BACHELOR OF COMPUTER APPLICATIONS (BCA)

CHOICE BASED CREDIT SYSTEM (CBCS)

Curriculum and Syllabus

Regular (2015 – 2016)

DEPARTMENT OF COMPUTER APPLICATIONS FACULTY OF ARTS, SCIENCE AND HUMANITIES

KARPAGAM ACADEMY OF HIGHER EDUCATION
(Deemed to be University)

(Established Under Section 3 of UGC Act, 1956)

Eachanari (Post), Coimbatore – 641 021.
Tamilnadu, India

Phone No. 0422-2980011 - 15

Fax No: 0422-2980022-23

E mail ID: info@karpagam.com Web: www.kahedu.edu.in

KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956)

FACULTY OF ARTS, SCIENCE AND HUMANITIES UNDER – GRADUATE PROGRAMMES

(REGULAR PROGRAMME)

SYLLABUS

(2015)

CHOICE BASED CREDIT SYSTEM (CBCS)

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கற்பகம் உயர்கல்வி கலைக்கழகம்
தமிழ்த்துறை
பகுதி - I தமிழ்ப் பாடத்திட்டம் (2015 - 2016)
முதல்பருவம்
(இளநிலை அறிவியல் பட்ட வகுப்புகளுக்குரியது)

(For I-UG Science Degree Classes) 15LSU101

பாடத்திட்டப் பொதுநோக்கம்

- கற்றல் வழி சிந்தனைத் திறனையும், கருத்து வெளிப்பாட்டுத் திறனையும், மேம்படுத்துதல்.
- ஆய்வுநோக்கை மேம்படுத்துதல்.
- 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.

பாடத்திட்டப் பயன் விளைவு

1. இந்திய குடியுரிமைப் பணி முதலான போட்டித் தேர்வுகளில், விருப்பப் பாடமாக இடம்பெறுகின்ற, 'தமிழ் இலக்கிய வரலாறு' குறித்த முழுமையான அறிமுகம் பெற்றிருத்தல்.
2. கல்வெட்டியல், ஓலைச்சுவடியியல் மற்றும் தொல்லியல் சார்ந்த ஆவணத் தேடலுக்குரிய ஆய்வுமனப்பான்மையுடன், இலக்கியங்களை அணுகுதல்.
3. தமிழின் வளர்ச்சித் துறையாகிய, 'அறிவியல் தமிழ்' ; 'இணைய தமிழ்' குறித்த பன்நோக்கு அணுகுமுறையிலான ஆய்வுச் சிந்தனை மேம்பாடு.
4. வேலைவாய்ப்புக்குரிய சுயதிறன் மேம்பாட்டுடன், படைப்பாக்கத்திறன் மேம்பாடும் பெற்றிருத்தல் .
5. சமுதாய மற்றும் வாழ்வியல் மதிப்புகளைப் பேணுவதற்குக் கருவியாக இலக்கியங்களை நாடுகின்ற மனப்பான்மை வளர்ச்சி.
6. மொழிபெயப்புத் துறைசார்ந்த வேலைவாய்புத் திறன் பெற்றிருத்தல்

பகுதி – I, தமிழ் | பருவம் I

15LAU101 : தமிழ் முதல் தாள் | 5-H,5-C

அலகு – I : இக்கால இலக்கியம்

தத்துவம் : மகாகவி பாரதியார் – பகைவனுக்கு அருள்வாய்.
கவிஞர் ந.பிச்சமூர்த்தி – கிளிக்கூண்டு

இயற்கை : பாவேந்தர் பாரதிதாசன் – அழகின் சிரிப்பு – ஞாயிறு.

சமுதாயம் : கவிக்கோ அப்துல் ரகுமான் – இன்றைய நிலை

அறிவியல் : கவிஞர் சிற்பி பாலசுப்பிரமணியன் – காலம்.

பெண்ணியம் : கவிஞர் சிவரமணி – வையகத்தை வெற்றிகொள்ள

சூழலியல் : அன்பாதவன் - மரணம்

காதல் : வைரமுத்து - காதல் உயில்

தன்னம்பிக்கை பா.விஜய் - தன்னம்பிக்கை

அலகு – II : அற இலக்கியம்

1. திருக்குறள் - தேர்ந்தெடுக்கப்பட்ட குறள்கள் 20
2. நான்மணிக்கடிகை - தேர்ந்தெடுக்கப்பட்ட ஐந்து பாடல்கள்
3. திரிகடுகம் - தேர்ந்தெடுக்கப்பட்ட ஐந்து பாடல்கள்

அலகு - III : சிற்றிலக்கியம்

1. நரிவிருத்தம் - அறன் வலியுறுத்தல்
2. தமிழ் விடு தூது - தமிழின் சிறப்புரைத்தல்
3. மதுரை மீனாட்சியம்மைப் பிள்ளைத்தமிழ் - தொடுக்கும் கடவுள் பழம்பாடல்

அலகு – IV : சிறுகதை

1. புதுமைப்பித்தன் - நிகும்பலை
2. தனுஷ்கோடி ராமசாமி - கந்தகக் கிடங்கிலே
3. கந்தர்வன் - துண்டு
4. வாஸந்தி - வடிகால்
5. சி.ஆர். ரவீந்திரன் - வழுக்குமரம்

அலகு- V : மொழிப்பயிற்சி

1. விண்ணப்பங்கள் எழுதுதல் மற்றும் கடிதப் பயிற்சி
2. மொழிபெயர்ப்புப் பயிற்சி

பாட நூல்: கற்பகச்சோலை – தமிழ் ஏடு. கற்பகம் பல்கலைக்கழகத் தமிழ்த் துறை வெளியீடு.

15ENU101 **ENGLISH - I** **4H- 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

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:

1. Learn to reflect on the literary works and communicate flexibly.
2. Reading and comprehending literary works
3. Genres of literature to provide moral education
4. Develop communication skills in business environment
5. Interpersonal skills will be developed.
6. 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

15ENU101 **ENGLISH - I** **4H- 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

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 Books:

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

Reference Books:

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

15CAU101 FUNDAMENTALS OF COMPUTER AND PROGRAMMING IN C 5H - 5C

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives:

- To understand the fundamentals of computer
- To learn the structure of C programming language.
- To learn how to perform structures.
- To learn how to design C using pointers.
- To learn about array concepts
- To learn dynamic memory allocation and file handling in C.

Course Outcomes (COs):

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

1. Understand the fundamentals of computer and its uses
2. Understand about the Input, Output Devices and types of programming languages.
3. Apply the basic concepts of C programming language.
4. Understand how to apply concepts to implement functions and different types of functions.
5. Understand the concepts of arrays and the difference between union and structures.
6. Apply the concepts of structures, pointers, file handling and able to write programs

Unit-I

Introduction to Computers: Evolution of Computers, Generation of Computers, Classification of Computers, Block Diagram of a Digital Computer, types of OS. Input / Output Devices: Input Devices -Keyboard, Mouse, Output Devices – VDU, Printers. Types of Programming Languages, Classification of software: Application software and System Software, Structured Programming, Algorithms and Flowcharts with Examples.

Unit-II

Introduction - An Overview of C – Keywords and Identifier – Variables - Declarations of Variables - 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 : 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 – 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 in C – Introduction - Defining 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-The Preprocessor.

TEXT BOOK

1. Ashok N. Kamthane. 2013. Fundamentals of Computers and C Programming. 2nd Edition, Pearson education, New Delhi.

REFERENCE BOOKS

1. Balagurusamy .E. 2012. Programming in ANSI C. 6th Edition, Tata McGraw Hill Publishers, New Delhi.
2. Dixit .J.B. 2007. Programming in C. 1st Edition, Firewall Media Publications, New Delhi.
3. Susant K. Rout. 2008. Cimple- C is Simple. 1st Edition, Tata McGraw Hill Publishers, New Delhi.
4. Yeswanth Kanetkar. 2007. Let Us C. 8th Edition, BPB Publications, New Delhi.
5. Karthikeyan.E. 2008. Textbook on C: Fundamentals, data structure & Programming, 1st Edition , PHI Publications, New Delhi.

WEB SITES

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

15CAU111 PROGRAMMING IN C LAB 5H - 3C

Instruction Hours / week: L: 0 T: 0 P: 5 C: 3 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

Course Objectives

- To understand the fundamentals of computer
- To learn the structure of C programming language.
- To learn how to perform structures.
- To learn how to design C using pointers.
- To learn about array concepts
- To learn dynamic memory allocation and file handling in C.

Course Outcomes (COs)

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

1. Understand the fundamentals of computer and its uses
2. Understand about the Input, Output Devices and types of programming languages.
3. Apply the basic concepts of C programming language.
4. Understand how to apply concepts to implement functions and different types of functions.
5. Understand the concepts of arrays and the difference between union and structures.
6. Apply the concepts of structures, pointers, file handling and able to write programs

List of Programs:

1. Write a program to solve all possible roots in Quadratic Equation

2. Write a program to implement bubble sort

3. Write a program to convert a given number into words

4. Write a program to perform matrix multiplication

5. Write a program to count the vowels in a given sentence

6. Write a program to perform Stack Manipulations

7. Write a program to check the given sting is palindrome or not

8. Write a program to find a substring in the main string without using library function

9. Write a program to prepare an employee pay slip using files.

10. Write a program to copy the content of one file to another file using command line arguments.

15CAU102 **ALLIED – 1 : DIGITAL ELECTRONICS** **4H – 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To understand the fundamentals of digital electronics.
- To learn the basic signals by discrete bands of analog and digital.
- To learn about the number systems.
- To learn how to design the logic gates and the logic circuits
- To learn digital to analog converters.
- To learn encoder and decoder.

Course Outcomes (COs)

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

1. To learn the fundamentals of different numbering system, conversions and the basics laws of Boolean algebra.
2. To provide a strong foundation in construction of Sequential and Combinational Circuits.
3. To familiarize with the function of Logic Gates, Flip Flops.
4. Understand the Shift Registers, Counters.
5. Understand the Encoder, Decoder circuits.
6. Apply the concepts of A/D& D/A Converters and its Applications.

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 – 4-bit 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.

15CAU102 DIGITAL ELECTRONICS 4H – 4C

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 Marks: Internal: 40 External: 60 Total: 100

End Semester Exam: 3 Hours

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

1. Salilvahanan , 2014. Digital Electronics and its Principles, Seventh Edition, Tata McGraw Hill , New Delhi. .[UNIT I **]**

2. Albert Paul Malvino, Donald P. Leach and Goutam Saha, 2010, Seventh Edition. Digital Principles and Application, Tata McGraw Hill, New Delhi.[UNIT II - IV**]**

3. Morris Mano, 2013. Digital Design: With an Introduction to Verilog HDL, Fifth Edition, Pearson Education.[UNIT- V]

REFERENCE BOOKS

1. Modern Digital Electronics, Jain R.P, Tata McGraw Hill Company, Fourth Edition, 2012.
2. Integrated Circuits, Botkar K.R, Khanna Publications, Fourth Edition, 2008.

SEMESTER – I

15CAU112 Allied-1: Practical - DIGITAL ELECTRONICS LAB 3H - 2C

Instruction Hours / week: L: 0 T: 0 P: 3 C: 2 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To understand the fundamentals of digital electronics.
- To learn the basic signals by discrete bands of analog and digital.
- To learn about the number systems.
- To learn how to design the logic gates and the logic circuits
- To learn digital to analog converters.
- To learn encoder and decoder.

Course Outcomes (COs)

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

1. To learn the fundamentals of different numbering system, conversions and the basics laws of Boolean algebra.
2. To provide a strong foundation in construction of Sequential and Combinational Circuits.
3. To familiarize with the function of Logic Gates, Flip Flops.
4. Understand the Shift Registers, Counters.
5. Understand the Encoder, Decoder circuits.
6. Apply the concepts of A/D& D/A Converters and its Applications.

(Any 8 Experiments)

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

15FCA101 FOUNDATION COURSE – A (VALUE EDUCATION) 2H - 1C

Instruction Hours/week: L: 2 T: 0 P: 0 C:1 Marks: Internal: 100 External: Nil Total: 100

Course Objective:

- To train students to acquire knowledge about the self-esteem and self confidence
- To develop the goal-setting, positive thinking, competitive sprit, cooperation.
- To improve the qualities of discipline, leadership, team-sprit, dileigence, punctuality.
- To provide the backdrop for the development of their creative talents.
- To understand the inter-personal, family relationships and spirituality
- To learn about human values and social values.

Course Outcome:

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

1. understand the integral development of human beings
2. manage to adopt sustainable lifestyle
3. get awareness about the values and their significance and role
4. imbibe the concept of discipline and freedom
5. aware and face social with the basic moral values.
6. Maintain the inter-personal relationship

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.

Unit – IV

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

Unit – 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.

15SSD101 **SOFT SKILL DEVELOPMENT- I** **2H-0C**

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

Course Objective:

- To train students to understand the basic concepts of Quantitative Ability
- To understand the number series, analysis problems.
- To acquire knowledge about the analytical, verbal and logical reasoning.
- To practice to evaluate various real-life situations
- To develop the knowledge on communication and presentation skills.
- To improve communication skill

Course Outcome:

After the completion of this course, a successful student 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. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
5. Compete in various competitive exams like TNPSC, UPSC.etc.
6. Improve the communication skill

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

கற்பகம் உயர்கல்வி கலைக்கழகம்

தமிழ்த்துறை

பகுதி - I தமிழ்ப் பாடத்திட்டம் (2015 - 2016)

இரண்டாம் பருவம்

(இளநிலை அறிவியல் பட்ட வகுப்புகளுக்குரியது)

(For I-UG Science Degree Classes) 15LSU201

பாடத்திட்டப் பொதுநோக்கம்

- கற்றல் வழி சிந்தனைத் திறனையும், கருத்து வெளிப்பாட்டுத் திறனையும், மேம்படுத்துத□□.
- □□□□□□□□□□□□ மேம்படுத்துத□□.
- 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.

பாடத்திட்டப் பயன் விளைவு

1. இந்திய குடியுரிமைப் பணி முதலான போட்டித் தேர்வுகளில், விருப்பப் பாடமாக இடம்பெறுகின்ற, 'தமிழ் இலக்கிய வரலாறு' குறித்த முழுமையான அறிமுகம் பெற்றிருத்தல்.
2. கல்வெட்டியல், ஓலைச்சுவடியியல் மற்றும் தொல்லியல் சார்ந்த ஆவணத் தேடலுக்குரிய ஆய்வுமனப்பான்மையுடன், இலக்கியங்களை அணுகுதல்.
3. தமிழின் வளர்ச்சித் துறையாகிய, 'அறிவியல் தமிழ்' ; 'இணைய தமிழ்' குறித்த பன்நோக்கு அணுகுமுறையிலான ஆய்வுச் சிந்தனை மேம்பாடு.
4. வேலைவாய்ப்புக்குரிய சுயதிறன் மேம்பாட்டுடன், படைப்பாக்கத்திறன் மேம்பாடும் பெற்றிருத்தல் .
5. சமுதாய மற்றும் வாழ்வியல் மதிப்புகளைப் பேணுவதற்குக் கருவியாக இலக்கியங்களை நாடுகின்ற மனப்பான்மை வளர்ச்சி.
6. மொழிபெயப்புத் துறைசார்ந்த வேலைவாய்புத் திறன் பெற்றிருத்தல்

பகுதி – I, தமிழ் | பருவம் II

15LAU201 : தமிழ் இரண்டாம் தாள் | 5-H,5-C

அலகு - I : பக்தி இலக்கியம்

1. **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. **நுண்ணோர் புருவத்த, திணை** – குறிஞ்சி, **ஆசிரியர்** – கபிலர்.
2. **அவறொறுந் தேரை, திணை** – முல்லை, **ஆசிரியர்** - பேயனார்.

பதிற்றுப்பத்து – தைதந்த காஞ்சி, ஆசிரியர் - பாலைக் கௌதமனார்.

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

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

அகநானூறு - 1. **ஆடு அமைக் குயின்ற, திணை** – குறிஞ்சி, **ஆசிரியர்** – கபிலர்.
2.**யான் எவன் செய்கோ தோழி, திணை** – பாலை, **ஆசிரியர்** – நோய்பாடியார்.

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.

2. **கம்பராமாயணம்** - இலக்கியநயம் மிக்க, தேர்ந்தெடுக்கப்பெற்ற 41 பாடல்கள்.

அலகு - IV : கட்டுரைகள்

1.திருக்குறளில் மனிதவள மேலாண்மைக் கருத்துக்கள் - திருமிகு ஹரி விஜயலட்சுமி.

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

3. சமயமும் தமிழும் – பேராசிரியர் அ.ச.ஞானசம்பந்தன்.

4.தமிழில் அறிவியல் – ஒரு பார்வை - பேராசிரியர் சிவகுமார்.

5. 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.

SEMESTER - II

15ENU201 **ENGLISH – 2** **4H- 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives:

- 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 Outcomes:

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

1. Wings of Communication 2014. Board of Directors. Emerald Publishers: Chennai

Reference Book

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

SEMESTER – II

15CAU201 OBJECT ORIENTED PROGRAMMING WITH C++ 5H – 5C

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To understand how C++ improves C with object-oriented feature.
- To learn the basic oops concepts
- To learn the syntax and semantics of classes in C++ programming language.
- To learn how to perform operator overloading and inheritance.
- To learn how to design C++ using pointers.
- 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 oops concept in the respective fields.
3. Apply the concepts of object-oriented programming in constructor and destructor.
4. Understand how to apply the major object-oriented concepts to implement inheritance and polymorphism.
5. Apply pointer concepts in C++
6. Use the concepts of preprocessor directives and macros.

Unit I

Principles of Object Oriented Programming: Basic concepts of object oriented programming – benefits of OOP – structure of c++ program – Declaration of variables. Control statements – Decision making statements – if ..else, jump, goto, break, continue- switch case statements – do-while – while statement, for statement. Inline functions – function overloading.

Unit II

Classes and Objects: Specifying a class – defining member functions Inside the Class – Defining member functions Outside the class - static data members – static member functions - array of objects – friendly functions. Constructors and destructors: - Constructors – multiple constructors in a class – constructors with default arguments - copy constructor – destructors.

Unit III

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.

Unit IV

Pointers: Pointers to objects – this pointer – pointers to derived classes – virtual function. 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

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: - Templates – class templates – function templates – member function templates.

Text Books

1. Ashok N. Kamthane. 2011. Object Oriented Programming with ANSI and Turbo C++, 2nd Edition, Pearson Education.

Reference Books

1. Chandra .B. 2005. Object Oriented Programming using C++, 2nd Edition, Narosa Publishing House.

2. Jesse Liberty and David B. Horvath. 2005. SAMS teach yourself C++ in 24 hours, 4th Edition, Pearson Education,

3. John R. Hubbard. 2006. Programming with C++, 2nd Edition, Tata McGraw Hill Publishers, New Delhi.

Web Sites

1. http://www.cplusplus.com/doc/tutorial/
2. www.cplusplus.com/
3. www.cppreference.com/

15CAU211 OBJECT ORIENTED PROGRAMMING WITH C++ LAB 5H -3C

Instruction Hours / week: L: 0 T: 0 P: 5 C: 3 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

Course Objectives

- To understand how C++ improves C with object-oriented feature.
- To learn the syntax and semantics of classes in C++ programming language.
- To learn how to perform operator overloading
- To learn how to perform inheritance.
- To learn how to design C++ using pointers.
- To learn file handling in C++.

Course Outcomes (COs)

After the completion of this course, a successful student 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. Use the concepts of preprocessor directives and macros.
6. Apply inheritance in the programming

List of Programs:

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. Check for overflow and underflow conditions.

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.

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.

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 a 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.

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

9. Write a program to perform insertion, deletion and updating using files.

10. Write a program which takes a file as arguments and copies into another file with line numbers using command line arguments.

15CAU202A PC HARDWARE AND TROUBLE SHOOTING 4H – 4C

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To understand the fundamentals of computer organization.
- To learn about the processor and memory concept.
- To learn about the peripherals
- To learn the system architecture of a computer.
- To learn installation and preventive maintenance.
- To learn about the assembling of a system

Course Outcomes (COs)

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

1. Understand the concept of computer organization and hardware.
2. Able to perform installation, configuration and upgrading of hardware and software.
3. Able to install/connect associated peripherals.
4. To assemble/setup personal computers.
5. Understand and implement maintenance tasks.
6. Diagnose troubleshoot in hardware and software and other equipments of a system

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 Book

1 IBM PC and Clones, B. Govindarajalu, Tata McGraw Hill Publishing Company, Second Edition, 2011. [UNIT I & II]
2 Introduction to PC Hardware and Troubleshooting, Michael Meyers, The Mike Meyers' Computer Skills, McGraw Hill, First Edition, 2003. [UNIT III - V]

Reference Book

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

SEMESTER – II

15CAU202B **STATISTICAL METHODS** **4H – 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

This course enables the students to

- understand the basic concepts of statistical methods
- develop the mathematical skills in the areas of measures.
- learn the mathematical knowledge in hypothesis testing
- gains the numerical techniques as powerful tool in scientific computing.
- understand the basic concepts of statistical correlation.
- Understand the basics of SPSS.

Course Outcomes (COs)

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

1. develop and apply the appropriate numerical techniques for frequency distribution and diagrammatic presentation.
2. understand the various measures such as mean, median, mode techniques.
3. understand the basics of correlation and regression methods
4. understand the concepts of probability theory and theoretical distribution
5. understand the concepts of significance tests and apply to the fields.
6. Understand SPSS and apply in the respective field.

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 theorem– conditional Probability.

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

Unit – V

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

Text Book:

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

References:

1. Jerrold H.Zar, 2003, Bio-Statistical Analysis, Fourth Edition, Pearson Education, (Pte) .Ltd, New Delhi.
2. PA.Navnitham. 2006. Business Mathematics and Statistics, Jai Publishers, Trichy - 21,
3. S.P. Gupta . "Statistical methods". Sultan Chand & Sons, New Delhi,2001.

SEMESTER – II

15CAU202C **BASIC ACCOUNTING** **4H – 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course objectives:

- To make the students learn the basic concepts, conventions, nature of accounting
- To know about the income and assets over time.
- To understand the financial performance.
- To understand the concepts of tax strategies.
- To learn about the quality management activities.
- To learn about to post ledger and prepare trial balance.

Course outcomes:

- Comprehend the accounting concepts, principles and to comply the accounting standards.
- Understand the role of accounting and its limitations.
- Compute the economic information conveyed in financial statements.
- Understand the links among the economic characteristics and strategies of a business.
- Compute the assessments of its profitability and market valuation.
- Able to prepare trial balance, profit and loss account and balance sheet.

Unit I

Accounting – Definition- Fundamentals of Book Keeping – Branches of Accounting – Nature of Accounts - Accounting Concepts and Conventions – Journal – Ledger.

Unit II

Subsidiary books – Introduction – Types of subsidiary books - purchases book - sales book- returns book - cash book - single column cash book – Two column cash book - Three column Cash book - petty cash book

Unit III

Trial balance - Errors and their rectification - Final accounts of a sole trader with adjustments - Trading and Profit and Loss Account - Balance Sheet – Difference between Profit and Loss Account and Balance Sheet.

Unit IV

Depreciation- Definition- Methods of depreciation- straight line method- written down value method- annuity value method- sinking fund method- provisions and reserves

Unit V

Accounts for Non Profit organization- Receipts and Payments and income and expenditure account and Balance sheet – Difference between Receipts and Payments and income and expenditure account and Balance sheet.

Note: Distribution of Marks between problems and theory shall be 75% and 25%.

TEXT BOOK:

1. N.Vinayakam, P.L.Maniam and K.L.Nagarajan , (2012)Principles of Accountancy New Delhi .S.Chand & Company Ltd

REFERENCES:

1. S. P. Jain & K. L. Narang, 2010, Advanced Accountancy, Sultan Chand & Sons. New Delhi
2. T.S.Grewal,(2011)Introduction to Accountancy, New Delhi S.Chand & Company Ltd.
3. R.L.Gupta, V.K.Gupta and M.C.Shukla,2010, New Delhi Financial Accounting,Sultan Chand .
4. T.S.Grewal, S.C.Gupta and S.P.Jain, 2010, New Delhi Advanced Accountancy, Sultan Chand .
5. K.L.Narang and S.N.Maheswari ,2010, New Delhi Advanced Accountancy-Kalyani Publishers.

15CAU212A PC HARDWARE & TROUBLE SHOOTING LAB 3H -2C

Instruction Hours / week: L: 0 T: 0 P: 3 C: 2 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To understand the fundamentals of computer organization.
- To learn about the processor and memory concept.
- To learn about the peripherals
- To learn the system architecture of a computer.
- To learn installation and preventive maintenance.
- To learn about the assembling of a system

Course Outcomes (COs)

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

1. Understand the concept of computer organization and hardware.
2. Able to perform installation, configuration and upgrading of hardware and software.
3. Able to install/connect associated peripherals.
4. To assemble/setup personal computers.
5. Understand and implement maintenance tasks.
6. Diagnose troubleshoot in hardware and software and other equipments of a system

List of Programs:

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

15CAU212B STATISTICAL METHODS LAB 3H -2C

Instruction Hours / week: L: 0 T: 0 P: 3 C: 2 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

Course Objectives

This course enables the students to

- understand the basic concepts of statistical methods
- develop the mathematical skills in the areas of measures.
- learn the mathematical knowledge in hypothesis testing
- gains the numerical techniques as powerful tool in scientific computing.
- understand the basic concepts of statistical correlation.
- Understand the basics of SPSS.

Course Outcomes (COs)

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

1. develop and apply the appropriate numerical techniques for frequency distribution and diagrammatic presentation.
2. understand the various measures such as mean, median, mode techniques.
3. understand the basics of correlation and regression methods
4. understand the concepts of probability theory and theoretical distribution
5. understand the concepts of significance tests and apply to the fields.
6. Understand SPSS and apply in the respective field.

List of Programs:

1. Using SPSS Package, to draw bar diagram and pie diagram for discrete series.
2. Using SPSS Package, to draw mutable bar diagram for discrete series.
3. Using SPSS Package, to calculate the Mean for individual, discrete.
4. Using SPSS Package, to calculate the Mean for continuous series.
5. Using SPSS Package, to calculate the Median for individual and discrete series.
6. Using SPSS Package, to calculate the Mode for individual and discrete series.
7. Using SPSS Package, to calculate the Standard deviation.
8. Using SPSS Package, to calculate the Karl Pearson's Correlation.
9. Using SPSS Package, to calculate the Rank Correlation Coefficient for Untied Rank.
10. Using SPSS Package, to calculate the Rank Correlation Coefficient for Tied Rank.

15CAU212C **Tally Lab** **3H -2C**

Instruction Hours / week: L: 0 T: 0 P: 3 C: 2 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

Course Objectives:

- To make the students learn the basic concepts, conventions, nature of accounting
- To know about the accounting process and preparation of final accounts of a sole trader.
- To understand the cost concepts, types of costing and preparation of cost sheet.
- To understand the concepts of management accounting
- To compute financial statement analysis
- To learn about to create a company and prepare all accounting reports

Course Outcomes:

1. Comprehend the accounting concepts, principles and to comply the accounting standards.
2. Prepare the final accounts of a sole trader.
3. Know the cost concepts, types of costing and preparation of cost sheet.
4. Understand the concepts of management accounting
5. Compute financial statement analysis
6. Apply the concepts in the respective field.

List of Programs:

1. Create a new company in integrate accounts mode and account with inventory mode
2. Create a primary and sub groups using single or multiple ledger mode
3. Create minimum 10 ledgers using single or multiple ledger, and alter and delete any 2 ledger
4. Create a new company, ledger and record minimum 10 transactions without adjustment
5. Create a new company, ledger and record minimum 10 transactions with any five adjustments and display the relevant results
6. Enter the following voucher
    - Payment vouchers
    - Receipt
    - Purchase
    - Sales
    - Credit note
    - Debit note
    - Journals
    - Memo
    - Optional

7. Prepare trail balance for the company

8. Prepare profit & loss a/c and balance sheet

SEMESTER - II

15FCB201 FOUNDATION COURSE - B (ENVIRONMENTAL STUDIES) 2H-1C

Instruction Hours / week: L: 2 T: 0 P: 0 C: 1 **Marks:** Internal: 100 External: - Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To create the awareness about environmental problems among people.
- To create the awareness about renewable and non renewable resources of the region.
- To understand the environmental acts, rights, rules legislation.
- To develop an attitude of concern for the environment.
- To motivate public to participate in environment protection and improvement.
- To understand forestation and deforestation.

Course Outcomes (COs)

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

1. Understand the ecological and physical sciences and apply in environmental problem solving.
2. Understand the concepts of the design and evaluation of environmental policies and institutions.
3. Known to appreciate the ethical, cross-cultural, and historical context of environmental issues.
4. Motivating public to participate in environment protection and improvement.
5. Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
6. Understand the values of global warming and how to save our environment.

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.

15SSD201 SOFT SKILL DEVELOPMENT - I 2H-1C

Instruction Hours / week: L: 2 T: 0 P: 0 C: 1 Marks: Internal: 100 External: Nil Total: 100

Course Objective:

- To train students to understand the basic concepts of Quantitative Ability
- To understand the number series, analysis problems.
- To acquire knowledge about the analytical, verbal and logical reasoning.
- To practice to evaluate various real-life situations
- To develop the knowledge on communication
- To develop the presentation skills.

Course Outcome:

After the completion of this course, a successful student 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. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
5. Compete in various competitive exams like TNPSC, UPSC.etc.
6. Improve the communication skill

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

SEMESTER – III

15ENU301 **ENGLISH - 3** **4H-4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives:

- 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 Outcomes:

1. Students learnt the basics and purposes of listening skill.
2. Students understand importance of speaking.
3. Students developed the speaking skills on telephone, business and also in travel
4. Learnt some effective vocabulary learning strategies.
5. Students will able to communicate clearly and effectively and
6. Student will be able to 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)

REFERENCE BOOKS:

1. Language in Use: Kenneth Anderson, Cambridge University Press.
2. Study Speaking: A course in Spoken English for Academic Purpose: Kenneth Anderson, Joan MacLean and Tony Lynch, Cambridge University Press, 2008.
3. Spoken English Part I & II (for Tamil speakers), Orient Longman Pvt. Ltd.
4. Dr. J. John Love Joy, Dr.Francis M.Peter S.J. "Lets Communicate – Basic English for Everyone", Vaigarai Publications, 1st edition, Dindigul 2007.

SEMESTER – III

15CAU301 DATA STRUCTURES AND ALGORITHMS 5H -5C

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To understand the fundamental concepts of data structures
- To Learn linear data structures – lists, stacks, and queues
- To apply Tree and Graph structures
- To understand sorting, searching and hashing algorithms
- To develop application using data structures.
- To learn about the space and time complexity.

Course Outcomes (COs)

Upon completion of this course, the student will be able to:

1. Implement abstract data types for linear data structures.
2. Apply the different linear and non-linear data structures to problem solutions.
3. Analyze the applications of tree.
4. Implement graph theory over various data structures.
5. Critically analyze the various sorting algorithms.
6. Understand the concepts of data structure and implement them.

Unit I

Introduction: Introduction to Algorithms- Analyzing Algorithms- Creating the Algorithms; Arrays: Representation of Arrays- Stacks and Queues- Multiple Stacks and Circular Queue- Sparse Matrices- Polynomial Addition; Infix to Postfix Conversions- Evaluation of Expression

Internal Sorting: Insertion sort – Quick sort- Selection sort – Shell sort – 2-Way Merge sort

Searching: Linear Search

Unit II

Linked list: Singly Linked List: Insertion and Deletion in Singly Linked List- Linked Stacks and Queues;

Doubly Linked List: Insertion and Deletion in Doubly Linked List - Sparse Matrices- Polynomial Addition;

Dynamic Storage Management: Allocating blocks- Freeing Blocks.

Unit III

Non Linear Structures: Trees: Basic Terminology; Binary Trees: Binary Tree Representations- Binary Tree Traversals - Threaded Binary Trees

Searching and Sorting: Binary Search- Heap sort

Application of Trees: B Trees- Tree indexing.

Unit IV

Non Linear Structures: Graphs: Basic Terminology– Graph Representation- Traversals- Spanning Tree- Kruskal's Algorithm

Applications of Graph: Shortest Path: Single Source All Destinations- All Pairs Shortest

Unit V

Sorting: External Sorting: K-Way Merge Sort- Sorting with tapes: Balanced Merge sort, Polyphase Merge .Static Tree – Dynamic Tree. Hash Tables: Hashing Functions – Overflow handling.

TEXT BOOK

1.Ellis Horowitz and Sartaj S Shani. .2010. Fundamentals of Data Structures, 2nd Edition ,Galgotia Publications, , New Delhi.

REFERENCE BOOKS

1. Kirshnamoorthy. 2008. Data Structures Using C, Tata Mcgraw Hill Publishing Company Limited, New Delhi.

2. Kruse R. 2007. Data Structures & Program Design In C, 2nd Edition, Prentice-hall Of India Pvt Ltd, New Delhi.

3. Murugan .M. Graph Theory and Algorithms,1st Edition, Muthali Publications house, Chennai.

4. Robert L. Kruse.2000. Data Structures and Program Design, 3rd Edition, Printice- Hall of India, Delhi.

5. Seymour Lipschutz.1986. Theory and Problems of Data Structures, 2nd Edition, McGraw Hill, New Delhi.

WEB SITES

1. http://en.wikipedia.org/wiki/Data_structure
2. http://www.cs.sunysb.edu/~skiena/214/lectures/
3. www.amazon.com/Teach-Yourself-Structures-Algorithms

SEMESTER - III

15CAU302 RELATIONAL DATABASE MANAGEMENT SYSTEMS 5H -5C

Instruction Hours / week: L:5 T:0 P: 0 C:5 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To describe a good introduction to the discipline of database management systems.
- To give a good formal foundation on the data models and E-R model.
- To demonstrate the principles database constraints behind systematic database design by covering normalization concept.
- To introduce the concepts of basic SQL as a universal Database language.
- To have an introductory knowledge about the PL/SQL concept.
- To learn about the URL concept

Course Outcomes (COs)

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

1. Demonstrate an understanding of the elementary features of RDBMS
2. Design conceptual models of a database using ER modeling for real life applications
3. Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database
4. Able to develop structured query language (SQL) queries to create, read, update, and delete relational database
5. Design efficient PL/SQL programs to access Oracle databases
6. Understand and apply the database normalization concepts.

Unit I

Databases and Database Users --Characteristics of the Database Approach - Actors on the Scene- Workers behind the Scene- Advantages of Using the DBMS Approach- A Brief History of Database Applications- Database System Concepts and Architecture : Data Models, Schemas, and Instances - Three-Schema Architecture and Data Independence- Database Languages and Interfaces- The Database System Environment- Centralized and Client/Server Architectures for DBMSs- Classification of Database Management Systems.

Unit II

Data Modeling Using the Entity-Relationship (ER) :Conceptual Data Models for Database Design -A Sample Database Application -Entity Types, Entity Sets, Attributes, and Keys -Relationship Types, Relationship Sets, Roles,and Structural Constraints -Weak Entity Types -ER Diagrams, Naming Conventions, and Design Issues. The Enhanced Entity-Relationship: Subclasses, Superclasses, and Inheritance - Specialization and Generalization - Constraints and Characteristics of Specialization and

Generalization Hierarchies -Modeling of UNION Types Using Categories- Data Abstraction, Knowledge Representation.

Unit III

Relational Algebra: Relational Algebraic Operations-Aggregate Function-Update Operations.SQL: Characteristics-Advantages& Action-Data types and Literals-Types of SQL Commands:DDL,DML,DQL,DCL,DAS,TCS-SQL Operators-Arithmetic, Comparsion, Logical& Set Operator-Operator Preceedence. Tables, view and Indexes: Introduction-View-Indexes. Queries and subqueries: Introduction-Subqueries-Aggregate Function-Insert, update and Delete Operations.

Unit IV

Overview – declaration section – executable command section: conditional logic, loops, CASE statements – exception handling section. 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, and Packages: Local and global – procedures vs. functions – stored procedures, functions – create procedure syntax - create function syntax – package header – package body – calling procedures, functions, package members. Replacing and dropping procedures, functions, packages.

Unit V

Database Design Theory and Normalization: Basics of Functional Dependencies and Normalization for Relational Databases-Informal Design Guidelines for Relation Schemas-Functional Dependencies-Normal Forms Based on Primary Keys-General Definitions of Second and Third Normal Forms-Boyce-Codd Normal Form-Multivalued Dependency and Fourth Normal Form-Join Dependencies and Fifth Normal Form.

Text Books

1. Ramez Elmasri and Shamkant B. Navathe.2011. Fundamental of Database Systems.6th edition.Pearson India.[Unit I to V]
2. Kevin Loney and George Koch. 2009. Oracle 11g The Complete Reference, 1st Edition, Tata Mcgraw-Hill, New Delhi.[Unit IV]

Reference Books

1. Ramez Elmasri.2013. Fundamentals of Database Systems: Models, Languages, Design and Application Programming , 6th edition Pearson India.
2. Bipin C. Desai. 2008. An Introduction to Database Systems, Galgotia Publications, New Delhi.
3. Gerald V. Post. Database Management Systems Designing and Building Business Applications, 2nd Edition, Tata McGraw-Hill, New Delhi.
4. Rajesh Narang. 2006. Database Management Systems. Prentice Hall of India, New Delhi
5. Alexix and Mathews Leon, 2006. Fundamentals of Database Management System, 1st Edition Vijay Nicole imprints private Limited

Web Sites

1. http://en.wikipedia.org/wiki/RDBMS
2. http://aspalliance.com/1211_Relational_Database_Management_Systems__Concepts
3. www.compinfo-center.com/apps/rdbms.html

SEMESTER – III

15CAU311 RELATIONAL DATABASE MANAGEMENT SYSTEMS LAB 4H- 2C

Instruction Hours / week: L: 0 T: 0 P:4 C:2 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

- To describe a good introduction to the discipline of database management systems.
- To give a good formal foundation on the data models and E-R model.
- To demonstrate the principles database constraints behind systematic database design by covering normalization concept.
- To introduce the concepts of basic SQL as a universal Database language.
- To have an introductory knowledge about the PL/SQL concept.
- To learn about the URL concept

Course Outcomes (COs)

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

1. Demonstrate an understanding of the elementary features of RDBMS
2. Design conceptual models of a database using ER modeling for real life applications
3. Analyze the existing design of a database schema and apply concepts of normalization to design an optimal database
4. Able to develop structured query language (SQL) queries to create, read, update, and delete relational database
5. Design efficient PL/SQL programs to access Oracle databases
6. Understand and apply the database normalization concepts.

List of Programs:

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

Field name	Constraint	Type	Size
Staff_no	Primary key	Character	6
Staff_name	Not Null	Character	30
Gender	Check	Character	1
Dob		Date	
Dept_code	Foreign key	Character	4
Designation		Character	15
Basic		Number	7,2

Department table:

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

Execute the following queries:

- Insert records for all the staff.
- Select the records for male staff.
- Select the staff whose name start with S.
- Update the records.
- To list the staff who joined 2 years back.
- To list the staff in computer science dept.
- To list the staff_name and the dept_name in which he/she works.
- To list the maximum and minimum salary in each dept.
- To list the dept along with the total amount spent on salary
- To list the name of the staff who draw the salary more than the average salary.

2. Perform queries using string functions.
3. Perform queries using mathematical functions.
4. Perform queries using date functions.
5. Perform queries using aggregate and set functions.
6. Creation the following
   - Views
   - Objects
   - Sequence
   - Synonyms.
7. Create a table with the following fields:
   Book table:

Field name	Constraint	Type	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:

- List the C and C++ books.
- List the books written by a particular author.
- List the books which costs between Rs.300/- and Rs.500/-

- List the no of books available in each subject.
- List the books in the decreasing order of the cost.
- Calculate the total cost and average cost of the available books
- List the books of minimum cost and maximum cost.

8. Perform different types of join operations between the two tables.

9. Create a table to store the salary details of the employees in a company. Use Cursor to update the employee salary.

10. Write a PL/SQL program to calculate the Fibonacci series, factorial, Palindrome string on user choice.

11. Create a table master book to contain the information of magazine_code, magazine_name, and publisher,Weekly/biweekly/monthly, price. Write PL/SQL block to perform insert, update and delete operations on the above table.

12. Create a table to contain phone number, user name, address of the phone user. Write a function to search for a address using phone numbers.

13. Create a table with the following fields:
Account table:

Field name	Constraint	Type	Size
Acc_no	Primary key	Character	4
Cust_name		Character	30
Branch_name		Character	30
Cust_city		Character	30

Borrower table:

Field name	Constraint	Type	Size
Acc_no	Foreign key	Character	30
Branch_name		Character	30
Amount		Number	8,2

Write the procedure to update the records of the tables.

14. Write a package to perform arithmetic operations.

15. Creating triggers.

15CAU303 NUMERICAL METHODS 6H - 4C

Instruction Hours / week: L: 6 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3Hours

Course Objectives

This course enables the students to

- Understand the basic concepts of numerical methods
- Develop the mathematical skills in the areas of numerical methods.
- The numerical techniques as powerful tool in scientific computing.
- To develop the mathematical skills of the students in the areas of numerical methods.
- To teach theory and applications of numerical methods in a large number of engineering subjects which require solutions of linear systems, finding eigen values, eigenvectors, interpolation and applications, solving ODEs, PDEs and dealing with statistical problems like testing of hypotheses.
- To lay foundation of computational mathematics for post-graduate courses, specialized studies and research.

Course Outcomes (COs)

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

1. Develop and apply the appropriate numerical techniques for the problem, interpret the results, and assess accuracy.
2. Understand the basics of Numerical Differentiation & Integration and numerical solutions of ordinary differential equations.
3. Understand the concepts of difference operators and the use of Interpolation.
4. Apply numerical methods to find our solution of algebraic equations using different methods under different conditions, and numerical solution of system of algebraic equations
5. Apply various interpolation methods and finite difference concepts.
6. Work numerically on the partial differential equations using different methods through the theory of finite differences.

Unit I

Solution of algebraic and transcendental equations: Bisection method –Regula Falsi method – Newton Raphson method. Polynomoial Equations – Graeffe's root squaring method.

Unit II

Solution of simultaneous linear algebraic equations: Gauss elimination method – Gauss Jordan method – Method of triangularization – Gauss-Jacobi method – Gauss-seidel method.

Unit III

Interpolation: Gregory Newton Forward and Newton Backward interpolation formula –Interpolation with unequal intervals — Lagrange's interpolation formula – Inverse interpolation formula.

Unit IV

Numerical Differentiation and Integration: Newton's Forward and backward differences to compute derivatives – Trapezoidal rule, Simpson's 1/3 &3/8 rule.

Unit-V

Numerical methods for solving ordinary differential equations – Taylor series(I order) – Euler and Modified Euler method – Runge kutta methods (II order , III order and IV order).

Text Book

1. Venkataraman .M.K., Fifth Edition,2001. Numerical Methods in Science and Engineering, National publishing Company ,Madras. (Unit I – V)

References

1. Kandaswamy. P., Thilagavathy K., and K.Gunavathy., 2013 .Numerical Methods, S. Chand & Company Ltd., New Delhi.

2. Vedamurthy V.N.,N.CH.S.N.Iyenger., 1999. Numerical Methods,Vikas Publishing House Pvt Ltd, New Delhi.

15CAU312A OPEN SOURCE TECHNOLOGIES 4H- 4C

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3Hours

Course Objectives:

- To learn about the basics of Open Source Technology
- To know the importance of Open source in the development of software
- To know the role of open source in development and distribution of higher quality, better reliability, more flexibility, and lower cost software.
- learn the open source ideals in order to apply those principles
- learn about the open source software and hardware and free software
- learn about the open source database mysql.

Course Outcome:
The student should able to

1. Gain knowledge about common open source licenses and the impact of choosing a license
2. Able to explain open source project structure and how to successfully setup a project
3. install open source server and handle open source database package
4. Be competent with distributed software engineering tools and processes such as test-driven
5. Development, issues tracking, unit testing, code review, distributed version control, and continuous integration
6. Apply the knowledge and manage the database in mysql

Unit I

Why open source, what is Open source, open source principles, open standards requirements for soteare, open source successes, free software, what is free software?, what are some example of free software?, free software license provider, free software Vs Open source software, Public Domine , FOSS DOES not Mean any cost, proprietary Vs Open Source Licensing Model.

Principles and Open Source Methodology: History, open source initiatives, open standards principles-methodologies, philosophy, software freedom, open source software, development, Licenses, copyright.

Unit II

Open source projects: Starting and maintaining an open source project, open source hardware- open source design-open source teaching (OST).Open Source Ethics: Open Source Vs Closed Source-Open source Government-The ethics of open source-social and financial impacts of open source technology-shared software, shared source.

Unit III

Apache Web Server: Introduction-Starting, Stopping, and Restarting Apache-Configuration-Securing Apache Create the Web Site-Apache Log Files

Unit IV

MySQL: Introduction-Tutorial-Database Independent Interface-Table Joins-Loading and Dumping a Database

Unit V

Perl: Introduction-Perl Documentation-Perl Syntax Rules-A Quick Introduction To Object-Oriented Programming-What We Didn't Talk About

Text Book:

1. Open source Technologies, Kailashvadera, Vhavyesh Gandhi, Published by University Science Press, Lakshmi Publications, 1st Edition 2009. [UNIT I – III]
2. Open Source Web Development with LAMP: Using Linux, Apache, MySQL, Perl, and PHP, James Lee, Brent Ware, Publisher: Addison Wesley Date Published: December 17, 2002. [UNIT IV – V]

Reference Books:

1. Fadi P. Deek and James A. M. McHugh, Open Source Technology and Policy, 2007, Cambridge University Press.
2. Nick Wells, The Complete Guide to Linux System Administration,2012, Delmar Cengage Learning.
3. Andrew M. St. Laurent, Understanding Open Source and Free Software Licensing, 2004,O'Reilly Media.
4. Dan Woods, Gautam Guliani, Open Source for the Enterprise, 2005,O'Reilly Media.

SEMESTER – III

15CAU312B **ETHICAL HACKING** **4H- 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3Hours

Course Objectives:

- To expand the knowledge of network.
- To know the importance of Web and Mobile security.
- To identify the threats and vulnerabilities.
- To learn about the commercial-grade hacking tools, techniques, and methodologies used by hackers and information.
- To learn the offensive penetration remedial technique.
- To learn Cryptography and Information Security.

Course Outcome:

The student should able to

1. Demonstrate the ability to attack and defend network.
2. To plan a vulnerability assessment and penetration test for a network.
3. To execute a penetration test using standard **hacking** tools in an **ethical** manner.
4. To report on the strengths and vulnerabilities of the tested network.
5. To identify legal and ethical issues related to vulnerability and penetration testing.
6. Understand ethical hacking methodologies and apply cyber security concepts to discover and report vulnerabilities in a network.

Unit I

Ethical Overview – TCP/IP concepts overview – Network and Counter Attacks – Footprint and Social engineering – Port Scanning

Unit II

Linux Hacking: Basics – Vulnerabilities – Firewall in Linux – Linux operating system defense – Linux Loadable Kernel Modules; Linux Tools: Application Security – Encryption – Log and Traffic Managers – Security countermeasures; Hacking: Routers – Cable Modems – Firewalls – Tools

Unit III

Hacking Mobiles Devices: Types of Handheld Devices – Common OS in handheld devices – Vulnerabilities in Handheld devices – Defending Handheld devices; Bluetooth Hacking: Introduction – Attacks against Bluetooth – Blue Hacking Tools – Bluetooth Security Tools

Unit IV

Hacking Web Servers – Hacking Wireless Networks – Network protection system

Unit V

Penetration Testing – Reconnaissance – Scanning – Exploitation – Web-Based exploitation

Text Books

1. Michael T. Simpson, Kent Backman, and James E. Corley, 2013, "Hands-On Ethical Hacking and Network Defense", Course Technology, Boston USA (Unit I & IV)

2. EC Council, "Ethical Hacking and Countermeasures: Linux, Macintosh and Mobile Systems" (Unit II & III)

3. Patrick Engebretson, 2013, "The Basics of Hacking and Penetration Testing: Ethical Hacking: Ethical Hacking and Penetration Testing made easy", 2nd Edition, Elsevier. (Unit V)

Reference Book

1. Ankit Fadia, 2006, "An unofficial Guide to Ethical Hacking", Second Edition, Macmillan Publishers India Ltd.
2. Michale T.Simpson, Kent Backman and James E.Corley, 2013, "Hands-on Ethical Hacking and network defence", Course Technology cengage learning.
3. Patrick Engebretson, 2013, "The basics of Hacking and Penetration Testing", Second Edition, Elsevier Inc.

Websites

1. http://www.hacking-tutorial.com
2. http://www.hackingloops.com/
3. https://evilzone.org/

15CAU312C **MONGO DB** **4H- 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3Hours

Course Objectives
Enable the student

- To get knowledge and skills to master the NoSQL database mongoDB.
- To write programs using MongoDB
- To design an e-commerce data model
- To gain the knowledge on replication
- To know about Query language
- To know about query optimization

Course Outcomes(COs)
Upon completion of this course, the students will be able to:

1. Gain the right skills and knowledge needed to develop Applications on mongoDB
2. Run Applications on MongoDB
3. Do the query operation in MongoDB
4. Manipulate aggregate function
5. Design an e-commerce data model
6. Gain the knowledge on replication

Unit I

Getting Started: A database for the modern web – MongoDB through the JavaScript shell – Writing programs using MongoDB.

Unit II

Application Development: Document-oriented data – Principles of schema design – Designing an e-commerce data model – Nuts and bolts on databases, collections, and documents. Queries and aggregation – E-commerce queries – MongoDB's query language – Aggregating orders – Aggregation in detail.

Unit III

Updates, atomic operations, and deletes: A brief tour of document updates – E-commerce updates – Atomic document processing – MongoDB updates and deletes. Indexing and query optimization: Indexing theory – Indexing in practice – Query optimization.

Unit IV

Replication**:** Overview – Replica sets – Master-slave replication – Drivers and replication. Shading: Overview – A sample shard cluster – Querying and indexing a shard cluster – Choosing a shard key – sharding in production.

Unit V

Deployment and administration: Deployment – Monitoring and diagnostics – Maintenance – Performance troubleshooting.

TEXT BOOK

1. Kyle Banker, 2012, "MongoDB in Action", Manning Publications Co.

REFERENCE BOOKS

1. Rick Copeland, 2013, "MongoDB Applied Design Patterns", First Edition, O'Reilly Media Inc.
2. Gautam Rege, 2012,"Ruby and MongoDB Web Development Beginner's Guide", Packt Publishing Ltd
3. Mike Wilson, 2013, ",Building Node Applications with MongoDB and Backbone", O'Reilly Media Inc.

WEBSITES

1. http://www.mongodb.org/about/production-deployments/
2. http://docs.mongodb.org/ecosystem/drivers/
3. http://www.mongodb.org/about/applications/
4. http://www.mongodb.org/

SEMESTER – III

15SSD301 SOFT SKILL DEVELOPMENT- II 2H-0C

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

Course Objective:

- To train students to understand the basic concepts of Quantitative Ability
- To understand the number series, analysis problems.
- To acquire knowledge about the analytical, verbal and logical reasoning.
- To practice to evaluate various real-life situations
- To develop the knowledge on communication
- To develop the presentation skills.

Course Outcome:

After the completion of this course, a successful student 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. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
5. Compete in various competitive exams like TNPSC, UPSC.etc.
6. Improve the communication skill

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

Unit – IV

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

Unit - V

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

SEMESTER - IV

15ENU401 **ENGLISH - 4** **4H- 4C**

Instruction Hours / week: L: 4 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3Hours

Course Objectives:

- To train the students in understanding the concepts of communication.
- To be familiar with the four basic skills of English.
- To train students in developing their written communication.
- To train students in developing their presentation skills.
- To acquire the skill of making grammatically correct sentences.
- To reflect originality on the application of soft skill views and express in writing their views.

Course Outcome:

1. Students have acquired proficiency in communication.
2. Students have become adept in written communication and presentation skills.
3. Developed the skill of writing in English and that of public speaking.
4. Establish and maintain social relationships.
5. Develop communication skills in business environment.
6. Enhanced communication competency through LSRW 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 – Precis 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 BOOKS:

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

REFERENCE:

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

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

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

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

15CAU401 OPERATING SYSTEM 6H- 6C

Instruction Hours / week: L: 6 T: 0 P: 0 C: 6 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

Course Objectives:
Enable the student

- To Study the basic concepts and functions of operating systems.
- To understand the structure and functions of OS.
- To Learn about Processes, Threads and Scheduling algorithms.
- To Understand the principles of concurrency, Deadlocks and Memory Management
- To Learn about the Protection and Security Concepts.
- Understand basic resource management techniques.

Course Outcome (COs):
Upon completion of this course the students will be able to:

1. Design various Scheduling algorithms.
2. Apply the principles of concurrency.
3. Design deadlock, prevention and avoidance algorithms.
4. Compare and contrast various memory management schemes.
5. Apply the Security Concepts based on Authentication.
6. Appreciate the role of operating system as System software.

Unit I
Introduction -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: System Model, Deadlock characterization, 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 . Multiprocess schedule: Real time schedule, Algorithm evaluation: Deterministic Modeling, Queue Model, Simulation

Unit IV

File systems: Introduction – File System Concepts – Access Methods – Directory structure – File Sharing – Allocation Methods – Free space management –Efficiency and performance – Recovery
Disk Performance Optimization: Introduction – Disk structure – Disk scheduling – Disk management.

Unit V

Case studies: LINUX, Windows 7, Mobile OS: History- Design principles- File systems- Memory.

TEXT BOOK

1. Silberschatz Galvin Gagne. 2012. Operating system concepts, 9th Edition, Wiley India (pvt), Ltd, New Delhi.

REFERENCE BOOKS

1. Deitel H.M. 2005. Operating systems, 3rd Edition, Addision Wesley Publication, New Delhi.

2. Pramod Chandra P. Bhatt. 2007. An Introduction to Operating Systems, 2nd Edition, Prentice Hall India, New Delhi.

3. Tanenbaum Woodhull. 2005. Operating Systems 2nd Edition, Pearson Education (LPE) , New Delhi.

4. William Stallings. 2010. Operating Systems internals and Design Principles, 6th Edition, Prentice Hall India, New Delhi.

WEBSITES

www.cs.columbia.edu/~nieh/teaching/e6118_s00/
www.clarkson.edu/~jnm/cs644
pages.cs.wisc.edu/~remzi/Classes/736/Fall2002/

15CAU402 PROGRAMMING IN VB .NET 6H – 6C

Instruction Hours / week: L: 6 T: 0 P: 0 C: 6 **Marks: Internal: 40 External: 60** Total: **100**

End Semester Exam: 3Hours

Course Objectives

Enable the student

- To Create windows forms using arrays and flow control statements.
- To Learn to use Basic windows controls using Visual Basic.Net
- To Learn to use the classes and namespaces in the .NET Framework class library.
- To Develop Web Applications using Microsoft ASP.NET programming.
- To Understand the concept of Multiple Document Interface and the architecture of .NET
- To handle string operations

Course Outcomes (COs)

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

1. Develop Windows based applications using Visual Basic.Net
2. Learn various tools in .net applications
3. Implement ADO.Net concept in VB.Net and ASP.Net applications
4. Create server side web applications using ASP.NET
5. Understand the concept of data sources and data bound controls in VB.NET
6. Learn the concept of data sources and data bound controls ASP.NET

Unit-I

Getting Started With VB.NET: The Integrated Development Environment-IDE Components-Environment Options. Visual Basic: The Language -Variables-Constants-Arrays – Variables as Objects-Flow Control Statements.

Unit-II

Writing and Using Procedures: Module Coding – Arguments. Working with Forms:Appearance of Forms- Loading and Showing Forms -Designing Menus. Multiple Document Interface

Unit- III

Basic Windows Controls: Textbox Control- ListBox, CheckedListBox-Scrollbar and TrackBar Controls. More Windows Control: The common Dialog Controls-The Rich TextBox Control.The TreeView and ListView Controls: Examining the Advanced Controls-The TreeView Control-The ListView Control-Content Page Holder.

Unit IV

Handling Strings, characters and Dates: Handling Strings and Characters – Handling Dates. Working with Folders and Files: Accessing Folders and Files – Accessing Files. Drawing and Painting with Visual Basic: Displaying Images – Drawing with GDI – Co-ordinate Transformation – Bitmaps.

Unit V

Databases: Architecture and Basic Concepts: What is database? - Server Explorer – Structured Query Language – The Query Builder – Building database Application with ADO.Net: The Architecture of ADO.Net-Creating the dataset – Data Binding – Programming the Data Adapter Objects – The Command and Data Reader Object. Programming the ADO.Net objects: The Structure of the dataset – The DataForm Wizard – Transactions – Performing Update Operations.

TEXT BOOK

1. Evangelos Petroutsos,2002, Mastering Vb.Net , SYBEX Inc.

REFERENCE BOOKS

1. Steven Holzner, 2003, Vb.Net Programming Black Book , Dreamtech Publications
2. Bill Evjen, Scott Hanselman, Farhan Mohammed, Srinivasa Siva Kumar and Devin Rader. 2006. Asp.Net 2.0, Wiley Publication , USA.
3. Burrowss W.E and D. Langford. 2003. Learning Programming using Visual Basic .Net, 1st Edition, McGraw Hill, New Delhi:
4. Jeffrey R. Shapiro. 2008**.** The Complete Reference Visual Basic.Net, 1st Edition, Tata -McGraw-Hill Edition, New Delhi.
5. Richard Bowman. 2002. Visual Basic.Net, Hungry Minds Inc. Publication, Canada

WEB SITES

1. www.microsoft.com/net/
2. www.en.wikipedia.org/wiki/.net
3. www.w3schools.com/ngws/default.asp
4. www.gotdotnet.com

15CAU411 PROGRAMMING IN VB .NET LAB 6H- 3C

Instruction Hours / week: L: 0 T: 0 P: 6 C: 3 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

Course Objectives

Enable the student

- To Create windows forms using arrays and flow control statements.
- To Learn to use Basic windows controls using Visual Basic.Net
- To Learn to use the classes and namespaces in the .NET Framework class library.
- To Develop Web Applications using Microsoft ASP.NET programming.
- To Understand the concept of Multiple Document Interface and the architecture of .NET
- To handle string operations

Course Outcomes (COs)

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

1. Develop Windows based applications using Visual Basic.Net
2. Learn various tools in .net applications
3. Implement ADO.Net concept in VB.Net and ASP.Net applications
4. Create server side web applications using ASP.NET
5. Understand the concept of data sources and data bound controls in VB.NET
6. Learn the concept of data sources and data bound controls ASP.NET

List of Programs:

1. Write a VB.NET program to calculate Simple interest and compound Interest.
2. Write a VB.NET program to find mouse events and coordinates where the mouse is clicked.
3. Write a VB.NET program to implement Calculator.
4. Write a VB.NET program to implement Notepad
5. Write a VB.NET program to draw several shapes and fill with color.
6. Write a VB.NET program to perform the following in list box
    a) Add an item
    b) Delete an item
    c) List count
    d) Clear the List
7. Write a VB.NET program to calculate the days elapsed between the given two dates.
8. Write a VB.NET program to create Menu and link multiple forms with different colors.
9. Write a VB.NET program to animate the picture using animation control.
10. Write a VB.NET program to check whether given string is a Palindrome or not.
11. Write a VB.NET program to generate Fibonacci series for the input given using Input box.
12. Write a program to calculate the total marks of the student and print the grade.
13. Write a VB.NET Program to maintain details of students. Use Crystal Report to generate report.
14. Write a VB.NET Program to implement Employee Payroll.
15. Write a VB.NET program to create and manipulate a File.

15CAU403A ELECTRONIC COMMUNICATION SYSTEMS 6H - 4C

Instruction Hours / week: L: 6 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3Hours

Course Objectives

Enable the students

- To learn about the individual communication network.
- To Learn transmission systems, relay stations.
- To Learn about Tributary stations and data terminal equipments.
- To learn the basic concepts of various modulation and demodulaton techniques.
- To learn about the electronics circuits used in communication systems.
- To learn about the Analog and Digital modulation circuits.

Course Outcomes (COs)

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

1. Understand the communication network.
2. Gain the knowledge about the transmission and relay systems.
3. Implement antenna theory in the respective field.
4. Implement receiver and tracking
5. Gain the knowledge about modulation and demodulation techniques.
6. Able to construct analog and digital circuits.

Unit I

Modulation Techniques: Introduction to Communication Systems - Information - Transmitter - Channel - Noise –Receiver - Amplitude Modulation: AM Theory- Frequency Spectrum of AM Wave - Representation of AM - Power Relations in AM wave -AM Transmitter Block Diagram - Frequency Modulation

Unit II

Wave Propagation:EM waves - Free Space Propagation - Surface Wave Propagation - Sky Wave Propagation - Space Wave Propagation - Trophospheric Scatter Propagation - Structure of Atmosphere - Virtual Height

Unit III

Antenna Theory: Electro Magnetic Radiations - Elementary Doublet - Current and Voltage Distribution - Resonant Antennas, Radiation Patterns and Length Calculations - Non Resonant Antennas - Antenna Gain and Effective Radiated Power - Bandwidth, Beam Width and Polarization .

Unit IV

Receiver: Introduction - Super Heterodyne Receiver - Choice of IF and Oscillator Frequencies - Image Rejection - Adjacent Channel Selectivity - Spurious Response - Tracking - AGC - Double Conversion Receiver

Unit V

Analog and Digital Modulation: Introduction to PAM, PPM, PWM and PCM-Binary Phase Shift Keying - Differential Phase Shift Keying - Quadrature Phase Shift Keying - Binary Frequency Shift Keying – Similarity of BFSK and BPSK.

TEXT BOOKS

1 Electronic Communication Systems, Kennedy and Davis, Tata McGraw Hill, Fifth Edition, 2012 [UNIT- I]
2 Antenna Wave Propagation, K.D. Prasad and Satyaprakahan, Pearson Education, Indian Reprint, 2012. [UNIT II & III]
3 Electronic Communications, Dennis Roddy and John Coolen, Pearson Education, Fourth Edition, 2008.[UNIT IV - V]

REFERENCE BOOKS

1 Principles of Communication Engineering, Anok Singh & A K Chhabra , S.chand Publications, Seventh Edition, 2010.

15CAU403B **OPERATIONS RESEARCH** **6H - 4C**

Instruction Hours / week: L: 6 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3Hours

Course Objectives

Enable the student

- To solve LPP using computer language.
- To learn to enhance in optimal use of resources
- To learn performance measures of queues
- To learn about the optimal use of Inventory
- To learn about the Network scheduling with various applications in the problems of real times.
- to know problem- solving through (computer language) programming.

Course Outcomes (COs)

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

1. Familiarize with the programming environment for operations research.
2. Understand the mathematical concepts using in computer programming techniques.
3. To apply the knowledge in optimal use of resources like LPP, TP, Assignment problems etc.
4. To impart knowledge in concepts and tools of operation research.
5. To understand mathematical models
6. To apply the techniques to the business decisions.

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):(∞/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.

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

TEXT BOOK

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

REFERENCES

1. Sharma J.K., 2009.Operations Research: Theory and Applications, Macmillan publishers India Ltd, New Delhi.
2. Sundaresan V., Ganapathy Subramanian K.S., and Ganesan K., 2005(III edition), Resource Management Techniques**,** A. R. Publications, Nagapatinam.

SEMESTER – IV

15CAU403C **BANKING PRACTICES** **6H - 4C**

Instruction Hours / week: L: 6 T: 0 P: 0 C: 4 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3Hours

Course Objectives

Enable the student

- To solve LPP using computer language.
- To learn to enhance in optimal use of resources
- To learn performance measures of queues
- To learn about the optimal use of Inventory
- To learn about the Network scheduling with various applications in the problems of real times.
- To know problem- solving through (computer language) programming.

Course Outcomes (COs)

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

1. describe the functions of banking.
2. Functions of central banking.
3. Describe the policy reforms in banking industry
4. Describe the recent developments in banking
5. To state the various social banking initiatives.
6. Understand the relationship between banker and customers.

Unit I

Banks: Origin of Banks – Definition of Bank – Classification of Banks – Banking system – UNIT Banking – Branch Banking – Functions of Modern Commercial Banks – Credit Creation by Commercial Banks.

Unit II

Central Banking: Functions – Credit Control Measures – Qualitative and quantitative credit control measures – Role of RBI in regulating and controlling banks.

Unit III

Development Banks: Functions, State Bank of India – Commercial banks and rural financing – Regional Rural Banks – Co-operative banks - NBFC-– IDBI – ICICI.-NBFC-NHB- IFCI

Unit IV

Services Banking: Automated Teller Machine – Merchant Banking – Mutual Fund – Factoring service – Privatization of commercial.

Unit V

E-Banking: E-Banking Services- ATM Card- Debit Card- Credit Card- Master Card-Visa Card- NEFT-RTGS-ECS.

Text Book

1. Natarajan, Parameswaran. (2013), Indian Banking,: S. Chand and sons, New Delhi

Reference Books

1. Santhanam.(2001) Banking and Financial System Margham Publications, Chennai.
2. Sundaram K.P.M. and Sundaram E.N. (1996) Modern Banking, Sultan Chand and Sons, New Delhi.

15SSD401 SOFT SKILL DEVELOPMENT-II 2H- 1C

Instruction Hours / week: L: 2 T: 0 P: 0 C:1 Marks: Internal: 100 External: Nil Total: 100

Course Objective:

Enable the student

- To train students to understand the basic concepts of Quantitative Ability
- To understand the number series, analysis problems.
- To acquire knowledge about the analytical, verbal and logical reasoning.
- To practice to evaluate various real-life situations
- To develop the knowledge on communication and
- To develop the presentation skills.

Course Outcome:

After the completion of this course, a successful student 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. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
5. Compete in various competitive exams like TNPSC, UPSC.etc.
6. Reinforcing competencies in soft skills which are crucial in a social setting

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

Unit – IV

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

Unit - V

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

15CAU501 DATA COMMUNICATION NETWORKS 5H- 5C

Instruction Hours / week: L: 5 T: 0 P: 0 C:5 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam : 3 Hours

Course Objectives
Enable the student

- To study the basic taxonomy and terminology of the computer networking and enumerate the layers of OSI model and TCP/IP model.
- To learn the function of switching concepts.
- To read the fundamentals and basics concepts of Physical layer with real time examples
- To study data link layer concepts, design issues, and protocols.
- To learn the functions of network layer and the various routing protocols.
- To familiarize the functions and protocols of the Transport layer and Application layer.

Course Outcomes (COs)

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

1. Understand the functions of each layer in OSI and TCP/IP model.
2. Understand the knowlededge of data transmission.
3. Explain the multiplexing, switching concept and types of transmission media with real time examples.
4. Understand the error detection and correction methods and can implement the data link layer protocols
5. Learn different medium access method to avoid collision and to learn about routing table.
6. Learn basic functionalities of transport layer and application layer.

Unit I

Data Communication: An Overview – Networks – Protocols and Standards. Network Models: The OSI Model and Layers – TCP/IP Protocol Suite – Addressing.

Unit II

Physical Layer: Multiplexing – Transmission Media – Switching – Circuit switched networks – Datagram Networks – Virtual circuit networks

Unit III

Data Link Layer: Error Detection and Correction – Framing – Flow and Error Control – Protocols

Unit IV

Network Layer: Ipv4 addresses – Internetworking – Ipv4 – Delivery and Forwarding – Unicast Routing Protocols.

Transport Layer: Process to Process Delivery – User Datagram Protocol – Transmission Control Protocol.

Unit V

Transport Layer: Data Traffic – Congestion Control – Quality of Service and Techniques. Application Layer: Electronic Mail – File Transfer –WWW and HTTP – Symmetric Key and Asymmetric Key Cryptography.

TEXT BOOK

1. Andrew S Tanenbaum. 2014. Computer Networks, 5th Edition, Prentice Hall of India, New Delhi.

REFERENCE BOOKS

1. Behrouz A. Forouzan. 2006. Data Communication and Networking, 4th Edition, McGraw Hill, New Delhi.

2. Douglas E. Comer. 2000. Computer Networks and Internets, 2nd Edition. Pearson Education Asia, New Delhi.

3. Stanford H. Rowe and Marsha L. Schuh. 2005. Computer Networking, 1st Edition, Pearson Education.

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

WEB SITES

1. www.mhhe.com/engcs/compsci/forouzan/
2. www.amazon.com/Data-Communications-Networking
3. highered.mcgraw-hill.com/sites/0072515848/information_center_view0/

15CAU502 COMPUTER GRAPHICS AND ANIMATION 5H – 5C

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

Enable the student

- This course presents an introduction to computer graphics designed to give the student an overview of fundamental principles.
- The course makes the student to understand about the video and raster scan displays and their storage
- Methods for modeling objects as polygonal meshes or smooth surfaces, and as rendering such as hidden-surface removal, shading, illumination, and shadows will be investigated.
- To make the student to understand the usage of input devices and its working
- The course objective relies on the student to understand the line algorithm and 2D,3D Geometrical transformation.
- To make solutions to challenging problems in different application domains.

Course Outcomes (COs)

Upon completion of the course, students will be able to

1. Have a knowledge and understanding of the structure of an interactive computer graphics system, and the separation of system components.
2. Have a knowledge and understanding of geometrical transformations and 2D iewing.
3. Be able to create interactive graphics applications.
4. Have a knowledge and understanding of techniques for representing 3D geometrical objects.
5. Have a knowledge and understanding of the various clipping algorithms and visible surface detection algorithm.
6. Learn knowledge to provide students with distinguished knowledge in the field of two- and three-dimensional computer graphics for Animation

Unit I

A Survey of Computer Graphics - Video Display Devices - Refresh Cathode Ray Tubes -Raster Scan Displays - Random Scan Displays - Color CRT Monitors - Direct –View Storage Tubes - Flat Panel Displays - Raster Scan Systems - Three Dimensional Viewing Devices - Random Scan Systems.

Unit II

Input Devices: Keyboards - Mouse –Track Ball and Space ball – Joysticks - Data Glove – Digitizers - Image Scanners - Touch Panels - Light Pens - Voice Systems. Hard Copy Devices: Printers and Plotters.

Point and Lines - Line Drawing Algorithms: DDA Algorithm - Bresenhams Line Algorithm. Circle Generating Algorithms: Mid Point Circle Algorithm.

Unit III

Two Dimensional Geometric Transformations: Basic Transformations: Translation –Rotation – Scaling - Composite Transformations: Translations – Rotations - Scalings. General Pivot Point Rotation - General Fixed Point Scaling. Two – Dimensional Viewing: The Viewing Pipeline - Window to viewport Transformation - Clipping Operations: Point Clipping - Line Clipping - Cohen Sutherland Line Clipping - Polygon Clipping: Sutherland – Hodgeman Polygon Clipping - Text Clipping.

Unit IV

Three – Dimensional Display methods, Three – Dimensional Transformations : Translation –Rotation – Scaling, Three Dimensional viewing : Viewing pipeline - Viewing coordinates - Parallel Projection – . Perspective Projections.

Unit V

Visible Surface Detection Methods: Classification of Visible Surface Detection Algorithms - Back Face Detection - Depth Buffer Method - Area Sub division Method.

Computer Animation : Design of Animation Sequences-General Computer Animation functions – Raster Animations – Computer animation Languages – Key Frame Systems – Motion Specifications

TEXT BOOK

1. Donald Hearn and M. Pauline Baker, 2010, "Computer Graphics - C Version", 2nd Edition, Pearson Education, New Delhi.

REFERENCE BOOKS

1. Amarendra N. Sinha, 2008, "Computer Graphics", 1st Edition, Tata McGraw Hill, New Delhi.

2. Foley, Vandam, Feiner and Hughes, 1999, "Computer Graphics Principles and Practices", 2nd Edition, Addison Wesley, Singapore.

3. Zhigang Xiang and Roy A. Plastock, 2002, "Theory and Problems of Computer Graphics", 2nd Edition, Tata McGraw-Hill publishers, New Delhi.

4. William M. NewMan and Robert F. Sproull, 2007, "Principles of Interactive Computer Graphics", 2nd Edition, Tata McGraw-Hill Publishers, New Delhi.

WEBSITES

1. http://www.fileformat.info/mirror/egff/ch02_01.html
2. http://www.rw-designer.com/how-to
3. http://en.wikipedia.org/wiki/3D_computer_graphics

15CAU503 ENTERPRISE INFORMATION TECHNOLOGIES 5H- 5C

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3Hours

Course Objectives

Enable the student

- To design components, systems and/or processes to meet required specifications for a web presence.
- To introduce at student level the technologies, concepts and principles of ERP and various users and their role,.
- To learn the development of electronic business from its origins in electronic data interchange to its current growing importance.
- To secure & work as an effective member or leader of diverse teams within a multi-level, multi-disciplinary and multi-cultural setting for the Group Website Research Project.
- Be aware of global perspectives of M-Commerce(needs, rules/regulations, and pecifications)
- Demonstrate effective and integrative team-work through mobile technology.

Course Outcomes (COs)

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

1. Discuss electronic commerce and the stakeholders and their capabilities and limitations in the strategic convergence of technology and business.
2. Gain the global nature and issues of electronic commerce as well as understand the rapid technological changes taking place and electronic payment options.
3. Identify advantages and disadvantages of E-security technology.
4. Demonstrate awareness of ethical, social and legal aspects of ERP
5. Analyse features of existing SAP businesses, and propose future directions or innovations for specific businesses
6. Identify the recent tools of SAP applications.

Unit I

ERP AND TECHNOLOGY: Introduction – Related Technologies – Business Intelligence – E-Commerce and EBusiness – Business Process Reengineering – Data Warehousing – Data Mining – OLAP – Product life Cycle management – SCM – CRM.

Unit II

ERP IMPLEMENTATION: Implementation Challenges – Strategies – Life Cycle – Pre-implementation Tasks – Requirements Definition – Methodologies – Package selection – Project Teams – Process Definitions – Vendors and Consultants – Data Migration – Project management – Post Implementation Activities.

Unit III

ERP IN ACTION & BUSINESS MODULES: Operation and Maintenance – Performance – maximizing the ERP System – Business Modules – Finance – Manufacturing – Human Resources – Plant maintenance – Materials Management – Quality management – Marketing – Sales, Distribution and service.

Unit IV

ERP MARKET: Marketplace – Dynamics – SAP AG – Oracle – PeopleSoft – JD Edwards – QAD Inc – SSA Global – Lawson Software – Epicor – Intutive.

Unit V

Enterprise Application Integration – ERP and E-Business – ERP II – Total quality management – future Directions – Trends in ERP.

TEXT BOOKS:

1. Alexis Leon, 2008. ERP DEMYSTIFIED, Second Edition, Tata McGraw Hill.

REFERENCES:

1. Alexis Leon, 2011 .ERP DEMYSTIFIED, third Edition, Tata McGraw Hill.
2. Mary Sumner, 2007.Enterprise Resource Planning, Pearson Education,
3. Biao Fu, 2003. SAP BW: A Step-by-Step Guide, First Edition, Pearson Education.

WEBSITES:

1. en.wikipedia.org/wiki/Enterprise_resource_planning
2. www.sap.com/india/pc/bp/erp/software/overview.html

SEMESTER – V

15CAU504 **PROGRAMMING IN JAVA** **5H- 5C**

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam: 3Hours

Course Objectives

Enable the students

- 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 AWT component and AWT classes.

Course Outcomes (COs)

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

1. Obtain knowledge of the structure and model of the Java programming language.
2. Use the Java programming language for various programming technologies (understanding)
3. Develop software in the Java programming language (application)
4. Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)
5. Use the certain technologies by implementing them in the Java programming language to solve the given problem (synthesis)
6. Choose an engineering approach to solving problems, starting from the acquired knowledge of programming and knowledge of operating systems. (evaluation)

Unit I

Introduction to Object Oriented Programming: Object Oriented Paradigm and Concepts-Structured versus Object Oriented Approach. Java Language: Features of Java -Environment-Java Architecture-Java Development Kit-Types of Java Program. Variable Declaration and Arrays: Data Types-Java Tokens –Variable Declaration – Type Casting and Conversion – Arrays, Operators, And Control Statements: Selection Constructs – Iteration Constructs –Jump Statements.

Unit II

Introduction to classes: Instance variables, Class variables, Instance Methods, Constructors, Class methods, Declaring Objects, Garbage Collection, Method Overloading - Constructor Overloading - This Reference. Inheritance: Super class variables- Method Overriding - final Keyword, Abstract Classes and Interfaces.

Unit III

Packages and Access Modifiers: Package Declaration – import statement - Access Protection. Strings: Creation – Operation on strings - Character Extraction Methods – Comparison –Searching and Modifying –String Buffer Class. Collection and Utilities: Collection of Objects – Interfaces and Classes –Iterators – List, Set, Map Implementations.

Unit IV

Input Output Classes: I/O Operations –Hierarchy of Classes – File class – Input Stream, Output Stream, FilterInputStream, FilterOutputStream, Reader and Writer classes – Random Access File class –Stream Tokenizer. Applets: Basics – Life Cycle –Methods –Graphics Class- Color, Font, and Font Metrics Class.

Unit V

Exception Handling: Fundamentals – Hierarchy of Classes – Types of Exception. Multithreaded Programming: Thread Model – Runnable Interface - Thread Class – Synchronization and Deadlock. AWT Components: AWT Classes – Basic Component and Container Classes – Frame Window in an Applet.

TEXT BOOK

1. ISRD Group. 2012. Introduction to Object Oriented Programming through Java, 1st Edition, Tata McGraw Hill, New Delhi.

REFERENCE BOOKS

1. Deitel H.M. and P.J.Deitel . 2014. Java, How to Program, 10th Edition, Pearson Education.

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

3. Somasundaram Dr.S. 2004. Java Programming, 1st Edition. Techmedia. New Delhi.

WEB SITES

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

15CAU511 PROGRAMMING IN JAVA LAB 5H-3C

Instruction Hours / week: L: 0T: 0 P: 5 C: 3 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

Course Objectives

Enable the students

- 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 AWT component and AWT classes.

Course Outcomes (COs)

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

1. Obtain knowledge of the structure and model of the Java programming language.
2. Use the Java programming language for various programming technologies (understanding)
3. Develop software in the Java programming language (application)
4. Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)
5. Use the certain technologies by implementing them in the Java programming language to solve the given problem (synthesis)
6. Choose an engineering approach to solving problems, starting from the acquired knowledge of programming and knowledge of operating systems. (evaluation)

List of Programs:

1. Write a program to find the sum of series $1+x+x^2+x^3+\ldots$
2. Write a program to get a number using command line argument and find its factorial using recursion.
3. Write a program to find maximum and sum of an array.
4. Define a class for Employee with name and date of appointment. Create employee objects and sort them as per their date of appointment.
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 an applet and draw the shapes.
8. Write a program for multiplication tables by multithreading.
9. Write a program to create an exception for marks out of bounds. If mark is greater than 100 throw an exception.

10. Write an applet program to create menus.

11. Write a java code to generate key event when input is received from the keyboard.

12. Write a Java Program to design a registration Form using Applet with all the AWT controls.

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks**: Internal: 40 External: 60 Total: 100
End Semester Exam: 3 Hours

Course Objectives

Enable the student

- To Understand Data Mining fundamentals and Characterize the kinds of patterns that can be discovered by association rule mining
- Understand the basic principles, concepts and applications of data warehousing and data mining
- To Compare and evaluate different data mining techniques like classification, prediction.
- To Cluster the high dimensional data for better organization of the data
- To describe complex data types with respect to spatial and web mining
- To Design data warehouse with dimensional modelling and apply OLAP operations.

Course Outcomes(COs)

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

1. Extract knowledge using data mining techniques and Implement Preprocess the data for mining applications and apply the association rules for mining the data
2. Design and deploy appropriate classification techniques and decision trees.
3. Understand the concept of clustering and its real time applications
4. Understand the design concept of data mining and its management.
5. Explore recent trends in data mining such as web mining, spatial-temporal mining
6. Able to know the basic concepts of data warehouse and OLAP operations

.

Unit I

Introduction : Fundamentals of data mining – Data Mining Functionalities – Classification of Data Mining systems – Major issues in Data Mining.

Data Warehouse and OLAP Technology: An Overview – Data Warehouse – Multidimensional Data Model – Data Warehouse Architecture

Unit II

Data Preprocessing: Needs Preprocessing the Data – Data Cleaning – Data Integration and Transformation – Data Reduction – Discretization and Concept Hierarchy Generation – Online Data Storage.

Preparing Data for Mining: Variable Measures.

Unit III

Mining Frequent Patterns, Associations and Correlations: Basic Concepts – Efficient and Scalable Frequent item set Mining Methods – From Association Mining to Correlation Analysis.

Unit IV

Classification and Prediction: Issues Regarding Classification and Prediction –Classification by Decision Tree Induction – Rule-based Classification – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a classifier or Predictor.

Unit V

Cluster Analysis Introduction :Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Model-Based Clustering Methods – Constraint-Based Cluster Analysis – Outlier Analysis. Applications and Trends in Data mining – Text Mining – Web Mining – Multimedia Mining-Spatial Mining – Visual data mining.

TEXT BOOKS

1. Jiawei Han & Micheline Kamber. 2012. Data Mining – Concepts and Techniques, 3rd Edition, Morgan Kaufmann Publishers.

REFERENCE BOOKS

1. Arun K Pujari. 2001. Data Mining Techniques, University Press.
2. Michael J. A.Berry, Gordon S.Linoff. 2011. Data mining Techniques, 3rd Edition, Wiley Publishing Inc,
3. K.P.Soman, Shyam Diwakar, V.Ajay. 2006. Insight into Data Mining Theory and Practice, Prentice Hall of India.
4. Paulraj Ponnaiah, Data Warehousing Fundamentals –Wiley Student Edition.

WEB SITES

1. www.thedacs.com
2. www.dwreview.com
3. www.ecai.com
4. www.eruditionhome.com
5. www.anderson.Ucla.com

SEMESTER – V

15CAU505B **BIG DATA** **5H- 5C**

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks**: Internal: 40 External: 60 Total: 100

End Semester Exam: 3 Hours

Course Objectives

Enable the student

- To know the fundamental concepts of big data and analytics.
- To explore tools and practices for working with big data
- To teach the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability.
- To enable students to have skills that will help them to solve complex real-world problems in for decision support.
- To learn about stream computing.
- To know about the research that requires the integration of large amounts of data.

Course Outcomes (COs)

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

1. Work with big data tools and its analysis techniques
2. Analyze data by utilizing clustering and classification algorithms
3. Learn and apply different mining algorithms and recommendation systems for large volumes of data
4. Perform analytics on data streams
5. Learn NoSQL databases and management.
6. Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.

Unit-I

Fundamentals of Big Data - The Evolution of Data Management Understanding the Waves of Managing Data- Defining Big Data - Big Data Management Architecture- The Big Data Journey -Big Data Types-Defining Structured Data-Defining Unstructured Data-Putting Big Data Together.

Unit-II

Big Data Stack- Basics of Virtualization - The importance of virtualization to big data -Server virtualization - Application virtualization - Network virtualization -Processor and memory virtualization - Data and storage virtualization-Abstraction and Virtualization-Implementing Virtualization to Work with Big Data.

Unit-III

Hadoop - Hadoop Distributed File System - Hadoop MapReduce- The Hadoop foundation and Ecosystem.

Unit-IV

Big Data Analytics-Text Analytics and Big Data-Customized Approaches for Analysis of Big Data

Unit-V

Integrating Data Sources-Real-Time Data Streams and Complex Event Processing-Operationalizing Big Data.

TEXT BOOK

1. Judith Hurwitz, Alan Nugent, Fern Halper, Marcia Kaufman. 2013. Big Data For Dummies, Wiley India,New Delhi.

REFERENCES

1. Paul Zikopoulos, Dirk deRoos, Krishnan Parasuraman, Thomas Deutsch, James Giles, David Corrigan. 2012. Harness the Power of Big Data The IBM Big Data Platform, Tata McGraw Hill Publications, New Delhi.
2. Michael Minelli (Author), Michele Chambers (Author), Ambiga Dhiraj (Author). 2013. Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses, Wiley Publications, New Delhi.
3. Zikopoulos, Paul, Chris Eaton. 2011 .Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data, Tata McGraw Hill Publications, New Delhi.

WEB SITES

1. www.oracle.com/BigData
2. www.planet-data.eu/sites/default/files/Big_Data_Tutorial_part4.pdf
3. www.ibm.com/developerworks/data
4. www.solacesystems.com
5. en.wikipedia.org/wiki/Big_data
6. www.sap.com/solution/big-data.html

15CAU505C **CLOUD COMPUTING** **5H- 5C**

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3Hours

Course Objectives

Enable the student

- To understand the concept of cloud computing.
- To provide students with the fundamentals and essentials of Cloud Computing.
- To provide students a sound foundation of the Cloud Computing so that they are able to start using and adopting Cloud Computing services and tools in their real life scenarios.
- To appreciate the evolution of cloud from the existing technologies.
- To have knowledge on the various issues in cloud computing.
- To be familiar with the lead players in cloud.

Course Outcomes (COs)

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

1. Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
2. Learn the key and enabling technologies that help in the development of cloud.
3. Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.
4. Explain the core issues of cloud computing such as resource management and security.
5. Be able to install and use current cloud technologies.
6. Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.

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

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

Reference Book

1. Barrie Sosinsky .2010. Cloud Computing Bible, Wiley- India [UNIT
2. Rajkumar Buyya, James Broberg, Andrzej M Goscinski. 2011. Tata Mc-Graw Hill, New Delhi.
3. Ronald L. Krutz, Russell Dean Vines. 2010. Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Wiley –India
4. Anthony T.Velte, Toby J.Velte, Robert Elsenpeter. 2010. Cloud Computing Practical Approach, 1st Edition, Tata McGraw Hill, New Delhi.
5. Nikos Antonopoulos, Lee Gillam. 2012. Cloud Computing: Principles, Systems and Applications, Springer.

WEB SITES

1. en.wikipedia.org/wiki/Cloud_computing
2. www.ibm.com/cloud-computing/in/en/
3. www.oracle.com/CloudComputing
4. www.microsoft.com/en-us/cloud/default.aspx

15OEU501 OPEN ELECTIVE: E-COMMERCE 3C

Instruction Hours / week: L: 0 T: 0 P: 0 C: 3 **Marks:** Internal: External: 100 Total: **100**
End Semester Exam: 3 Hours

Course Objectives:

To help students to

- To Learn the E-Commerce Platform and its concepts
- To Understand the Technology, infrastructure and Business in E-Commerce
- To Understand the Security and Challenges in E-Commerce
- To Build an Own E-Commerce using Open Source Frameworks
- To Able to Understand the TCP/IP network, Electronic payment systems
- To able to understand E-Security principles

Course Outcome:

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

1. Design Website using HTML CSS and JS
2. Design Responsive Sites
3. Manage, Maintain and Support Web Apps
4. Able to create XML and Web Databases
5. Implement Electronic payment systems
6. Implement E-Security systems

Unit I

E-business opportunities and risks-e-commerce vs e-business-significance of e-business and e-commerce- digital technologies for e-business and e-commerce-B2B and B2C companies-Management responses to e-business and e-commerce- e-commerce environment – portals – auctions – business models and revenue models – dot-com

Unit II

e-Business strategy strategic analysis – strategic objectivities – strategy definition – Strategy implementation - information system and e-business strategy

Unit III

Supply chain management – value chain – e-business to restructure supply chain – supply chain management implementations – procurement – risks and impact of e-procurement – electronic B2B market

Unit IV

Management issues in e-marketing – e-marketing – e-marketing planning – situation analysis – strategy – tactics

Unit V

Management issues in CRM – CRM – characteristics of interactive marketing communications – assessing marketing communications effectiveness – customer retention management – improving online service quality – customer extension – technology solutions for CRM

TEXTBOOK

1. Dave Chaffey, E-Business and E-Commerce Management, Pearson Publications India, 5th Impression 2012

REFERENCE BOOKS:

1. Ken Laudon, E-Commerce 2012, Course Smart eTextbook, 8/E,Prentice Hall
2. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, E-Commerce: Fundamentals and Applications, 2001, Paperback

SEMESTER – VI

15CAU601 SOFTWARE ENGINEERING AND PROJECT MANAGEMENT 5H- 5C

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam : 3Hours

Course Objectives

Enable the students

- To understand the methods used to evaluate and select projects for investment of funds .
- primary aim of thist concepts of project management related to managing software development projects.
- To gain knowledge on the principles and techniques of software project management
- To introduce organization behavior and general management techniques used for project Management.
- To implement a software project management activity
- To complete a specific project in time with the available budget

Course Outcomes (COs)

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

1. Apply the process to be followed in the software development life-cycle models.
2. Implement communication, modeling, construction & deployment practices in software development.
3. Analyze & design the software models using unified modeling language (UML).
4. Explain the concepts of various software testing methods & be able to apply appropriate testing approaches for development of software.
5. Explain the quality management & different types of metrics used in software development.
6. Apply the concepts of project management & planning.

Unit I

Introduction to Software Engineering: The Evolving Role of Software-Software-Software Myths- A Generic View of process: Software Engineering –A Layered Technology- Process Models: Prescriptive Models- Waterfall Model- Incremental process Models. Evolutionary Process Models: Prototyping, The Spiral Model. Specialized process Models- An agile view of Process-What is an Agile Process – Agile Process Models.

Unit II

Requirements engineering: requirements engineering tasks. Building the Analysis Model: Requirements Analysis-Analysis Modeling Approaches-Data Modeling Concepts: Data Objects-Date attributes-Relationships Cardinality and Modality-Flow Oriented Modeling: Creating Data Flow Model-Creating a Control Flow Model-The Control Specification-The Process Specification- Creating a Behavioral Model.

Unit III

Design Engineering: Design with the Context of Software Engineering-Design Process and Design Quality-Design Concepts-Creating An Architectural Design: Software Architecture-Data Design-Architectural Design- Assessing Alternative Architectural Designs-Mapping Data Flow into Software Architecture.

Unit IV

Performing User Interface Design: The Golden Rules- User Interface Analysis and Design- The Process- Interface Analysis: User Analysis - Task analysis and Modeling. Testing Tactics: Software Testing Fundamentals- Black –Box and White-Box Testing- White Box Testing-Basis Path Testing-Control Structure Testing: Condition Testing- Data Flow Testing-Loop Testing- Black Box Testing-Quality Concepts: Quality- Quality Control –Quality Assurance –Cost Of Quality.

Unit V

Project Evaluation: Strategic Assessment, Technical Assessment, cost-benefit analysis, Cash flow forecasting, cost-benefit evaluation techniques, Risk Evaluation. Risk Management: Nature of Risk, Managing Risk, Risk Identification and Analysis, Reducing the Risk. Resource Allocation: Scheduling resources, Critical Paths, Cost scheduling, Monitoring and Control: Creating Framework, cost monitoring, prioritizing monitoring.

TEXT BOOK

1. Roger S. Pressman. 2006. Software Engineering – A Practitioner's Approach, 6th Edition, McGraw Hill International Edition, New Delhi. [UNIT I – IV]
2. Bob Hughes & Mike Cotterell, 2012. Software Project Management, 5th Edition, Tata McGraw-Hill Publications, New Delhi. [UNIT V]

REFERENCE BOOKS

1. Ian Sommerville. 2005. Software Engineering 5th Edition, Pearson Education Publication, New Delhi.
2. Daniel Hoffman and Paul Strooner Software Design Automated Testing and Maintenance, Thomson Publications, Asia.
3. Kalkar S.A. 2007. Software Engineering a Concise Study, 1st edition, Prentice Hall India, New Delhi.
4. Richard Fairley. 1998. Software Engineering Concepts, 1st Edition, Tata McGraw Hill Publishing, New Delhi.
5. Stephen Schach. 2007. Software Engineering , 7th Edition, Tata McGraw Hill, New Delhi.
6. Roger S. Pressman. 2010. Software Engineering – A Practitioner's Approach, 10th Edition, McGraw Hill International Edition, New Delhi.
7. Kelkar. S. A. 2013. Software Project Management, 3rd Edition , Prentice Hall India, New Delhi.

WEB SITES

1. http://en.wikipedia.org/wiki/Software_engineering
2. http://www.onesmartclick.com/engineering/software-engineering.html
3. http://www.cc.gatech.edu/classes/AY2000/cs3802_fall

15CAU602 SCRIPT LANGUAGE 5H-5C

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3 Hours

Course Objectives

- The principles of scripting languages.
- Motivation for and applications of scripting.
- Difference between scripting languages and non- scripting languages.
- Types of scripting languages.
- Scripting languages such as PERL, TCL/TK, python and BASH.
- Creation of programs in the Linux environment.
- Usage of scripting languages in IC design flow.

Course Outcomes (COs)

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

1. Ability to create and run scripts using PERL/TCl/Python in IC design flow.
2. Ability to use Linux environment and write programs for automation of scripts in VLSI tool design flow
3. Construct web scraping scripts to programmatically obtain data and content from web pages.
4. Demonstrate the use of Python to manage applications using networking.
5. Control the keyboard and mouse with GUI automation.
6. Use Python to process Excel spreadsheets, PDF and CSV files, Word documents, and JSON data.

Unit I

HTML: Introduction - SGML - Outline of HTML Document - Head section-Body section - HTML forms.

Unit II

Introduction - Language elements - Object of java script - Other objects - Arrays.

Unit III

DHTML: Cascading style sheets - DHTML Document object model and collections - Event Handling - Filters and Transitions - Data binding

Unit IV

XML: Syntax of XML Document - XML Attributes - XML Validation - XML DTD - XML -DTD Elements - DTD Attributes - DTD Entities - DTD Validation

Unit V

PHP: Introduction to PHP - Syntax - Saving PHP files - Variables - Constants - If and Switch Statements - Operators - Loops and Strings.

TEXT BOOKS

1. Gopalan. N.P & J.Akilandeswari. 2007. Web Technology : A Developer's Perspective ,2nd Edition , Prentice Hall of India. New Delhi. [UNIT I – II]

2. Ivan Bayross.2009. Web Enabled Commercial Application Development using HTML, DHTML ,JavaScript, Perl CGI 2nd Edition, BPB Publications, New Delhi. [UNIT III – V]

REFERENCE BOOKS

1. Ashok Lodha. 2007. Guide to PHP, 1st Edition. LawPoint, Kolkata.

2. Dave W.Mercer, Allan Kent, Steven D.Nowicki, Davd Mercer, Dan Squie, Wankyu Choi. 2006. Beginning PHP5, Wiley India (P) Ltd. New Delhi.

3. Tim Converse & Joyce Park with Clark Morgan. 2006. PHP5 & MySQL Bible, 1st Edition,John Wily, India.

WEB SITES

1. http://www.mvps.org/scripting/languages
2. Http://en.wikipedia.org/wiki/script_language
3. http://www.mvps.org/scripting/languages

15CAU611 SCRIPT LANGUAGE LAB 5H – 3C

Instruction Hours / week: L: 0 T: 0 P: 5 C: 3 **Marks:** Internal: **40** External: **60** Total: **100**

End Semester Exam : 3 Hours

Course Objectives

Enable the student

- To write basic PHP syntax using various operators.
- To write PHP scripts to handle HTML forms.
- To analyze different tasks using PHP functions.
- To understand the regular expressions in PHP.
- To learn concept of extended markup language
- To learn array data structure using PHP scripts.

Course Outcomes (COs)

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

1. Write PHP scripts using operators to perform various functions
2. Design PHP scripts to handle HTML forms.
3. Implement different types of PHP functions.
4. Write regular expressions including modifiers, operators, and metacharacters.
5. Create webpage using different techniques.
6. Create PHP scripts using array.

List of Programs :

1. Create a form to reserve a ticket in the railways if the source and destination place is given.
2. Create a web page to display student mark statement.
3. Design an home page for a company
4. Develop DHTML Script to illustrate Color and Background attribute.
5. Create a DHTML page using various filters on images, mask image, mask Text.
6. Design a PHP program to find greatest of three numbers.
7. Design an student application form using PHP program.
8. Write a java script program design a calculator
9. Develop a Java script program for display greetings based on Time
10. Create an XML document for student information with relevant attributes and validation.
11. Develop a program to copy the content of one file to another file using PHP program.
12. Develop an E-mail application using PHP program.

15CAU603A OBJECT ORIENTED ANALYSIS AND DESIGN 5H - 5C

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3Hours

Course Objectives

Enable the student

- To understand the Object-based view of Systems
- Explain the principles and requirements of OOA and Design
- Describe the object-oriented approach to system development, modeling objects, relationships and interactions.
- Discuss software design in an object-oriented manner.
- Use the UML (Unified Modeling Language)
- Use case studies and tool for OOA and Design.

Course Outcomes (COs)

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

1. Identify suitable life cycle models to be used and translate a requirement specification to a design using an appropriate software engineering methodology.
2. Apply systematic procedure for software design and deployment.
3. Analyze a problem and identify and define the computing requirements to the problem.
4. Formulate appropriate testing strategy for the given software system.
5. Develop software projects based on current technology,
6. Test the software using testing tools.

Unit-I

The Object Model: The evolution of the object model – Elements of the object model – Applying object model. Classes and Objects: The nature of an object – Relationships among objects.

Unit-II

Classes and Objects: The nature of the class – Relationship among classes – The Interplay of Classes and Objects – On building quality classes and objects. Classification: The Importance of proper classification – Identifying proper classes and objects – Key abstraction mechanism.

Unit-III

The notation: Elements of the notation – class diagrams –state transition diagrams – object diagrams.

Unit-IV

The Process: First principles – The micro development process – The macro development process.

Unit-V

UML Overview: UML History – Goals of UML – UML concept areas – Syntax of Expressions and Diagrams.

Nature and purpose of Models: A Model – Levels of Models – Meaning of Model. UML Walkthrough: UML views – Static views – use case view – interaction views – state machine view – activity view – physical view – model management view- extensibility constructs.

TEXT BOOK

1. Grady Booch. 2007. Object Oriented Analysis and Design, 3rd Edition, Addison Wesley, New Delhi.

REFERENCES

1. James Rumbaugh, Ivar Jcobson and Grady Booch. 2003. The Unified Modeling Language Reference Manual, 1st Edition, Addison Wesley, New Delhi.
2. Martin Fowler, Kendall Scott. 2004. UML Distilled, 2nd Edition, Pearson Education, New Delhi.

WEB SITES

1. uml-tutorials.trireme.com/
2. http://www.devshed.com/c/a/Practices/Introducing-UMLObjectOriented-Analysis-and-Design/
3. http://community.sparxsystems.com/tutorials/object-oriented-analysis-and-design

15CAU603B **SOFTWARE TESTING** **5H - 5C**

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3Hours

Course Objectives

Enable the student

- To introduce the fundamental concepts of software engineering.
- To Analyze, specify and document software requirements for a software system.
- To understand different techniques and tools used in this area of software testing.
- To Design, select and apply the most appropriate software engineering process for a given project, plan for a software project, identify its scope and risks, and estimate its cost and time.
- Expose the criteria for test cases.
- Be familiar with test management and test automation techniques

Course Outcomes (COs)

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

1. Identify suitable life cycle models to be used and translate a requirement specification to a design using an appropriate software engineering methodology.
2. Apply systematic procedure for software design and deployment.
3. Analyze a problem and identify and define the computing requirements to the problem.
4. Formulate appropriate testing strategy for the given software system.
5. Enable to understanding the techniques, and tools in the area of software testing and its practice in the industry
6. Develop software projects based on current technology, and test the software using testing tools.

UNIT I

Procedures to build software testing organization – Minimizing risks – writing policy for software testing – Economics of testing – Building structured approach to software testing – Developing test strategy - Guidelines for software testing.

UNIT II

Customizing the software testing process -Integrating tools into the Tester's work processes – selecting and using test tools – Appointing tool managers – Building software tester competency – overview of the software testing process.

UNIT III

Organizing for testing: Do procedures – Reporting process; Developing test plan: Do procedures – check procedures.

UNIT IV

Verification testing: Do procedures – check procedures; Validating testing: Do procedures.

UNIT V

Analyzing and reporting test results: Input – Do procedures; Acceptance and operational testing; Post implementation analysis.

TEXT BOOK

1. William E. Perry, Effective Methods for Software Testing, 3rd Edition, Wiley Publications.

REFERENCE BOOKS:

1. Nageshwar Rao Pusuluri ,Software Testing Concepts and Tools , 2006,Paperback , Dreamtech Press
2. Dorothy Graham, Foundations of Software Testing ISTQB 2012, Paperback .

15CAU603C **MULTIMEDIA SYSTEMS** **5H - 5C**

Instruction Hours / week: L: 5 T: 0 P: 0 C: 5 **Marks:** Internal: **40** External: **60** Total: **100**
End Semester Exam: 3Hours

Course Objectives

Enable the student

- To understand multimedia in respect to many application including business, schools, home, education, and virtual reality.
- To understand the hardware and software needed to create projects using creativity and organization to create them.
- To develop multimedia skills understanding the principal players of individual players in multimedia teams in developing projects.
- Know the importance of images, sound.
- To understand working principles of video and learn copyright laws associated with multimedia.

Course Outcomes (COs)

Upon Completion of the course, the students will be able to

1. Students will be able to analyze various components of the multimedia systems.
2. Use technologies of different multimedia software
3. Able to know multimedia skills understanding the principal players of individual players in multimedia teams in developing projects.
4. Students will be able to design a multimedia system with the encoding and decoding techniques which they have been trained through this course.
5. Able to know clear know about animation software.
6. Design new real time applications

UNIT-I

Definition of multimedia – Introduction to making multimedia: the stages of a project –Basic software tools-Using Text in multimedia - font editing and design tools – hypermedia and hypertext.

UNIT-II

Introduction to Photoshop 6: Interfaces and Navigation-Tools-Text-Working in Photoshop-Creating new documents-Saving Files.

UNIT-III

Displaying the Images- Using Rulers, Guides and Grids – Making Selections- Layers and Types-Choosing Colors-Creating Brushes- painting & editing Tools- Making and Applying Gradients.

UNIT-IV

Introduction to Flash: Variables & data types- Data types in Action Script-Creating and placing variables – Buttons with text fields.

UNIT-V

Basic Actions: Play, stop, Back & forth- Between frames and scenes – Timelines – External scripts-Loops.

TEXT BOOKS

1. Tay Vaughan. 2008. Multimedia making it Work, 7th Edition, Tata McGraw-Hill, New Delhi.(UNIT I)
2. Steve Romaniello. 2001. Mastering Photoshop 6, 1st Edition, BPB Publications, New Delhi. (UNIT II and UNIT III)
3. Bill Sanders. 2001. Flash5 Action Script, 1st Edition, DreamTech Press, New Delhi. (Unit IV and UNIT V)

REFERENCES

1. Dinesh Maidasani. 2006. Flash 8, 1st Edition, Firewall Media Publications, New Delhi.
2. Russal chan 2010. Adobe Flash Professional CS5 Classroom 2010 Adobe Creative Team, Adobe Systems.
3. Robert Shufflebotham. 2004. Photoshop CS in Easy Steps, 1st Edition, DreamTech Pess, New Delhi.
4. Ze-Nian Li and Mark S. Drew. 2004. Fundamentals of Multimedia, Pearson Eduction, New Delhi.

WEB SITES

1. en.wikipedia.org/wiki/Multimedia
2. www.arena-multimedia.com/ -
3. www.nextwavemultimedia.com/

15CAU506 ADVANCED JAVA PROGRAMMING 4H- 4C

Instruction Hours / week: L: 0 T: 0 P: 0 C: 4 **Marks:** External: 100 Total: **100**

End Semester Exam: 3 Hours

Course Objectives

Enable the student

- 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 AWT component and AWT classes.

Course Outcomes (COs)

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

1. Obtain knowledge of the structure and model of the Java programming language.
2. Use the Java programming language for various programming technologies (understanding)
3. Develop software in the Java programming language (application)
4. Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)
5. Use the certain technologies by implementing them in the Java programming language to solve the given problem (synthesis)
6. Choose an engineering approach to solving problems, starting from the acquired knowledge of programming and knowledge of operating systems. (evaluation)

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 BOOKS and 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 REFERENCE BOOKS 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 BOOK

1. Deitel & Deitel. 2011. Java How to Program, 9th Edition, Pearson Education Asia, New Delhi.

REFERENCE BOOKS

1. Aaron walsh, Justin couch & Daniel H.Steinberg. 2000. Java 2 Programming, IDG Books India (P) Ltd., New Delhi
2. Balagurusamy.E . 2000.Programming with Java, Tata Mc-Graw Hill, New Delhi.
3. Herbert Schildt, 2000.Java Complete Reference, Tata McGraw Hill,New Delhi.
4. ISRD Group. 2007. Introduction to Object Oriented Programming through Java, 1st Edition, Tata Mc- Graw Hill, New Delhi.

WEB SITES

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

SEMESTER – VI

15CAU604 ADVANCED NETWORKING 4H – 4C

Instruction Hours / week: L: 0 T: 0 P: 0 C: 4 **Marks:** External: **100** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

Enable the student

- To study the basic taxonomy and terminology of the computer networking and enumerate the layers of OSI model and TCP/IP model.
- To read the fundamentals and basics concepts of Physical layer with real time examples
- To study data link layer concepts, design issues, and protocols.
- To learn the functions of network layer and the various routing protocols.
- To read the concepts of protocol on DHCP
- To familiarize the functions and protocols of the Transport layer and Application layer.

Course Outcomes (COs)

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

1. Understand the functions of each layer in OSI and TCP/IP model.
2. Explain the multiplexing, switching concept and types of transmission media with real time examples.
3. Understand the error detection and correction methods and can implement the data link layer protocols
4. Apply the clear knowledge of different types of protocol.
5. Learn different medium access method to avoid collision and to learn about routing table.
6. Learn basic functionalities of transport layer and application layer.

UNIT I

Introduction: WAN, WAN technologies - Internetworking concepts - 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 - ICMP Package

UNIT III

Unicast Routing Protocol: Intra Domain and Inter Domain Routing – Distance Vector Routing – RIP – Link State Routing – OSPF – Path Vector Routing – BGP – Multicast Routing – Multicast Routing Protocols. 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. Mobile IP : Addressing – Agents – Agent discovery – Registration – Data Transfer - VPN

TEXT BOOK

1. Behrouz A. Forouzan.2003. TCP/IP Protocol Suite, 3rd Edition, Tata McGraw Hill Publication, New Delhi.

REFERENCE BOOKS

1. Andrews S Tanenbaum. 2014.Computer Networks. 5th Edition, Prentice Hall of India Private Ltd, New Delhi.

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

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

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

WEB SITES :

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

SEMESTER – V

15CAU507 DISTRIBUTED DATABASE MANAGEMENT SYSTEM 5C

Instruction Hours / week: L: 0 T: 0 P: 0 C: 5 **Marks:** External: **100** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

Enable the student

- Design good performing distributed database schemas.
- Create optimized query execution plan.
- Efficiently distribute and manage the data.
- manage distributed access control
- To understand the concepts of query processing
- Know how to make security to the databases.

Course Outcomes (COs)

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

1. Explain the architecture of a system based on distributed databases.
2. Develop a system to support distributed transactions in such databases.
3. Provide for competitive access to data in systems using distributed databases.
4. Propose solutions for increasing reliability and security of distributed database system.
5. Compare different systems for managing distributed databases (DDBMS).
6. Develop a real time project using different database tools.

UNIT - I

Database concepts : Data Models- Database Operations- Database Management-DB Clients, Servers, and Environments. DBE Architecture **:** Services- Components and Subsystems- Sites - Expected Services-Expected Subsystems- Typical DBMS Services**–** DBE Taxonomy**:** COS Distribution and Deployment- COS Closedness or Openness-Schema and Data Visibility- Schema and Data Control.

UNIT - II

Data Distribution Alternatives : Design Alternatives- Localized Data- Distributed Data. Fragmentation: Vertical Fragmentation- Horizontal Fragmentation. Distribution Transparency: Location Transparency-Fragmentation Transparency-Replication Transparency-Location, Fragmentation, and Replication Transparencies.

UNIT - III

Query Optimization: Sample Database- Query Processing in Centralized Systems: Query Parsing and Translation - Query Optimization- Query Processing in Distributed Systems- Heterogeneous Database Systems - Concurrency Control in Distributed Database Systems.

UNIT - IV

Deadlock Handling: Deadlock Definition- Deadlocks in Centralized Systems- Deadlocks in Distributed Systems- Distributed Deadlock Detection. Replication Control: Replication Control Scenarios. Failure and Commit Protocols: Terminology- Commit Protocols.

15CAU507 DISTRIBUTED DATABASE MANAGEMENT SYSTEM 5C

UNIT - V

DDBE Security: Cryptography- Securing Data . Traditional DDBE Architectures: Classifying the Traditional DDBMS Architecture- The MDBS Architecture Classifications- Approaches for Developing A DDBE- Deployment of DDBE Software.

TEXT BOOK

1. Saeed K. Rahimi And Frank S. Haug. 2010. Distributed Database Management Systems :A Practical Approach. 1st Edition, A John Wiley & Sons, Inc., Publication.

REFERENCES

1. Ceri.1985.Distributed Databases Principles and Systems , 1st Edition Mchraw Hill Pub.
2. Tamer Ozus M,Patrick Valduriez,S.Sridhar.2006. Principle Of Distributed Database Systems, 1st Edition , Pearson Education.
3. William M.NewMan, Robort F.Sproull, 2004, Principles of Interactive Computer Graphics, 1st Edition , Pearson Education.

WEB SITES

1. en.wikipedia.org/wiki/Distributed_computing
2. www.webopedia.com/TERM/D/distributed_computing.html
3. www.tech-faq.com/distributed-computing.shtml

15CAU605 ADVANCED OPERATING SYSTEM 5C

Instruction Hours / week: L: 0 T: 0 P: 0 C: 5 **Marks:** External: **100** Total: **100**

End Semester Exam: 3 Hours

Course Objectives

Enable the student

- To Study the basic concepts and functions of operating systems.
- To understand the structure and functions of OS.
- To Learn about Processes, Threads and Scheduling algorithms.
- To Understand the principles of concurrency, Deadlocks and Memory Management
- To Learn about the Protection and Security Concepts.
- To understand the concepts of authentication.

Course Outcomes (COs)

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

1. Design various Scheduling algorithms.
2. Apply the principles of concurrency.
3. Apply the memory management process.
4. Design deadlock, prevention and avoidance algorithms.
5. Compare and contrast various memory management schemes.
6. Apply the Security Concepts based on Authentication.

UNIT I

OS Design and Implementation: Introduction-Operating System Definition-Function-History of Operating System-Types of Operating System- Operating System Concepts- Operating System Structure-The nature of the Design problem-Interface Design-Implementation-Trends in Operating System Design.

UNIT II

Process and Threads: Process-Threads-Inter process communication-classical IPC Problems-Scheduling –Deadlocks: Detection and Recovery, Avoidance and Prevention.

UNIT III

File systems-Files-Directories-File System Implementation. Case Studies: Design of UNIX/LINUX, Windows 2000 and MSDOS.

UNIT IV

Distributed Operating System Concepts and Design: Fundamentals-Remote Procedure Calls-The RPC model-Transparency of RPC-Implementing RPC mechanism-Stub Generation-RPC Messages-Marshalling Arguments and Results-Server Management-Parameter-Passing Semantics-Call Semantics-Communication Protocol for RPCs. Distributed File System: Introduction-Desirable Features-File models-File Accessing-Models-Files-Sharing Semantics-File Caching Schemes-File Replication-Fault Tolerance-Atomic Transaction

UNIT V

Real Time Operating System and Micro Kernels: Characteristics of Real Time Systems-Micro kernel's and RTOS-Scheduling for real-time Systems.

TEXT BOOK

1. Andrew S Tannenbauml,"Modern Operating System",2nd Edition. Prentice Hall of India. New Delhi.2002.

REFERENCES

1. Pradeep K Sinha,"Distributed Operating Systems Concepts and Design", 2nd Edition. Prentice Hall of India. New Delhi.2002.
2. Promod Chandra P Bhat,"An Introduction to Operating Systems Concept and Practice", 1st Edition. Prentice Hall of India. New Delhi. 2004.