S. Carson II, 1984, Discrete Event System Simulation, Prentice Hall Inc.

Narsingh Deo, 1979, System Simulation with Digital Computer, Prentice Hall of India.

Andrei Borshchev, 2013, The Big Book of Simulation Modeling: Multimethod Modeling with AnyLogic 6, AnyLogic North America.

References

Peter Fritzson, 2011, Introduction to Modeling and Simulation of Technical and Physical Systems with Modelica, Wiley-IEEE Press.

Francis Neelamkovil, 1987, Computer Simulation and Modeling, John Wiley & Sons.

Averil M. Law and W. David Kelton, 1991, Simulation Modeling and Analysis, McGraw Hill International Editions.