SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

(Affiliated to Bharathidasan University)

(Accredited with "A" grade by NAAC; An ISO 9001:2015 Certified Institution)

SUNDARAKKOTTAI, MANNARGUDI – 614016.

TAMILNADU, INDIA.

B.Sc., COMPUTER SCIENCE
COURSE STRUCTURE UNDER CBCS

(For the candidates admitted in the academic year 2020 – 2021)

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

(Affiliated to Bharathidasan University)

(Accredited with "A" grade by NAAC; |An ISO 9001:2015 Certified Institution)

SUNDARAKKOTTAI, MANNARGUDI – 614016.

TAMILNADU,INDIA.

B.Sc., COMPUTER SCIENCE COURSE STRUCTURE UNDER CBCS

(For the candidates admitted in the academic year 2020 – 2021)

ELIGIBILITY: Those who have completed +2 examinations with Mathematics as one of the core subject

Sem.	Part	Nature of the Course	Course Code	Title of the Course	Inst. Hours/ Week	Credit	Exam Hours	Marks		
								CIA	ESE	Total
I	I	Language Course – I (LC) – Tamil*/Other Languages **		Ikkala Ilakkiyam	6	3	3	25	75	100
	II	English Language Course -I(ELC)		Prose and Communication	6	3	3	25	75	100
	III	Core Course – I (CC)		C Programming	6	5	3	25	75	100
		Core Practical - I (CP)		C Programming Lab	3	2	3	40	60	100
		First Allied Course –I (AC)		Algebra and calculus	4	3	3	25	75	100
		First Allied Course – II (AC)		Numerical analysis	3	2	3	25	75	100
	IV	Value Education		Value Education	2	2	3	25	75	100
	TOTAL				**30**	**20**				**700**
II	I	Language Course – II (LC) - Tamil*/Other Languages **		Idaikala Illakiyamum puthinamum	6	3	3	25	75	100
	II	English Language Course – II (ELC)		Poetry and Communication	6	3	3	25	75	100
	III	Core Course – II (CC)		Programming in C++	6	6	3	25	75	100
		Core Practical - II (CP)		Programming in C++Lab	3	2	3	40	60	100
		First Allied Course – III(AC)		Statistics	3	2	3	25	75	100
		First Allied Course – IV(AC)		Operations research	4	3	3	25	75	100
	IV	Environmental Studies		Environmenta lStudies	2	2	3	25	75	100

	TOTAL				**30**	**21**				**700**
III	I	Language Course – III(LC)– Tamil*/Other Languages **	**20LC301**	Kappiyamum Nadagamum	6	3	3	25	75	100
	II	English LanguageCourse - III (ELC)	**20ELC301**	Language through Literature III(Drama and Communication Skills)	6	3	3	25	75	100
	III	Core Course – III (CC)	**20CS305**	Programming in Java	6	5	3	25	75	100
		Core Practical - III (CP)	**20CS306P**	Programming in Java Lab	3	2	3	40	60	100
		Second Allied Course – I (AC)	**20APH301**	Applied Physics –I	4	4	3	25	75	100
		Second Allied Course-II (AP)	**20APH302P**	Applied Physics practical – I	3	2	3	40	60	100
		Non Major Elective - I - forthose who studied Tamil under Part -I a) Basic Tamilfor other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degreeprogramme	**20NMEPH31**	Energy physics	2	2	3	25	75	100
	Total				**30**	**21**				**700**
IV	I	Language Course –IV (LC) - Tamil*/Other Languages **	**20LC401**	Pandaiya Illakkiyam	6	3	3	25	75	100
	II	English Language Course–IV (ELC)	**20ELC401**	Language through Literature- IV(Short Stories and Communication)	6	3	3	25	75	100
	III	Core Course – IV (CC)	**20CS407**	Database Management System	6	5	3	25	75	100
		Core Practical - IV (CP)	**20CS408P**	Database Management System Lab	3	2	3	40	60	100

		Second Allied Course –III(AC)	**20APH403**	Applied Physics – II	3	2	3	25	75	100
		Second Allied Course –IV(AP)	**20APH404P**	Applied Physics Practical – II	3	2	3	40	60	100
	IV	Non Major Elective – IIforthose who studied Tamil under Part I a) Basic Tamilfor other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree Programme	**20NMEPH42**	Laser physics	2	2	3	25	75	100
		Skill Based Elective – I	**20SBECS1**	Page maker	2	2	3	25	75	100
	TOTAL				**31**	**21**				**800**
	III	Core Course V [CC]	**20CS509**	Fundamentals of Data Structures and Algorithms	5	5	3	25	75	100
		Core Course VI [CC]	**20CS510**	Computer Systems and Network	5	5	3	25	75	100
		Core Course VII [CC]	**20CS511**	Python Programming	5	5	3	25	75	100
V		Core Practical V [CP]	**20CS512P**	Python Lab	3	3	3	40	60	100
		Major Based Elective - I	**20MBECS1:1** **20MBECS1:2**	Software Engineering / Digital Electronics and Microprocessor	5	5	3	25	75	100
	IV	Skill Based Elective - II	**20SBECS2**	Corel Draw	2	2	3	25	75	100
		Skill Based Elective – III	**20SBECS3**	Dream Weaver	2	2	3	25	75	100
		Soft Skills Development	**RUGSDC**	Soft Skills Development	2	2	3	25	75	100
	TOTAL				**29**	**29**				**800**
	III	Core Course VIII [CC]	**20CS613**	Operating Systems	6	6	3	25	75	100
		Core Course IX [CC]	**20CS614**	Programming in PHP	6	6	3	25	75	100
		Core Practical VI [CP]	**20CS615P**	Programming in PHP Lab	5	4	3	40	60	100

VI		Major Based Elective - II	**20MBECS2:1** **20MBECS2:2**	Cloud Computing/ MobileComputing	6	5	3	25	75	100
		Project		Group Project	6	5	3	25	75	100
	V	Extension Activities		Extension Activities	-	1	-	-	-	-
		Gender Studies	**UGGS**	Gender Studies	1	1	3	25	75	100
	TOTAL				**30**	**28**				**600**
GRAND TOTAL					**Hrs** **180**	**Credit** **140**	**-**	**-**	**-**	**Marks** **4300**

CURRICULAM DESIGN

LIST OF ALLIED COURSES

ALLIED COURSE I-MATHEMATICS **ALLIED COURSE II-PHYSICS**

Subject	No. of Courses	Total Credits
Language Part – I	4	12
English Part –II	4	12
Core Course	9	48
Core Practical	6	15
Allied Course	6	16
Allied Practical	2	4
Non-Major Elective	2	4
Skill Based Elective	3	6
Major Based Elective	2	10
Project	1	5
Environmental Studies	1	2
Value Education	1	2
Soft Skill Development	1	2
Gender Studies	1	1
Extension Activities	1	1
TOTAL	**44**	**140**

* For those who studied Tamil upto 10th +2 (Regular Stream)

+ Syllabus for other Languages should be on par with Tamil at degree level

#those who studied Tamil upto 10th +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV

** Extension Activities shall be outside instruction hours

Note:

	CIA	ESE
1. Theory	25	75
2. Practical	40	60

3. Separate passing minimum is prescribed for Internal and External marks

FOR THEORY

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]

The passing minimum for University Examinations shall be 40% out of 75 marks [i.e. 30 marks]

FOR PRACTICAL

The passing minimum for CIA shall be 40% out of 40 marks [i.e. 16 marks]

The passing minimum for University Examinations shall be 40% out of 60 marks [i.e. 24 marks]

NON MAJOR ELECTIVE (NME) OFFERED BY THE DEPARTMENT

Semester	Part	Course	Title of the Paper
III	IV	NME -I	Working Principles of Internet
IV		NME -II	Fundamentals of Information Technology

SKILL BASED ELECTIVE (SBE) OFFERED BY THE DEPARTMENT

DESKTOP PUBLISHING

Semester	Part	Course	Title of the Paper
		SBE : Desktop Publishing	
IV	IV	SBE-I	Page Maker
V		SBE-II	Corel Draw
V		SBE-III	Dream Weaver

*****

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE

(AUTONOMOUS)

(Affiliated to Bharathidasan University)
(Accredited with "A" grade by NAAC;An ISO 9001:2015 Certified Institution)
SUNDARAKKOTTAI, MANNARGUDI – 614016.
TAMILNADU, INDIA.

DEPARTMENT OF COMPUTER SCIENCE

B.Sc., COMPUTER SCIENCE

(For the candidates admitted in the academic year 2020-2021)

Question Paper Pattern – (Theory)

Max time:3 Hours **Max Marks:75**

Section – A (10 x 2 = 20)Answer all the questions
Answer in One or Two sentences each

1. ┐
2. ┘ Unit I
3. ┐
4. ┘ Unit II
5. ┐
6. ┘ Unit III
7. ┐
8. ┘ Unit IV
9. ┐
10. ┘ Unit V

Section – B (5 x 5 = 25)

Answer all the questions
Each answer should not exceed 500 words

11. a (or) ┐
    b ┘ Unit I
12. a (or) ┐
    b ┘ Unit II
13. a (or) ┐
    b ┘ Unit III
14. a (or) ┐
    b ┘ Unit IV
15. a (or) ┐
    b ┘ Unit V

Section – C (3 x 10 = 30)
Answer any <u>THREE questions</u> in 1200 words

16 Unit I
17 Unit II
18 Unit III
19 Unit IV
20---Unit V

*****

SEMESTER I

Semester: I-CC- I: C PROGRAMMING

Ins. Hrs. /Week: 6 **Course Credit: 5** **Course Code:**

OBJECTIVES

- To understand the basic knowledge of Programming Skills in Language.
- To stresses the strengths of C, which provide students with the means of writing efficient, maintainable, and portable code.
- To know the nature of C language with the wide variety of examples and applications.

UNIT I

C fundamentals Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions.

UNIT II

Data input output functions - Simple C programs - Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

UNIT III

Functions - Definition - proto-types - Passing arguments - Recursions. Storage Classes - Storage classes: Automatic, External, Static, Register Variables - Multi-file programs.

UNIT IV

Arrays - Defining and Processing - Passing arrays to functions - Multi-dimension arrays - Arrays and String. Structures - User defined data types - Passing structures to functions - Self-referential structures – Unions - Bit wise operations. Pointers - Declarations - Passing pointers to Functions - Operation in Pointers, Pointer and Arrays - Arrays of Pointers - Structures and Pointers -

UNIT V

Files: Creating Processing, Opening and Closing a data file. Stack –Queue-Dynamic memory allocation – Linked lists – Preprocessors.

COURSE OUTCOME

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

1. Understand the basic terminology used in computer programming.
2. Design programs involving decision structures, loops and operators.
3. Understand the use of functions in programming and storage classes.
4. Understand the dynamics of memory by the use of pointers and Structures.
5. Use different data structures and create/update basic data files.

TEXT BOOK(S)

1. Balagurusamy E., Programming in ANSI C, Eighth Edition, McGraw-Hill, 2018

REFERENCE BOOKS

1. R.S. Bichkar, Programming with C, University Press, 2012.

E_RESOURCES

1. https://bit.ly/2USuCq7
2. https://www.learnpick.in/prime/documents/ppts/details/42/structures-in-c
3. http://www.d.umn.edu/~rmaclin/cs1622/Chapter09-10/Chapter09-10.PPT

Semester: I-CP- I: C PROGRAMMING LAB

Ins. Hrs. /Week: 3 **Course Credit: 2** **Course Code:**

OBJECTIVES

- To write, compile and debug programs in C language.
- To formulate problems and implement algorithms in C.
- To effectively choose programming components that efficiently solves computing problems in real-world environment.

EXERCISES

1. Write a Program to convert temperature from degree Centigrade to Fahrenheit.
2. Write a Program to find whether given number is Even or Odd.
3. Write a Program to find greatest of three numbers.
4. Write a Program to swap two numbers using temporary variable.
5. Write a Program to using switch statement to display Monday to Sunday.
6. Write a Program to display first Ten Natural Numbers and their sum.
7. Write a Program to find Multiplication of Two Matrices.
8. Write a Program to find the maximum number in Array using pointer.
9. Write a Program to reverse a number using pointer.
10. Write a Program to solve Quadratic Equation using functions.
11. Write a Program to find factorial of a number using Recursion.
12. Write a Program to show Call by Value and Call by Reference.
13. Write a Program to add two numbers using pointer.
14. Write a Program to create a file containing Student Details.

COURSE OUTCOME

After Completion of this course the student would be able to

1. Understand the basic concept of C Programming, and its different modules.
2. Acquire knowledge about the basic concept of writing a program.
3. Understand the role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
4. Understand the concept of Arrays and pointers dealing with memory management.
5. Understand the file handling for permanent storage of data.

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS),
SUNDARAKKOTTAI, MANNARGUDI – 614016.
DEPARTMENT OF MATHEMATICS
ALLIED MATHEMATICS
ALLIED COURSE – I

Semester : I – AC – I : ALGEBRA AND CALCULUS

Ins. Hrs. /Week : 4 **Course Credit: 3** **Course Code :**

OBJECTIVES

- To learn the basic concept in the integration.
- To train the students to solve the problems in Theory of Equations.
- To introduce the basic concept of Theory of equations, Matrices and Differentiation.

UNIT I

Theory of Equations: Relation between roots & coefficients – Transformations of Equations – Diminishing, Increasing & multiplying the roots by a constant.

UNIT II

Matrices : Singular matrices – Inverse of a non-singular matrix using adjoint method - Rank of a Matrix – Consistency - Characteristic equation, Eigenvalues, Eigen vectors – Cayley Hamilton's Theorem (proof not needed) –Simple applications only.

UNIT III

Differentiation: Maxima & Minima – Concavity , Convexity – Points of inflexion- Partial differentiation – Euler's Theorem - Total differential coefficients (proof not needed) – Simple problems only.

UNIT IV

Evaluation of Integrals of Types, 1] $\int \frac{px+q}{ax^2+bx+c}dx$ 2] $\int \frac{px+q}{\sqrt{ax^2+bx+c}}dx$

3] $\int \frac{dx}{a+bcosx}$ 4] $\int \frac{dx}{a+bsinx}$

Evaluation using Integration by parts – Properties of definite integrals –Reduction formula

1] $\int x^n e^{ax}dx$ 2] $\int cos^n x dx$ 3] $\int sin^n x dx$.

UNIT V

Differential Equations: Linear equations – Second order of types (aD^2+ bD +c) y = F(x) where a,b,c are constants and F (x) is one of the following types (i) e ax (ii) sin (ax) or cos (ax) (iii) x n, n being an integer (iv)eax f(x)

COURSE OUTCOME

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

1. Find solutions of transformation of equation by increasing and decreasing roots.
2. Acquire the Knowledge of pertaining to consistency of equations of matrices and Eigen value and Eigen vector.
3. Understand the concept of maxima and minima and partial differential equation.
4. Understand the different types of Integral Equations and their properties.
5. Do the problems in different methods of Differential Equation.

TEXT BOOK(S)

1. T.K.Manickavasagam Pillai & others, Algebra, Volume I & II, S.V Publications,1985 Revised Editions.
2. S.Narayanan, T.K.Manicavachagam Pillai, Calculus, Vol.I & II, S. Viswanathan Pvt. Limited,2003.
3. S.Narayanan,T.K.Manicavachagam Pillai, Differential Equations, S.Viswanathan Pvt. Limited, 2003.

UNIT-I Chapter 6 : Sec. 11, 15 and 17 of [1].
UNIT- II Chapter 2 : Sec. 1 to 16 of [1].
UNIT -III Chapter 5 : Sec. 1, 2 of [2].
Chapter 8 : Sec. 1.1,1.3 and 1.6 of [2].
UNIT -IV Chapter 1 : Sec. 7.3, 8,9, 11, 12, 13.1, 13.3, 13.4 of [2].
UNIT -V Chapter 5 : Sec. 1, 2, 3 and 4 of [3].

REFERENCE BOOK(S)

1.M.L. Khanna, Differential Calculus, Jaiprakashnath and Co., Meerut-2004.

E_RESOURCES

1.https://www.pdfdrive.com/calculus-volume-1-d33472743.html.
2.https://www.computer-pdf.com/amp/download-672

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS),
SUNDARAKKOTTAI, MANNARGUDI – 614016.
DEPARTMENT OF MATHEMATICS ALLIED MATHEMATICS
ALLIED COURSE – II

Semester : I – AC – II : NUMERICAL ANALYSIS

Ins. Hrs. /Week : 3 **Course Credit: 2** **Course Code :**

OBJECTIVES

- To introduce the basic concept of solving algebraic and transcendental equations.
- To introduce the numerical techniques of interpolation.
- To acquaint the student with an understanding of numerical techniques of differentiation and integration.

UNIT I

The Solution of Algebraic and Transcendental Equations – Bisection method – Iteration method – Newton Raphson method

UNIT II

Interpolation – Finite differences – Newton's forward and backward Interpolation – Lagrange's Interpolation formula

UNIT III

Numerical Differentiation – Numerical Integration: Trapezoidal Rule – Simpson's 1/3 Rule

UNIT IV

Gauss Elimination Method – Gauss Jacobi Method –Gauss Seidal method

UNIT V

Numerical Solution of Ordinary Differential Equations – Solution by Taylor's Series – Euler's method – Runge Kutta second and fourth order method.

COURSE OUTCOME

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

1. Understand the numerical techniques to find the roots of linear and non-linear equations.
2. Understand the difference operators and use of interpolation.
3. Understand numerical differentiation and integration.
4. Understand the methods of solutions of linear equations.
5. Understand the concept of numerical solutions of ordinary differential equations.

TEXT BOOK(S)

1. S. S. Sastry, Introductory Methods of Numerical Analysis, 4thEdition, Prentice Hall of India, New Delhi, 2005.

UNIT - I	Chapter 2:	Sec. 2.2,2.4, 2.5
UNIT - II	Chapter 3:	Sec. 3.3 (3.3.1 & 3.3.2), 3.6, 3.9.1
UNIT - III	Chapter 5:	Sec. 5.2.1, 5.4 (5.4.1 & 5.4.2)
UNIT - IV	Chapter 6:	Sec. 6.3.2, 6.4
UNIT - V	Chapter 7:	Sec. 7.2, 7.4, 7.5

REFERENCE BOOK(S)

1. M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Private Limited,2001.
2. David Kincaid, Ward Cheney, Numerical Analysis, Books/cole Publishing company, Calfifornia.

E_RESOURCES

1. http://www.math.iitb.ac.in/~baskar/book.pdf
2. http://spartan.ac.brocku.ca/~jvrbik/MATH2P20/notes.pdf

BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI- 620 024

Applicable to the candidates admitted from the Academic year 2018-19 onwards

Part IV - VALUE EDUCATION (Revised Syllabus)

Unit I : Philosophy of Life and Social Values

Human Life on Earth (Kural 629) Purpose of Life (Kural 46) Meaning and Philosophy of Life (Kural 131, 226) Family (Kural 45), Peace in Family (Kural 1025) Society (Kural 446), The Law of Life (Kural 952), Brotherhood (Kural 807) Five responsibilities / duties of Man (a) to himself (b) to his family (c) to his environment (d) to his society, (e) to the Universe in his lives (Kural 43, 981).

Unit II : Human Rights and Organizations

Definitions, Nature of Human Rights. Universal Declaration of Human Rights, International covenent on Civil and Political Rights - International covenent of Economic, Social and Cultural Rights. Amnesty International Red Cross.
Contemporary Challenges**:** Child Labour – Women's Right - Bonded Labour - Problems of refugees - Capital punishment. National and State Human Rights Commissions

Unit III : RTI Act, 2005 & Consumer Protection Act, 1986

Definition of RTI Act, 2005 and obligations of Public Authorities – The Central Information Commission – The State Information Commission – Powers and Functions of the Information Commissions – Appeal and Penalties.
Definition of The Consumer Protection Act,1986 – State and Central Consumer Protection Councils – Consumer Disputes Redressal Agencies.

Unit IV : Yoga and Health

Definition, Meaning, Scope of Yoga - Aims and objectives of Yoga - Yoga Education with modern context - Different traditions and schools of Yoga - Yoga practices: Asanas, Pranayama and Meditation.

Unit V : Role of State Public Service Commission

Constitutional provisions and formation - Powers and Functions - Methods of recruitment - Rules and notification, syllabi for different exams - written and oral - placement.

BOOKS FOR REFERENCES:

1. Thirukkural with English Translation of Rev. Dr. G.U. Pope, Uma Publication, 156, Serfoji Nagar, Medical College Road, Thanjavur 613 004
2. V.R. Krishna Iyer, Dialetics and Dynamics of Human Rights in India, Tagore Law Lectures.
3. Yogic Thearpy - Swami Kuvalayananda and Dr.S.L.Vinekar, Government of India, Ministry of Health, New Delhi.
4. SOUND HEALTH THROUGH YOGA - Dr.K.Chandrasekaran, Prem Kalyan Publications, Sedaptti, 1999.
5. Right to Information Act, 2005-Website: www.tnpsc.gov.in/RTI%20ACT%202005.pdf
6. The Consumer Protection Act, 1986 – Website: http://ncdrc.nic.in/bare_acts/consumer%20Protection%20Act-1986.html

******

SEMESTER II

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS), SUNDARAKKOTTAI, MANNARGUDI – 614016.

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE
B.Sc., COMPUTER SCIENCE

Semester: II-CC- II: PROGRAMMING IN C++

Ins. Hrs. /Week: 6 **Course Credit: 6** **Course Code:**

OBJECTIVES:

- To get a clear knowledge about object-oriented concepts.
- To understand object oriented programming through C++.
- To learn how to design C++ classes with code reuse.

UNIT I

Basic Concepts of Object- Oriented Programming-Benefits of OOP-Object Oriented Languages-Applications of OOP – Difference between C and C++. Structure of C++ Program - Tokens, Expressions and Control Structures – Functions in C++-

UNIT II

Classes and Objects: Constructors: C++ Default Constructor- Parameterized Constructor- copy Constructor and Destructors –Operator Overloading and Type Conversions: Implicit Type Conversion- Explicit Type Conversion.

UNIT III

Inheritance: Extending Classes – Defining Derived Classes – Single Inheritance – Multilevel Inheritance – Multiple Inheritance – Virtual Base Classes – Pointer, Virtual Functions and Polymorphism – Pointers –Pointers to Objects – this Pointer – Pointers to Derived Classes – Virtual Functions – Pure Virtual Functions.

UNIT IV

Managing Console I/O Operations – C++ Streams – C++ Stream Classes – Unformatted I/O Operations – Formatted Console I/O Operations – Working with Files – Classes for File Stream Operations – Opening and Closing a File – Detecting End-of-file - Templates.

UNIT V

Standard Template Library- STL components – Manipulating Strings – Basic String Operations– string copy, string length, string comparison, string concatenation.

COURSE OUTCOME:

After Completion the student would be able to

1. Gain the basic knowledge on Object Oriented concepts.
2. Develop applications using Classes and objects.
3. Understand the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable code.
4. Understand the file handling and error handling mechanisms in C++.
5. Implement features of object oriented programming to solve real world problems.

TEXT BOOK(S) :

1. Balagursamy E, Object Oriented Programming with C++, Tata McGraw Hill Publications, Seventh Edition, 2018

REFERENCE BOOKS:

1. Ashok Kamthane, Programming in C++, Pearson Education,2013.

E_RESOURCES:

1. https://bit.ly/3l0vAuW
2. https://bit.ly/2UVciN7
3. http://www.cs.fsu.edu/~xyuan/cop3330/16_template.pptx

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS), SUNDARAKKOTTAI, MANNARGUDI – 614016.

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE
B.Sc., COMPUTER SCIENCE

Semester: II-CP- II: PROGRAMMING IN C++ LAB

Ins. Hrs. /Week: 3 **Course Credit: 2** **Course Code:**

OBJECTIVES

- To make the student to identify and practice the object-oriented programming concepts and techniques.
- To practice the use of C++ classes and class libraries, modify existing C++classes.
- To develop C++ classes for simple applications

EXERCISES

1. Classes
   Write a Program using a class to represent a Bank Account with Data Members – Name of depositor, Account Number, Type of Account and Balance and Member Functions – Deposit Amount – Withdrawal Amount. Show name and balance. Check the program with own data.
2. Constructor & Destructor
   Write a program to read an integer and find the sum of all the digits until it reduces to a single digit using constructor, destructor and default constructor.
3. Default &Reference Argument
   Write a program using function overloading to read two matrices of different data types such as integers and floating point numbers. Find out the sum of the above matrices separately and display the total sum of these arrays individually.
4. Operator Overloading
   Addition of Two Complex Numbers, Matrix Multiplication
5. Function Overloading
   To find the volume of cube, cuboids, cylinder.
6. Inheritance
   Prepare Pay Roll of an employee using Inheritance.
7. Overriding
   To implement the concept of Overriding.
8. Templates
   Create program to add, subtract, multiply and divide two numbers using class template
9. Pointers
   Write a Program to find the number of vowels in a given text Write a Program to check for Palindrome
10. Files
    Prepare Students Mark List in a file with Student Number, Mark in four subjects and Mark Total. Write a program to arrange these records in the ascending order of Mark Total and write them in the same file overwriting the earlier records.
11. Exception Handling
    Prepare Electricity Bill for customers generating and handling any two Exceptions.

COURSE OUTCOME

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

1. Apply object-oriented programming features to program design and implementation
2. Understand object-oriented concepts and how they are supported by C++
3. Understand implementation issues related to object-oriented techniques.
4. Analyze, use, and create functions, classes, to overload operators.
5. Write programs that make appropriate use of advanced object-oriented facilities common to many object- oriented languages such as classes, message passing, overloading and inheritance.

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS),
SUNDARAKKOTTAI, MANNARGUDI – 614016.
DEPARTMENT OF MATHEMATICS ALLIED MATHEMATICS
ALLIED COURSE – III

Semester : II – AC – III : STATISTICS

Ins. Hrs. /Week : 3 **Course Credit: 2** **Course Code :**

OBJECTIVES

- To train the students to workout statistical problems.
- To analyze the data graphically using frequency distributions.
- To analyze the data using measure of central tendency.

UNIT I

Introduction -Origin and development of statistics-scope-limitations- Frequency distribution graphical representation.

UNIT II

Measures of central tendency: Arithmetic Mean – Geometric Mean – Harmonic Mean - Median - Mode

UNIT III

Measures of dispersion: Range-Quartile deviation-Mean deviation- Standard deviation Coefficient of dispersion

UNIT IV

Correlation and Regression–Properties of Simple Correlation and regression coefficients – Simple Problems only.

UNIT V

Binomial distribution: Moments- Recurrence relations for the Moments-Moment generating functions-simple problems-Additive property.

COURSE OUTCOME

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

1. Understand the basic concept of statistics.
2. Acquire knowledge of measures of central tendency.
3. Understand the concept of measures of dispersion.
4. Understand the concept of correlation and regression.
5. Gain Knowledge about binomial distribution and its properties.

TEXT BOOK(S)

1. Gupta.S.C & Kapoor.V.K, Fundamentals of Mathematical Statistics, Sultan Chand & sons, New Delhi-2002.

UNIT -I Chapter 1 : Sec. 1.1 to 1.4
Chapter 2 : Sec. 2.1 to 2.3
UNIT -II Chapter 2 : Sec. 2.4 to 2.9

UNIT -III Chapter 2 : Sec. 2.13 to 2.14

UNIT-IV Chapter10 : Sec. 10.1 to 10.4 & Chapter 11: Sec. 11.1, 11.2 (11.2.1 to 11.2.3)

UNIT -V Chapter 8 : Sec. 8.4 (8.4.1, 8.4.2, 8.4.6,8.4.7 only)

REFERENCE BOOK(S)

1. Gupta.S.P , Statistical Methods, Sultan Chand & sons, NewDelhi-1994.
2. Kapil Sharma, Statistical Methods, ABO Publishers, Jaipur, India.

E-RESOURCES

1. https://www.math.arizona.edu/~jwatkins/statbook.pdf
2. http://www.cimt.org.uk/cmmss/S1/Text.pdf

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS),
SUNDARAKKOTTAI, MANNARGUDI – 614016.
DEPARTMENT OF MATHEMATICS ALLIED MATHEMATICS
ALLIED COURSE – IV

Semester : II – AC – IV : OPERATIONS RESEARCH

Ins. Hrs. /Week : 4 **Course Credit: 3** **Course Code :**

OBJECTIVES

- To train the students to solve Assignment problems, Transportation problems.
- To train the students in Network problems.
- To impart knowledge in concepts and tools of Operations Research.

UNIT I

Operations Research: Introduction - Basics of OR – OR & decision making – Role of OR - Linear programming formulations & graphical solution of two variables – Canonical & standard forms of LPP.

UNIT II

Simplex Method: Simplex Method for < , = , > constraints –Big M-method.

UNIT III

Transportation Problem: Transportation algorithm –Degeneracy algorithm – Degeneracy in Transportation Problem, Unbalanced Transportation problem-Assignment algorithm – Unbalanced Assignment problem.

UNIT IV

Sequencing Problem: Processing of n jobs through two machines – Processing of n jobs through 3 machines – Processing of two jobs through n machines.

UNIT V

Networks: Network – Fulkerson's rule - Measure of activity – PERT computation – CPM computation - Resource scheduling.

COURSE OUTCOME

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

1. Understand the advantages and limitations of operation research
2. Understand the LPP and to know methods of solving problems
3. Understand the concepts of transportation and assignment problems
4. Learn about the sequencing problems
5. Assimilate the concept of Network scheduling by CPM and PERT

TEXT BOOK(S)

1. S.Kalavathy, Operations Research, Fourth Edition, Vikas Publishing House Pvt. Ltd.

UNIT - I	Chapter 1
	Chapter 2 : Sec. 2.1, 2.2
	Chapter 3
UNIT -II	Chapter 4
	Chapter 5 : Sec. 5.1, 5.2
UNIT -III	Chapter 8 : Sec. 8.1 to 8.5
	Chapter 9 : Sec. 9.3 to 9.5
UNIT -IV	Chapter 1 :Sec. 14.1 to 14.3, 14.5
UNIT -V	Chapter 15 :Sec. 15.1 to 15.8

REFERENCE BOOK(S)

1. P. K Gupta and Manmohan, Operations Research, Sultan Chand and sons Educational publishers, New Delhi.
2. Hamdy A. Taha, Operations Research, 7th Edn., Prentice Hall of India Private Limited, New Delhi, 2005.

E_RESOURCES

1. http://ebooks.lpude.in/commerce/bcom/term_5/DCOM303_DMGT504_OPERATION_RESEARCH.pdf
2. http://www.ggu.ac.in/download/class-note14/operation%20research07.04.14.pdf

BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI- 620 024

ENVIRONMENTAL STUDIES

(Applicable to the candidates admitted from the Academic year 2019-20 onwards)

Unit: 1 The Multidisciplinary nature of environmental studies Definition, scope and importance. Need for public awareness (2 lectures)

Unit: 2 Natural Resources:

Renewable and non-renewable resources:
Natural resources and associated problems.

a) Forest resources: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.

c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.

f) Land resources: Land as a resources, land degradation, man induced Landslides, soil erosion and desertification.

(8 lectures)

Unit: 3 Ecosystems

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles
- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession.
- Food chains, food webs and ecological pyramids

- Introduction, types, characteristic features, structure and function of the following ecosystem:-
- a. Forest ecosystem
- b. Grassland ecosystem
- c. Desert ecosystem
- d. Aquatic ecosystems, (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit: 4 Biodiversity and its conservation

- Introduction – Definition : Genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, National and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity : habitat loss, poaching of wildlife, man- wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
- Biological Diversity Act 2002/ BD Rules, 2004

(8 lectures)

Unit: 5 Environmental Pollution

Definition

Causes, effects and control measures of :

a. Air Pollution

b. Water Pollution

c. Soil Pollution

d. Marine Pollution

e. Noise pollution

f. Thermal Pollution

g. Nuclear hazards

- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution

- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides.
- Ill-Effects of Fireworks: Firework and Celebrations, Health Hazards, Types of Fire, Firework and Safety (8 lectures)

Unit: 6 Social Issues and the Environment

- From Unsustainable to Sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people; its problems and concerns. Case studies
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and Control of Pollution) Act.
- Wildlife Protection Act.
- Forest Conservation Act.
- Issues involved in enforcement of environmental legislation
- Public awareness.

(7 lectures)

Unit: 7 Human Population and the Environment

- Population growth, variation among nations.
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights - Value Education
- HIV/ AIDS - Women and Child Welfare
- Role of Information Technology in Environment and human health
- Case studies.

Unit: 8 Field Work

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

References:

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Public Ltd Bikaner.
2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt ltd, Ahamedabad – 380013, India, E-mail: mapin@icenet.net(R)
3. Brunner R.C. 1989, Hazardous Waste Incineration, McGraw Hill Inc 480 p
4. Clark R.S. Marine Pollution, Clanderson Press Oxford (TB) 5. Cunningham, W.P.Cooper, T.H.Gorhani E & Hepworth, M.T. 2001.
6. De A.K. Environmental Chemistry, Wiley Eastern Ltd
7. Down to Earth, Centre for Science and Environment (R)
8. Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford University, Press 473p.
9. Hawkins, R.E. Encyclopedia of India Natural History, Bombay Natural History Society, Bombay (R)
10. Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge University Press 1140 p.
11. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws Himalaya Pub. House, Delhi 284 p.
12. Mckinney, M.L. & Schoch R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition 639 p.
13. Mhaskar A.K. Matter Hazardous, Techno-Science Publications (TB)
14. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
15. Odum, E.P. 1971 Fundamentals of Ecology. W.B. Saunders Co. USA. 574 p
16. Rao MN & Datta, A.K. 1987 Waste Water treatment, Oxford & IBH Publication Co. Pvt Ltd 345 p.
17. Sharma B.K. 2001 Environmental chemistry Goel Publ House, Meerut.
18. Survey of the Environment, The Hindu (M).
19. Townsend C. Harper, J and Michael Begon, Essentials of Ecology, Blackwell science (TB)
20. Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media (R).
21. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science Publications (TB).
22. Wagner K.D. 1998 Environmental Management. W.B. Saunders Co. Philadelphia USA

    (M) Magazine (R) Reference (TB) Textbook

23. http://nbaindia.org/uploaded/Biodiversityindia/Legal/33%20Biological%20Diversity%20Rules,%202004.pdf.

SEMESTER III

Semester: III -CC- III: Programming in JAVA

Ins. Hrs. /Week: 6 **Course Credit: 5** **Course Code:**

OBJECTIVES

- To acquire the basic knowledge of programming skills in Java Language
- To understand the strengths of Java, which provide the means of writing efficient, maintainableand portable code
- To obtain knowledge in Java language with the wide variety of examples and applications

UNIT- I: Object Oriented Programming (18 Hours)

Introduction To OOP – Data Abstraction-Encapsulation- Polymorphism–Objects And Classes– Characteristics Of OOP–Difference Between OOP And Procedure Oriented Language –**Introduction To Java Programming :** Introduction – Features Of Java – Comparing Java And Other Languages – Applications And Applets – Java Development Kit – Complex Programs–Java Source File Structure– Prerequisites For Compiling And Running Java Programs.

UNIT -II: Java Language Fundamentals (18 Hours)

The Building Blocks Of Java – Data Types – Variable Declarations– Wrapper Classes – Operations And Assignment – Control Structures- Operator And Expressions- Decision Making And Branching- Decision Making And Looping –Arrays–Strings–String Buffer Class.

UNIT -III: Java as an OOP Language (18 Hours)

Defining Classes- Fields Declaration- Creating Objects-Accessing Class Members – Constructors – Method Overloading- Static Members- Nesting of Methods- Modifiers- **Inheritance:** Extending Classes- Overloading Methods– Final Variables- Final Classes-Finalizer Methods-Packages-Interfaces.

UNIT -IV: Exception Handling (18 Hours)

Introduction–Basics Of Exception Handling–Exception hierarchy – Constructors And Methods In Throwable Class- Unchecked And Checked exceptions – Handling Exceptions In Java – Exception And Inheritance – Throwing user-Defined Exceptions – Redirecting And Rethrowing Exceptions – Advantages of exception Handling Mechanism – **Multithreading :** Introduction – Creating Threads –Thread life-Cycle – Thread Priorities and Thread scheduling– Thread synchronization– Daemon Threads– Thread Groups– Communication of Threads.

UNIT- V: Files and I/O Streams **(18 Hours)**

Overview – Java I/O – File Streams – File input stream and file output stream File streams – Random access file –Serialization-Applets-how applet differ from applications- Introduction–Java Applications Versus Java Applets –Applet life Cycle – create an executable applet-Working with applets–The HTML APPLET Tag–The Java Applet package

Total Lecture Hours-90

COURSE OUTCOME

Students are able to

1. Understand the basic terminology used in Java programming
2. Design programs involving decision structures, loops and operators
3. Apply the concepts of Class, Inheritance, Packages and Interfaces
4. Understand the concepts of exception handling
5. Use different Files and I/O Streams

TEXT BOOKS

1. Balagurusamy.E 2019, Programming With Java 6th Edition. Mc Graw Hill Publications, USA.
2. Radhakrishna.P 2016, Object Oriented Programming Through Java, University press, England.

REFERENCE BOOKS

1. Gerard Prudhomme 2019, Java Programming Applications, Arcler Education Incorporated, Canada.
2. Herbert Schildt 2018, Java The Complete Reference Eleventh Edition, Mcgraw-Hill Education, USA.
3. Rajkumar.K 2013, Java Programming, Pearson Education, India.

E-RESOURCES

1. https://www.tutorialspoint.com/java/java_tutorial.pdf
2. https://www.slideshare.net/wanizahoor/applets-in-java
3. https://syr.us/kDN
4. https://syr.us/UHC
5. https://www.javatpoint.com/java-tutorial

Semester: III-CP- III: Programming in JAVA Lab

Ins. Hrs. /Week: 3 **Course Credit: 2** **Course Code:**

OBJECTIVES

- To write, compile and debug programs in JAVA language
- To formulate problems and implement algorithms in JAVA
- To effectively choose programming components that efficiently solves computing problems in real-world environment

EXERCISES

1. Write a program to sort the given numbers using arrays.
2. Write a program to implement the FIND and REPLACE operations in the given multiple text.
3. Write a program to implement a calculator to perform basic arithmetic Operations.
4. Write a program to find the area of a rectangle using constructor
5. Write a program to find the student's percentage and grade using command line arguments.
6. Write a program to draw circle or triangle or square using polymorphism and inheritance.
7. Implement multiple inheritance concepts in java using interface, you can choose your own example of a company or education institution or a general concept which requires the use of interface to solve a particular problem.
8. Write a program to create threads and assign priorities to them
9. Write a program to develop an applet to play multiple audio clips using multithreading.
10. Write a program to create a window with three check boxes called red, green and blue. The applet should change the colors according to the selection.
11. Write a Java Program to Draw a Human Face.

COURSE OUTCOME

Students are able to

1. Understand the basic concept of JAVA Programming
2. Acquire knowledge about the basic concept of writing JAVA program
3. Understand the role of constants, variables, identifiers, operators, type conversion and other building blocks of JAVA Language
4. Understand the concept of inheritance and method overloading
5. Write programs using the concepts of applet

Semester: III - AC-I: Applied Physics-I

Ins. Hrs. /Week: 4 **Course Credit: 4** **Course Code:**

OBJECTIVES

- To understand the different kinds of circuits.
- To acquire the knowledge about AC circuits.
- To implement the logic circuits related with the computer field.

UNIT-I: Current Electricity (12 Hours)

Ohm's Law- Verification of Ohm's Law-Kirchoff's law- Applications of Kirchoff's law-Wheatstone's bridge - Metre bridge- Carey Foster's bridge- Potentiometer- Measurement of Current and Resistance- Calibration of low range Voltmeter.

UNIT-II: Alternatingcurrent (12 Hours)

AC circuits with double components – measurement of current and voltage – power in an AC Circuit-Power Factor (derivation)- Wattless current – Choke - series and parallel resonant circuits - Impedance-Q factor-Selectivity and Sharpness of resonance.

UNIT-III: Number Systems, Codes And Logic Gates (13 Hours)

Number Systems - Conversions - Binary: Addition, Subtraction, Multiplication, Division-8421 Code - BCD Code - Excess 3 code - Gray code - Binary to Gray and Gray to Binary Conversion - ASCII code – Basic and Derivative Gates: AND, OR, NOT, NAND, NOR, EX-OR, NAND&NOR as Universal Gates.

UNIT-IV:Boolean Algebra, Arithmetic And Combinational Logic Circuits (12 Hours)

Basic laws of Boolean algebra - De Morgan's theorem - Verification of Boolean expression using Boolean laws - Half-adder - Full adder - Half-Subtractor- Full subtractor (using gates)

UNIT-V: Semiconductor Memories (11 Hours)

Introduction – ROM using diodes and transistors – ROM in terms of digital circuits–PROM – EPROM – EEPROM – ROM as a unit in microcomputers – RAM – Static RAM – Memory expansion – Memory Parameters.

Total Lecture Hours- 60

COURSE OUTCOME

Students are able to

1. Understand the concept of electric current flows in a circuit.
2. Gain the knowledge about AC concepts to analyze circuits.
3. Learn the different types of number systems as they related to computers.
4. Acquire the knowledge about various combinational logic circuits using basic gates.
5. Identification of new developments in semiconductor memory.

TEXT BOOK(S)

1. Narayanamurthi and Nagarathinam, Electricity and Magnetism, The National Publishing Company, Madras,1994.
2. Brijlal & Subramanian, Electricity and Magnetism, Ratan Prakashan Mandir, 1995.
3. PuriV.K.,Digital Electronics circuits and systems, TATA Mcgraw hill publications, New Delhi,2011.
4. Vijayendran. V & Subramanian. V, Introduction to Integrated Electronics, S. Viswanath PVT Ltd., Chennai2012.
5. Sanjay D Jain, Applied Physics, Universities Press, Hyderabad,Telengana.

REFERENCE BOOK(S)

1. MurugeshanR,ElectricityandMagnetism,S.Chand&CompanyLtd.,2015
2. Gothaman W.H., Digital Electronics, Prentice Hall of India PVT., New Delhi, 1996.
3. Beiser Arthur, Concepts of Modern Physics, 7 th Edition, Mcgraw hill education,Europe.
4. D.N. Vasudeva, Electricity and MagnetismS.Chand&Co, twelfth edition (2007).
5. S.Salivahanan, Digital Circuits and Design, Oxford University Press 5th Edition (2018) .

E -RESOURCES

1. https://youtu.be/InSK7biFdbo
2. https://youtu.be/FFDMzbrEXaE
3. https://www.askiitians.com/revision-notes/physics/current-electricity.html
4. https://www.askiitians.com/revision-notes/physics/electromagnetic-induction-andalternating-current/
5. https://www.my-mooc.com/en/mooc/circuits-electronics-1-basic-circuit-mitx-6-002- 1x-0/

Semester: III - AC- II: Applied Physics Practical-I

Ins. Hrs. /Week: 3 **Course Credit: 2** **Course Code:**

(Any 10 Experiments)

OBJECTIVE:

- It promotes the exhaustive requirements and expectations of the students to acquire practical knowledge for the theory given in their syllabus.

1. Metre Bridge-Specific Resistance.
2. Potentiometer-Measurement of Current.
3. Potentiometer-Calibration of low range voltmeter.
4. Carey Foster's Bridge- Specific Resistance.
5. Logic Gates (AND, OR, NOT, NAND, NOR and EX-OR) Using IC's.
6. NAND as Universal Gates.
7. Verification of De-Morgan's Theorems.
8. Half –Adder and Half –Subtractor using logic gates.
9. Full Adder and Full Subtractor using logic gates.
10. LCR - Series resonance circuit
11. LCR - Parallel resonance circuit
12. NOR as Universal Gates

COURSE OUTCOME:

- Understand the laboratory technique and to educate and motivate the students in the field of Physics

TEXT BOOK (S)

1. Somasundram S., Practical Physics, Apsara Publications, Tiruchirappalli.2012.
2. Department of Physics, *Practical Physics*, (B.Sc. Physics Main), St. Joseph's College, Tiruchirapalli1998.

REFERENCE BOOK(S)

1. Srinivasan M.N. Balasubramanian S. &Renganathan R., A Text book of Practical Physics, Sulthan Chand & Sons, New Delhi, 2000.

E_RESOURCES

https://youtu.be/Q8Otf6k3uGk
https://youtu.be/8DhfUz0idwM

SEMESTER IV

Semester: IV-CC- IV: Database Management System

Ins. Hrs. /Week: 6 **Course Credit: 5** **Course Code:**

OBJECTIVES

- To explain the role of a database management system in an organization
- To describe the basic database concepts, including the structure and operation of the relational data model
- To illustrate the logical database design principles, E-R Diagrams, database normalization, and the role of the database administrator

UNIT- I : Introduction **(17 Hours)**

Database-System Applications- Purpose of Database Systems - **View of Data:** Physical Level, View Level, Logical Level- **Database Languages**: Data Definition Language-Data Manipulation Language - Relational Databases - Database Design -Data Storage and Querying Transaction Management- Data Mining and Analysis - Database Architecture - Database Users and Administrators - History of Database Systems.

UNIT- II: Relational Model **(18 Hours)**

Structure of Relational Databases - Database Schema - Keys - Schema Diagrams - Relational Query Languages - Relational Operations -Fundamental Relational Algebra Operations - Additional Relational Algebra Operations- Extended Relational Algebra Operations - Null Values - Modification of the Database.

UNIT- III: SQL **(18 Hours)**

Overview of the SQL Query Language - SQL Data Definition - Basic Structure of SQL Queries - Additional Basic Operations - Set Operations - Null Values Aggregate Functions - Nested Subqueries - Modification of the Database -Join Expressions - Views - Transactions - Integrity Constraints - SQL Data Types and Schemas – Authorization.

UNIT- IV: Relational Languages **(20 Hours)**

The Tuple Relational Calculus - The Domain Relational Calculus DatabaseDesign and the E-R Model-Overview of the Design Process - The Entity Relationship Model - Schemas -**Schema Refinement (Normalization) :** Purpose of Normalization or schema refinement,concept of functional dependency-normal forms based on functional dependency(1NF, 2NF and 3 NF)- concept of surrogate key-Boyce-codd normal form(BCNF)- Lossless join and dependency preserving decomposition- Fourth normal form(4NF).

UNIT- V: Overview of Storages and Indexing **(17 Hours)**

Data on External Storage- File Organization and Indexing – Clustered Indexing – Primary and Secondary Indexes-Index Data Structures-Hash- Based Indexing– Tree-Based Indexing- Comparison of File Organization-Types of storage-Types of File organization-File Operations.

Total Lecture Hours-90

COURSE OUTCOME

Students are able to

1. Apply the basic concepts of Database Systems and Applications
2. Understand the basics of SQL and construct queries using SQL in database creation and interaction
3. Design a commercial relational database system by writing SQL queries
4. Analyze and Select storage and recovery techniques of database system
5. Understand the concepts of file organization and indexing, hashing

TEXT BOOKS

1. Abraham Silberschatz, Henry Korth.F, Sudarshan.S 2010, Database System Concepts, Seventh Edition, McGraw-Hill, Newyork.
2. Ramiz Elmasri, Shamkant Navathe.B 2016, Fundamentals of Database Systems, Seventh Edition Pearson Publication, London.

REFERENCE BOOKS

1. Lisa Friedrichsen , Lisa Ruffolo , Ellen Monk , Joy Starks.L , Philip Pratt .J 2020, Concepts of Database Management System, 10th Edition, Cengage Learning, Boston, Massachusetts
2. Raghu Ramakrishnan 2014 , Johannes Gehrke ,Database Management Systems,Third Edition, McGrawHill Education, Newyork.
3. RamezElmasri 2014, Database Systems: Models, Languages, Design and Application, Pearson Education, London.

E-RESOURCES

1. https://www.tutorialspoint.com/dbms/database_normalization.htm
2. http://inst.eecs.berkeley.edu/~cs186/sp07/Spring07Lectures/25-Norm1.ppt
3. https://www.d.umn.edu/~rmaclin/cs4611/notes/Ch08_Storage_Indexing_Overview.pdf

Semester: IV-CP- IV: Database Management System Lab

Ins. Hrs. /Week: 3 **Course Credit:2** **Course Code:**

OBJECTIVES

- To understand the MySQL operations for creating table, set operations, aggregate functions, implement nested sub queries, join operations
- To describe the database concepts for creating view and string operations
- To Illustrate the concept of database creation with primary key and foreign key

EXERCISES

1. Create a table and perform the following basic mysql operations

a) Set the primary key
b) Alter the structure of the table
c) Insert values
d) Delete values based on constraints
e) Display values using various forms of select clause
f) Drop the table

2. Develop mysql queries to implement the following set operations

a) Union
b) Union all
c) Intersect
d) Intersect all

3. Develop mysql queries to implement the following aggregate functions

a) Sum
b) Count
c) Average
d) Maximum
e) Minimum
f) Group by clause & having clause

4. Develop mysql queries to implement following join operations

a) Natural join
b) Inner join
c) Outer join-left outer, right outer, full outer
d) Using join conditions

5. Develop mysql queries to implement nested subqueries

a) Set membership (int, not int)
b) Set comparison (some, all)
c) Empty relation (exists, not exists)
d) Check for existence of Duplicate tuples(unique, not unique)

6. Develop mysql queries to create a views and expand it.

7. Develop mysql queries to implement

a) String operations using %
b) String operations using '_'
c) Sort the element using asc,desc [*create necessary relations with requires attribute]

8. Consider the following database for a bankingenterpriseBRANCH(branch-name:string, branch-city:string, assets:real)
ACCOUNT(accno:int, branch-name:string, balance:real) DEPOSITOR(customer-name:string, accno:int)
CUSTOMER(customer-name:string, customer-street:string, customercity:string)LOAN(loan-number:int, branch-name:string, amount:real) BORROWER(customer-name:string, loan-number:int)

i. Create the above tables by properly specifying the primary keys and the foreign keys
ii. Enter at least five tuples for each relation
iii. Find all the customers who have at least two accounts at the Main branch.
iv. Find all the customers who have an account at all the branches located in a specific city.
v. Demonstrate how you delete all account tuples at every branch located in a specific city.
vi. Generate suitable reports.
vii. Create suitable front end for querying and displaying the results.

COURSE OUTCOME

Students will be able to

1. Develop Database tables and perform a basic MySQL operations
2. Implement MySQL commands for data definition and data manipulation
3. Obtain the skills to implement the aggregate functions
4. Obtain the knowledge to set operations, join operations, nested sub queries, views etc
5. Design database tables using primary key and foreign key

Semester: IV - AC- III: Applied Physics-II

Ins. Hrs. /Week: 3 **Course Credit: 2** **Course Code:**

OBJECTIVES

- To understand the properties of semi-conductor
- To study the applications in memory devices and gain knowledge of the opto electronic devices
- To study the applications of Op- amp.

UNIT-I: Semiconductor Physics **(12 Hours)**

Theory of energy bands in crystals- Distinction between conductors, Insulators and Semiconductors – Intrinsic and Extrinsic semiconductors – Hall effect in semiconductor– Zener diode –V-I characteristics.

UNIT-II: Transistors **(12 Hours)**

Transistors - PNP and NPN transistors - DC Characteristics of CE and CB configuration-Hybrid parameters-Functions of Transistor as an amplifier – FET-N-channel FET - performance Characteristics- FET amplifier

UNIT-III: Lasers **(10 Hours)**

Laser - Basic concepts of stimulated emission –Population inversion and Meta stable state-He-Ne laser-Ruby laser -production – Advantages.

UNIT-IV: Opto-Electronic Devices LED **(14 Hours)**

Radiation transition - Emission spectra –Luminescent efficiency-Method of Excitation-Visible LED-Materials for LED - LED configuration and performance- Photo conduction – Photo diode-Photo transistor-seven segment display -LCD.

UNIT-V: Operational Amplifier **(12Hours)**

The basic operational amplifier– Inverting and Non inverting operational Amplifier–CMRR-Basic uses of operational amplifier as sign and scale changer and phase shifter - Adder – Sub tractor – comparator.

Total Lectures Hours-60

COURSE OUTCOME

1. The knowledge of fundamentals of semiconductor physics enable the students to apply the various system
2. Design characterization and study of properties of material help the students for various applications
3. Gain the applications of LASER
4. The knowledge for using Opto electronic devices
5. Understand the basic concept of Op amp

TEXT BOOK(S)

1. JacobMillman, 1985..Micorelectronics,McGrawHillpublications,NewDelhi.
2. Theraja B.L., 2002. The fundamentals of solid state physics, Sultan Chand& Co., Delhi.
3. Mithal G.K. and Vanvasi, 2006. Pulse and Digital electronics, Khanna publication, New Delhi.
4. Vijayendran. V & Subramanian. V, 2012.Introduction to Integrated Electronics, S. Viswanath PVT Ltd., Chennai.
5. L. Floyd, Electronic Devices,2013. (Pearson Education, New York.).

REFERENCE BOOK(S)

1. Ramanan,Function Electronics, 1994.TMH, New Delhi,
2. Millman&Halkias, 1967. Electronics devices and Circuits, McGraw-Hill.
3. Sanjay D Jain, Engineering Physics, 2012.Universities Press, Hyderabad,
4. Telengana Gothaman W.H., 1996. Digital Electronics, Prentice Hall of India PVT., New Delhi,
5. W.T. Silvast, 2003.Laser Fundamentals (Cambridge University Press, Cambridge).

E LEARNING RESOURCE(S)

1. https://youtu.be/kiiA6WTCQn0
2. https://youtu.be/KynKHr2cXgk
3. https://bit.ly/3qomJYb
4. https://bit.ly/2JwMRix
5. https://youtu.be/AcxDiesy-nI

Semester: IV-AC- IV: Applied Physics Practical-II

Ins. Hrs. /Week: 3 **Course Credit: 2** **Course Code:**

(Any 10 Experiments)

OBJECTIVE

- To acquire basic understanding of laboratory technique and to educate and motivate the students in the field of Physics

EXERCISES

1. Semiconductor diode-Characteristics.
2. Zener diode - Characteristics.
3. FET - Characteristics.
4. Transistor Characteristics-CE Configuration.
5. Transistor Characteristics-CE Configuration.
6. Inverting and non inverting operational amplifier using Op-amp.
7. Photo diode -V-I Characteristics.
8. Mathematical operator –addition, Subtraction using Op-amp.
9. BCD to Seven Segment Display
10. FET amplifier – Frequency response curve.
11. Single stage amplifier - Frequency response curve.
12. Op-amp as a comparator.

COURSE OUTCOME

- Understand the laboratory technique and to educate and motivate the students in the field of Physics

TEXT BOOKS:

1. Somasundram S., Practical Physics, Apsara Publications, Tiruchirappalli.2012.
2. Department of Physics, *Practical Physics*, (B.Sc. Physics Main), St. Joseph's College,Tiruchirapalli1998.

REFERENCE BOOK(S):

1. Srinivasan M.N. Balasubramanian S. &Renganathan R., A Text book of Practical Physics, Sulthan Chand & Sons, New Delhi, 2000.

E_RESOURCES:

1. https://youtu.be/aMrGe2r9nco
2. https://youtu.be/x3VvjHVBGDU

Semester: IV-SBE-I : Page Maker

Ins. Hrs. /Week: 2 **Course Credit: 2** **Course Code:**

OBJECTIVES

- To understand the concepts of Page maker
- To describe the different Graphic tools
- To understand about new technologies of publishing

UNIT- I: Getting Started With Adobe Page maker 7.0 **(6 Hours)**

Creating And Printing Lesson Project- Installing PPD(Windows Only) –Flyer-Locating Files And Fonts-Restoring Default Settings-Opening An Existing Publication-Page-Pasteboard-Style And Color Palettes-Page Icon-Change The View Of Publication-Using The Ruler- Positioning The Zero Point-Setting Up The Rulers-Planning To Print Flyer--Assembling A Two Row Column Flyers-Producing The Flyer-Creating a Publication.

UNIT –II: Modifying Text **(6 Hours)**

Starting Page maker-Setting An Application Default- Opening An Existing Document-Talk With Your Printer- Assembling A Custom Template- Creating A New Publications- Saving The Publication As A Template-Establish A Design Grid-Assembling Envelope-Tilling The Publication Window-Dragging A Group From One Publication To Another- Assembling A BusinessCard-Creating A Tinted Box-Drawing Lines-Copying Text From One Publication To Another- Copying, Pasting And Formatting The Address-Printing The Letterhead.

UNIT- III: Project Proposal **(6 Hours)**

Before You Begin-Assembling A Master Page-Defining Printing Requirements- Creating New Publication-Creating Column Guides-Adding Tints To Color Palette-Using Control Palette To Resize An Object Proportionally-Specifying Automatic Page Numbering-Establishing A Publication Default Stroke Style And Weight-Creating The Rotated Display Text-Replacing Selected Text-Assembling The First Page- Assembling The Second Page- Assembling The Third Page- Producing The Proposal.

UNIT- IV : Jewel Case Booklet **(6 Hours)**

Before You Begin- Assembling The Master Page- Assembling The Booklet Cover-Creating A New Publication-Establishing Preferences-Specifying Columns Of Unequal Width- Drawing A Circle-Copying The Page Number Marker-Assembling The First Double Page Spread - Assembling The Second Double-Page Spread - Assembling The Last Spread - Assembling The BackCover - Building A Booklet- Printing The Booklet.

UNIT- V: Adventure Newsletter **(6 Hours)**

Before You Begin - Starting The Publication- Setting Up The Master Pages- Beginning Page -Adding Guides -Placing Art On Page - Placing The Text- Formatting The Bungee Article - Adding The Continuation Line- Adding The Editor's Note- Finishing The Bungee Article- Formatting The Kayaking Article Positioning The Pull Quote- Laying Out The Tibetan Treks Sidebar- Using The Story Editor- Finding And Changing Text -Checking Spelling.

Total Lecture Hours-30

COURSE OUTCOME

Students are able to

1. Understand the basic concepts of PageMaker
2. Analyze how to modify and create text style
3. Create graphics with multiple colors
4. Comprehend new technologies in page maker
5. Understand the concepts of internet and intranet

TEXT BOOKS

1. Adobe Press 2012, Adobe Page Maker 7.0 Classroom Guide, Adobe Press, Canada.
2. Kevin Proot 2014, Adobe Pagemaker 7.0. Cengage Learning ,USA.

REFERENCE BOOKS

1. Carolyn M. 2002, The Complete Reference. Pagemaker 7, McGraw-Hill, USA
2. Greg Bowden 2002, Learning Adobe Pagemaker 7.0, Guided Computer Tutorials, Australia.
3. Scott Basham 2002, Pagemaker In Easy Steps. Dream Tech Press, New Delhi.

E-RESOURCES

1. https://www.slideshare.net/lakshmirama/pagemaker65-ppt
2. https://www.youtube.com/watch?v=ud0htk5jiz0
3. http://ncsmindia.com/wp-content/uploads/2012/04/dtp4.pdf
4. https://www.bestlibrary.org/journalism/files/using_pagemaker_7_text_doc..pdf
5. https://www.r-iti.com/download/pagemakernotes.pdf

SEMESTER V

Semester: V-CC- V: Fundamentals of Data Structures and Algorithms

Ins. Hrs. /Week: 5 **Course Credit:5** **Course Code:**

OBJECTIVES

- To impart the basic concepts of data structures and algorithms
- To understand concepts about searching and sorting techniques
- To understand basic concepts about stacks, queues, lists, trees and graphs

UNIT- I: Data Structure Fundamentals (18 Hours)

Arrays and sequential representations – Ordered lists –Difference between sequential and ordered list – Stacks and Queues – Applications of stack and Queue - Evaluation of Expressions – Multiple Stacks and Queues – Singly Linked List – Linked Stacks and queues – Polynomial addition.

UNIT- II: Trees (17 Hours)

Introduction – Binary tree representations – Tree Traversal – Threaded Binary Trees – Binary Tree Representation of Trees – Graphs and Representations – Traversals- Connected Components and Spanning Trees – Shortest Paths.

UNIT- III: Algorithms (14 Hours)

Definition- Characteristics - Pseudo Code Conventions-Algorithm analysis-Algorithm Complexity – Priority Queues - Heaps – Heap Sort – Merge Sort – Quick Sort – Binary Search – Findingthe Maximum and Minimum.

UNIT- IV: Greedy Method (14 Hours)

The General Method – Greedy Method Control Abstraction for subset paradigm-Treevertex splitting-Optimal Storage on Tapes – Knapsack Problem – Job Sequencing with Deadlines – High level Description of Job Sequencing Algorithm-Sequencing Unit Time Jobs with Deadlines and profits-Fast Job Scheduling-Optimal Merge Patterns.

UNIT –V: Back tracking **(12 Hours)**

The General Method – '4' Queens Problem-'8' Queens Problem – 'N' Queens Problem- Recursive Backtracking - Iterative Backtracking - Sum of Subsets – Graph Coloring - Planar Graph Representation - m colorings of a Graph - Hamiltonian cycle.

Total Lecture Hours-75

COURSE OUTCOME

Students are able to

1. Write algorithms step by step in solving problems with the help of fundamental data structures
2. Analyze algorithm and algorithm correctness
3. Summarize searching and sorting techniques
4. Describe stack, queue and linked list operation
5. Understand the concepts of tree and graph

TEXT BOOKS

1. Ellis Horowiz, SartajSahni 2008, Fundamentals of Data Structure, Galgotia Publications, New Delhi.
2. Ellis Horowiz, Sartaj Sahni and Sanguthevar Rajasekaran 2008, Computer Algorithms, University Press, Hyderabad.

REFERENCE BOOKS

1. John Bullinaria 2019, Data Structures and Algorithms, Version 27 , University of Birmingham, UK.
2. Narasimha Karumanchi 2017, Data Structures and Algorithms Made Easy, 5th Edition, Career Monk Publication, Hyderabad.
3. Seymour Lipschutz 2014, Data Structures , Tata Mcgraw Hill, Schaum's Outline Series, India.

E-RESOURCES

1. https://drive.google.com/file/d/17uKRbJfApOLMQtw6wjlST8Q6ga-3rYG5/view?usp= drive_web
2. https://www.slideshare.net/adisesha12/data-structure-ppt-138483078

Semester: V-CC- VI: Computer Systems and Networks

Ins. Hrs. /Week: 5 **Course Credit:5** **Course Code:**

OBJECTIVES

- To understand the design and organization of Computer Networks
- To analyze the fundamental Layers of Networks
- To understand the real world applications of computer networks

UNIT- I: Introduction **(17 Hours)**

Data Communications - Networks - The Internet- Protocols And Standards-Network Types-**Network Models:** The OSI Model- Layers In The OSI Model- TCP/IP Protocol Suite- The OSI Model- **Physical Layer**: Analog and Digital-Digital to Digital Conversion-Analog to Digital Conversion– Digital to Analog Conversion-Transmission Modes-Multiplexing - Spread Spectrum-Transmission Media-Guided Media-Unguided Media.

UNIT- II: Data Link Layer **(16 Hours)**

Introduction to Error Deduction and Correction – Block Coding-Linear Block Codes- Cyclic codes-Checksum- **Data link Control:** Framing- Flow and Error Control- Noiseless Channels- Noisy Channels- HDLC- **Media Access Control:** Random Access- Controlled Access-**Wireless Networks:** IEEE 802.11- Bluetooth-Cellular Telephone- Satellite network- Connection devices.

UNIT- III: Network Layer **(14 Hours)**

Ipv4 Addresses- Ipv6 Addresses-Circuit Switching- Packet Switching- Internetworking- IPv4- IPv6-Transition From IPv4 TO IPv6 -Address Mapping- Delivery- Forwarding- **Unicast Routing Protocols:** Optimization Distance Vector Routing -Link State Routing- Path Vector Routing-**Multicast Routing Protocols:** Unicast, Multicast, and Broadcast – Applications- Multicast Routing - Routing Protocols.

UNIT -IV: Transport Layer **(14 Hours)**

Process-To-Process Delivery-Transport Layer Protocols- User Datagram Protocol - User Datagram - Checksum - TCP Services- TCP features - Windows in TCP - Flow Control - Error Control- TCP Congestion Control Data Traffic- Congestion-Congestion Control- Quality of Service - Techniques to Improve Quality of Service- Integrated Services.

UNIT- V: Session Layer **(14 Hours)**

Session Layer Functions –Session Layer Protocols-**Presentation Layer**: Presentation Formatting-Data Compression- Lossless Compression Algorithms- Image Compression (JPEG)- **Application Layers** : Domain Name Space- Remote Logging -Client Server Programming - World Wide Web Architecture-Uniform Resource Locator -Web Documents- Hyper Text Transfer Protocol - File Transfer Protocol-Electronic mail. **Total Lecture Hours-75**

COURSE OUTCOME

Students are able to

1. Identify the Networks types, models and OSI layers
2. Understand the Data link layer and working of connection devices
3. Understand about the Addressing modes
4. Understand the TCP Services and Features
5. Obtain the knowledge in WWW, FTP, Email

TEXT BOOKS

1. Behrouz Forouzan 2013, A Data Communications and Networking, , Tata McGrawHill, Fifth Edition, NewDelhi, India.
2. Larry Peterson.L and Bruce Davie.S 2006, Morgan Computer Networks, KaufmannPublishers , Burlington, Massachusetts, USA.

REFERENCE BOOKS

1. Achyut Godbole and Atul Kahate 2011, Data Communications and Networks, McGraw Hill Education, New Delhi, India.
2. Andrew Tennabaum.S 2013, Computer Networks, Fifth Edition Pearson Publication, India.
3. James Kurose .F, Keith Ross.W 2016. Computer Networking , A Top down Approach,Sixth Edition Pearson Publication, India.

E-RESOURCES

1. https://www.albany.edu/~goel/classes/fall2002/msi603/notes/osi.ppt
2. http://index-of.es/Varios-2/Computer%20Networks%205th%20Edition.pdf

Semester: V-CC- VII: Python Programming

Ins. Hrs. /Week: 5 **Course Credit: 5** **Course Code:**

OBJECTIVES

- To describe the concepts of variables and functions in python
- To understand how to use python data structures such as lists, tuples and dictionaries
- To obtain knowledge about input/output files in python

UNIT-I: Introduction to Python **(11 Hours)**

Definition of python-Advantages of python-Comparing python to other languages- **Variables, Expressions and Statements:** Assignment Statements-Variable names-Expression and Statements-Script mode-Order of operations-String operations- Comments- **Functions:** Function calls-Math functions-Composition-Adding new functions- Definitions and uses-Flow of execution-Parameters and arguments-Variables and parameters are local-Stack diagrams-Fruitful functions and void functions-Need of functions-**Case Study:**Interface design .

UNIT-II: Conditional and Recursion **(18 Hours)**

Floor division and modulus-Boolean expressions-Logical Operators-Conditional execution-Alternative execution- Chained conditionals-Nested conditionals-Recursion-Stack diagrams for recursive functions-Infinite recursion-Keyboard input-Fruitful Functions: Return Values-Incremental development-Composition-Boolean functions-More recursion-Leap of faith-One more example-Checking types- Iteration: Reassignment-Updating variables-The while statement-break-Square roots-Algorithms- Strings: A string is sequence-length-Traversal with a for loop-String slices-Strings are immutable-Searching-Looping and counting-String methods-The in operator-String comparison- Case Study: Word Play.

UNIT-III : List **(18 Hours)**

A list is a sequence-Lists are mutable-Traversing a list-List operations-List slices- List methods-Map, filter and reduce-Deleting elements-Lists and strings-Objects and values-Aliasing-List arguments-**Dictionaries:** A dictionary is a mapping-Dictionary as a collection of counters-Looping and dictionaries-Reverse lookup-Dictionaries and lists-Memos-Global Variables-**Tuples:** Tuples are immutable-Tuples assignment-Tuples as return values- Variable-length argument tuples-Lists and tuples-Dictionaries and tuples-Sequences ofsequences-**Case Study:** Data Structure Selection.

UNIT-IV: Files **(18 Hours)**

Persistence-Reading and Writing-Format operator-Filenames and paths-Catching exceptions-Databases-Pickling-Pipes-Writing modules-**Classes and objects:** Programmer- defined types-Attributes-Rectangles-Instances as return values-Objects are mutable- Copying-**Classes and**

Functions: Time-Pure functions-Modifiers-prototyping versusplanning-**Classes and methods:** Object-oriented features-Printing objects-Another example-A more complicated example-The init method-The str method-Operator overloading- Type-based dispatch-Polymorphism- **Inheritance:** Card objects-Class attributes-ComparingCards-Decks-Printing the deck-Add, remove, Shuffle and sort-Inheritance-Class diagrams- **The Goodies:** Conditional expressions-List expressions-Generator expressions-any and all-Sets-Counters-defaultdict-Named tuples-Gathering keyword args.

UNIT-V: Files and exception **(10 Hours)**

Text files- opening a file -closing a file-reading a file -writing a file- python file methods-format operator-command line arguments-errors and exceptions-Types of exception-**Handling exceptions:** try-except-finally-modules-packages-**Illustrativeprograms:** word count-copy file- Library functions.

Total Lecture Hours-75

COURSE OUTCOME

Students are able to

1. Understand the basic terminology used in python
2. Design python programs with conditionals and loops
3. Represent compound data using Python lists, tuples, dictionaries
4. Understand the concept of Classes and objects
5. Read and write data from / to files using Python Programs

TEXT BOOKS

1. Allen Downey.B 2016. ``Think Python: How to Think Like a Computer Scientist'', 2nd Edition, Updated for Python 3, Shroff/O'Reilly Publishers, Green Tea Press, Needham, Massachusetts.
2. Charles Dierbach 2015, "Introduction to Computer Science using Python", Wiley, Manhattan, America.

REFERENCE BOOKS

1. Guido van Rossum and Fred Drake Jr.L 2011. "An Introduction to Python – Revised andupdated for Python 3.2, Network Theory Ltd, United Kingdom.
2. John Guttag V 2013. "Introduction to Computation and Programming Using Python'', Revised and expanded Edition, MIT Press, Cambridge, London.
3. Luciano Ramalho, 2015, "Fluent python", 1st Edition, O'Reilly Media, USA.

E-RESOURCES

1. https://padeepz.com/course/problem-solving-python-programming-ge8151-semester-1-regulation-2017-anna- university/
2. https://www.greenteapress.com/thinkpython/thinkCSpy.pdf
3. https://rb.gy/a9vfsw

Semester: V-CP-V: Python Lab

Ins. Hrs. /Week: 3 **Course Credit: 3** **Course Code:**

OBJECTIVES

- To develop programs using the concepts of variables and functions in python
- To understand the use of python data structures such as lists, tuples, dictionaries
- To obtain the knowledge about input/output files in python

EXERCISES

1. Write a program to check whether the given string is Symmetrical or Palindrome
2. Write a program to find the size of a Tuple
3. Write a program to find the sum of all items in a dictionary
4. Write a program to get the largest number from a list
5. Write a program that take command line arguments
6. Write a program to check file size in python
7. Write a program to read an entire text file
8. Write a program to display the various date time formats
   (a) Current data and time
   (b) Current year
   (c) Month of year
   (d) Week number of the year
   (e) Weekday of the Week
   (f) Day of year
   (g) Day of the Month
   (h) Day of Week
9. Write a program to convert temperatures to and from Celsius, Fahrenheit
10. Write a program for binary search
11. Write a python program by using exception handling mechanism.
12. Write a Python program to create a table and insert some records in that table. Finally selects all rows from the table and display the records.

COURSE OUTCOME

Students are able to

1. Understand the basic concepts of Python programming
2. Develop the simple programs in Python
3. Design programs using loops and decision statements in Python
4. Understand read and write operations in files
5. Use exception handling in Python applications for error handling

Semester: V-MBE-I: Software Engineering

Ins. Hrs. /Week:5 **Course Credit:5** **Course Code:**

OBJECTIVES

- To understand the software process and models
- To describe the requirement analysis and software design
- To study the object oriented concepts, software coding and Web Engineering

UNIT –I: Introduction **(14 Hours)**

Introduction to Software Engineering - Software Process - Software Process Models - Software Model - **Requirements Engineering Principles :** Requirements Engineering - Importance of Requirements - **Types of Requirements:** Feasibility Study- Requirement Gathering-Software requirement Specification-Software Requirement Validation- Steps involved in Requirements Engineering.

UNIT- II: Requirements Analysis Modeling **(14 Hours)**

Analysis Modeling Approaches - Structured Analysis - Object Oriented Analysis - **Design and Architectural Engineering :** Design Process and Concepts - Basic Issues in Software Design - Characteristics of Good Design - Software Design and Software Engineering - Function Oriented System vs Object Oriented System – Modularity- Cohesion- Coupling -Layering - Real Time Software Design - Design Models - Design Documentation.

UNIT- III: Object Oriented Concepts **(15 Hours)**

Fundamental Parts of Object Oriented Approach - Data Hiding and Class Hierarchy Creation - Relationships - Role of UML in OO Design - Design Patterns - Frameworks - Object Oriented Analysis - Object Oriented Design - **User Interface Design :** Conceptsof User Interface - Elements of User Interface - Designing the User Interface - User Interface Evaluation - Golden Rules of User Interface Design - User Interface Models – Usability.

UNIT- IV: Software Testing and Maintenance **(17 Hours)**

Software Coding - Introduction to Software Measurement and Metrics - Software Estimation Tools, Techniques and Models - Software Configuration - Project Management Introduction –Software Testing: Introduction to Software Testing-Types of Software Testing-Functional Software Testing-Non-Functional Software Testing - Software Maintenance.

UNIT- V: Web Engineering **(15 Hours)**

Introduction to Web - General Web Characteristics - Web ApplicationCategories - Working of Web Application - Advantages and Drawbacks of Web Applications - Web Engineering - Emerging Trends in Software Engineering - Rapid Delivery - Open Source Software Development - Security Engineering - Service Oriented Software Engineering - Web Service - Software as a Service - Service Oriented Architecture.- Cloud Computing - Aspect Oriented Software Development - Test Driven Development - Social Computing.

Total Lecture Hours-75

COURSE OUTCOME

Students are able to

1. Implement the concepts of software engineering
2. Understand the Design and Architectural Engineering
3. Describe about Object Oriented Concepts
4. Understand about Software coding and Configuration
5. Learn about Emerging Trends in Software Engineering

TEXTBOOKS

1. Prof.Aggarwal.K.K, Prof. Yogesh Singh 2019, Software Engineering, New Age International (P) Ltd., Publishers, New Delhi, India.
2. Chandramouli Subramanian, Saikat Dutt, Chandramouli Seetharaman, Geetha.B.G 2015, Software Engineering, Pearson Publications, London.

REFERENCE BOOKS

1. Jibitesh Mishra 2011 , Software Engineering, Pearson Education, London.
2. Ian Sommerville 2017, Software Engineering, Tenth edition , Pearson Education, London.
3. Pressman 2004, Software Engineering, 6th Edition , McGraw-Hill Education , India.

E-RESOURCES

1. https://www.tutorialspoint.com/software_engineering/ Software_engineering_pdf_version.htm.
2. https://www.youtube.com/watch?v=Z6f9ckEElsU.

Semester: V –MBE - I: Digital Electronics and Microprocessor

Ins. Hrs. /Week: 5 **Course Credit:5** **Course Code:**

OBJECTIVES

- To understand the role of Number system and codes
- To be familiar with the concepts of Boolean algebra, DeMorgan's Theorem, Karnaugh Maps
- To obtain knowledge about the Combinational Logic Circuits and Sequential Logic Circuits

UNIT -I : Number Systems and Codes **(12 Hours)**

Introduction to Number systems-Types of Number Systems-Binary NumberSystem-Decimal Number System-Hexadecimal Number System-Octal Number System – Binary to Decimal Conversion – Decimal to Binary Conversion – Octal Numbers – Hexadecimal Numbers – Binary Codes – **Logic Gates and Circuits**: AND, OR, NOT, NAND, NOR, Exclusive OR and Exclusive NOR Gates.

UNIT –II: Boolean Algebra **(14 Hours)**

Definitions – Fundamentals of Boolean Algebra – Boolean Functions – Minterms and Maxterms – Laws and Theorems of Boolean Algebra – DeMorgan's Theorem - Simplifying Logic Circuits– Sum of Products – AND-OR Networks – Sum of Products and Product of Sums Forms – Karnaugh Maps and Tabulation method – Product of Sums Simplification – NAND and NOR Implementation - Don't CareConditions – Overlapping Groups – Rolling the Map – Eliminating Redundant Groups.

UNIT- III: Combinational Logic Circuits **(15 Hours)**

Introduction – Adders – The Half Adder – The Full Adder – Subtractors– BCD Adder –Multiplexers – Demultiplexers – Decoders – Encoders –**Flip Flops**: RS Flip Flop – Clocked RS Flip Flop– D Flip Flop – JK Flip Flop – T Flip Flop – Shift Registers- **Sequential Logical Circuit:** Counters – Asynchronous or Ripple Counter – Ring Counter.

UNIT- IV : Introduction to Microprocessor **(20 Hours)**

Features of Microprocessor-Evolution of Microprocessor- Classification of microprocessor-Applications of Microprocessor – Single chip Microcomputer–Microprocessor Applications –Buses-Memory Addressing capacity and CPU – Microcomputers– Processor Architecture-Pin Configuration of Microprocessor – Intel 8085 – Instruction cycle – Timing Diagram.

UNIT V: Instruction Set of Intel 8085 **(14 Hours)**

Instruction and Data Format **– Address Modes:** Immediate Addressing- register Addressing-Register Indirect Addressing-Implicit Addressing **– Status Flags:** Carry Flag-Auxiliary Carry Flag-Sign Flag-

Parity Flag-Zero Flag– Intel 8085 instruction - Programming Microprocessor – Assembly language – Assembler-Types ofAssembler-Difference between assembler and Compiler.

Total Lecture Hours-75

COURSE OUTCOME

Students are able to

1. Acquire the knowledge about the number system and codes
2. Understand the basics of Boolean Algebra, Demorgan's theorem K-Map
3. Analyze the concepts multiplexer, demultiplexer, sequential logic circuits
4. Understand the evolution of microprocessor, Assembler, Instruction set of Intel 8085
5. Comprehend the concepts of Address modes, Programming Microprocessor, status flags

TEXT BOOKS

1. Badri Ram 2012, Fundamentals of Microprocessors and Microcomputers, Eighth Edition,Dhanpat Rai Publications, New Delhi.
2. Dr. Meena. K 2009, Principles of Digital Electronics, PHI Learning Private Limited, NewDelhi.

REFERENCE BOOKS

1. MorrisMano.M 2010, Digital Logic Design, Pearson Education, London.
2. Dr.Narendra Jadav.S, Dr.(Mrs). Alpna Adsul P 2018, Digital Electronics and Microprocessor ,First Edition, Nirali Prakashan, Pune, .
3. Senthil Kumar Saravanan,Jeevananthan 2010, Microprocessors and Microcontrollers, Oxford Univ Press,England.

E-RESOURCES

1. https://www.tutorialspoint.com/digital_circuits/digital_circuits_k_map_method.htm
2. https://www.tutorialspoint.com/digital_circuits/digital_circuits_sequential_circuits.htm
3. http://sigc.edu/department/mca/studymet/Intel8085.pdf

Semester: V-SBE- II: Corel Draw

Ins. Hrs. /Week: 2 **Course Credit: 2** **Course Code:**

OBJECTIVES

- To understand the concepts of Corel Draw
- To understand about the concept of multiple images
- To create images and background with multiple colors

UNIT- I: Corel Draw Basics **(6 Hours)**

Interfacing With Corel draw- Essential Object Commands- Launching Corel draw- Creating A New Document-Opening Document-Importing Graphics and Text- Saving Drawings-Making Backup Files-Export Drawings- Window Management-Closing Documents- Quitting Corel draw.

UNIT –II: Drawing and Selecting **(6 Hours)**

Drawing Menus- Very First Drawing—Saving the Drawing-Closing The Drawing-Opening The Existing Drawing-Opening And Saving Files-Controlling Documents And Pages- Measuring And Drawing Helpers-Zooming And Viewing- Options In Drawing Menu- Colors-Color Palettes

UNIT- III: Working With Text **(6 Hours)**

Adding Text To A Document-Text Formatting-Importing Text-Text Layouts- Embellishing Text- Text Special Effect- Skewing And Rotating Text – Create Drop Shadows – Fitting Text To A Path- Extruding Text- The Neon Effect - Font Styles- Creating Standard Text Formats- Applying The Text Formats.

UNIT- IV: Working With Images **(6 Hours)**

Image Formatting- Alignment-Create Image Gallery- Using Images From Image Library- Image Based Content Creation- Using Images As Styles - Working With Rectangles- Working With Ellipses-Select, Move, Copy And Ellipses- Selecting Objects-Moving Objects- Copying Objects-Resizing Objects-Deleting Objects.

UNIT- V: Page Layout and Background **(6 Hours)**

Setting Page Size and Orientation- Setting A Page Background- Adding Pages- Deleting Pages-Document Navigation- View Document Info- Page Layout Styles- Applying Page Layout Styles- Page Layout Menu-Applying Color To Pages-Solid Color Fills And Outlines.

Total Lecture Hours-30

COURSE OUTCOME

Students are able to

1. Understand the basic concepts of COREL DRAW
2. Work with drawing tools
3. Apply the text formats and styles
4. Implement image formatting and graphics
5. Understand the concepts of page layouts

TEXT BOOKS

1. Steve Schwartz And Phyllis Davis 2003, Corel draw 11 For Window, Pearson Education,England.
2. Vikas Gupta 2009, DTP Course Kit. Dream tech Press, New Delhi.

REFERENCE BOOKS

1. Gary David Bouton 2014, Corel draw X7: The Official Guide, Corel Corporation, London.
2. Satish Jain/Geetha.M 2018, Corel Draw Training Guide, Bpb Publications, New Delhi.
3. Steve Bain 2014, Coreldraw 12: The Official Guide. Dreamtech Publications, New Delhi.

E-RESOURCES

1. https://www.slideshare.net/ienock/introduction-to-corel-draw
2. https://vdocument.in/introduction-to-corel-draw.html
3. https://www.youtube.com/watch?v=tpbfhcevnpy
4. https://www.coreldraw.com/en/learn/tutorials/
5. https://www.javatpoint.com/coreldraw

Semester: V-SBE-III: Dream Weaver

Ins. Hrs. /Week: 2 **Course Credit: 2** **Course Code:**

OBJECTIVES

- To understand the concepts of dream weaver
- To describe about working with webpages and CSS
- To create images and background with Java script

UNIT- I: Introduction To Dreamweaver Cs4 **(6 Hours)**

Title Bar-Menu Bar-Creating New Webpages-Creating New Templates For Web Pages-Working With Dreamweaver Websites-Setting Up Dreamweaver Sites- Understanding Remote And Local Folder Structure-Using Site Maps-Working With Webpage With Out Defining A Sites-Understanding Basic Tab Option.

UNIT- II: Working With Web Pages **(6 Hours)**

Designing Your First Webpage-Setting Page Properties-Working With Links-Linking Pages-Using Jump Menu-Navigation Bar-Image Maps- Working With HTML Tables- Creating HTML Tables- Creating Tables In Standard Mode-Applying Table For Spacing And Alignment-Framesets And Frames-Setting Target And Links In Frames-Changing Frame Property.

UNIT- III: Introduction To Cascading Style Sheets **(6 Hours)**

Creating Styles- Defining Styles-Elements Of Style- Linking a style to an HTML document-Inline Stylesheet-External Stylesheets-Internal Stylesheets- Understanding CSS Style Panel- CSS Rules - Creating New CSS Rule-Working With External CSS Files-Formatting CSS Code-Working With CSS Layouts-Applications of CSS.

UNIT- IV: Working With Templates **(6 Hours)**

Templates-Creating Dream Weaver Template-Creating Editable Region- Creating Repeating Regions-Using Optional Region- Working With Flash Contents and HTML Forms-Dreamweaver and Flash-Managing Extension in Dreamweaver- HTML Form Control.

UNIT -V: Working With Java script **(6 Hours)**

Working With Java script Behaviors- Finalizing The Site-Using Browser Compatibility Feature-Working With Broken Links-Publishing The Website-Changing Local And Remote Sites-Setting Cloaking Option-Site Management.

Total Lecture Hours-30

COURSE OUTCOME

Students are able to

1. Understand the basic concepts of Dream Weaver
2. Work with webpages and HTML tables
3. Illustrate the concept of CSS
4. Work with flash contents and HTML forms
5. Design website using Javascript

TEXT BOOKS

1. Kogent Learning, 2010, Dreamweaver CS4 In Simple Steps, Kogent Learning Solutions Inc, Dreamtech Press, New Delhi.
2. Joseph Lowery 2012, Adobe Dreamweaver CS6 Bible, Wiley publications, USA.

REFERENCE BOOKS

1. Adobe press 2019. Adobe Dreamweaver CC, Adobe press, USA.
2. Reina Luz Alegre 2020. The Dream Weaver, Simon & Schuster Books For Young Readers, New York.
3. Su Williams 2014. Dream Weaver, Create space independent publications, USA

E-RESOURCES

1. https://www.slideshare.net/9869265428/adobe-dreamweaver-55850463
2. https://web.cs.dal.ca/~tt/ECMM6010/presentations/Dreamweaver.ppt
3. https://syr.us/61W
4. https://syr.us/Kml
5. https://syr.us/hj

BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI - 24.
UNDER GRADUATE DEGREE PROGRAMMES

SOFT SKILLS DEVELOPMENT

Learning Objective

Today's world is all about relationship, communication and presenting oneself, one's ideas and the company in the most positive and impactful way. This course intends to enable students to achieve excellence in both personal and professional life.

Unit I

Know Thyself/ Understanding Self
Introduction to Soft skills-Self discovery-Developing positive attitude-Improving perceptions-Forming values

Unit II

Interpersonal Skills/ Understanding Others
Developing interpersonal relationship-Team building-group dynamics-Net working Improved work relationship

Unit III

Communication Skills / Communication with others
Art of listening-Art of reading-Art of speaking-Art of writing-Art of writing e-mails-e mail etiquette

Unit IV

Corporate Skills / Working with Others
Developing body language-Practicing etiquette and mannerism-Time management Stress management

Unit V

Selling Self / Job Hunting
Writing resume/cv-interview skills-Group discussion- Mock interview-Mock GD – Goal setting - Career planning

TEXT BOOKS:

Meena.K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R. Publishers & Distributors, No, B-20 & 21, V.M.M.
Complex, Chatiram Bus Stand, Tiruchirappalli- 620 002.
(Phone No: 0431-2702824: Mobile No: 94433 70597, 98430 74472)

Alex K. (2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi- 110 055. Mobile No : 94425 14814 (Dr.K.Alex)

REFERENCE BOOKS:

(i) Developing the leader within you John c Maxwell
(ii) Good to Great by *Jim Collins*
(iii) The seven habits of highly effective people Stephen Covey
(iv) Emotional Intelligence Daniel Goleman
(v) You can win Shive Khera
(vi) Principle centred leadership Stephen Covey

SEMESTER VI

Semester: VI -CC- VIII: Operating Systems

Ins. Hrs. /Week:6 **Course Credit:6** **Course Code:**

OBJECTIVES

- To understand the basic concepts and functions of operating systems
- To analyze various memory management schemes
- To illustrate the Processes and the concept of Deadlocks, Schedulingalgorithms, I/O management and File systems

UNIT –I: Introduction **(12 Hours)**

Evolution of operating systems- Serial Processing - Batch Processing - Multi Programming- **Functions of OS:** Memory Management Functions - Processor / Process Management Functions - Device Management Functions - Information Management Functions – **Types of Operating Systems:** Batch Operating System-Multi Programming Operating System - Multitasking Operating System - Multi-user Operating System - Multithreading - Time Sharing System - Real Time Systems – Interrupt Structure & processing.

UNIT -II: Memory Management **(23 Hours)**

Single Contiguous Allocation- Partitioned Allocation – Relocatable Partitions allocations – Paged Memory Management- Demand paged Memory Management –Page Removal Algorithms -FIFO-LRU- **Virtual Memory Management**: Segmented Memory Management – Segmented and Demand paged Memory Management – Other Memory Management Techniques-overlay Techniques – Swapping.

UNIT -III: Processor Management **(20 Hours)**

Job Scheduling –Job Scheduling functions & Policies - Process Scheduling – Process Scheduling Functions and Policies – Evolution of Round Robin Multiprogramming Performance – Process Synchronization – Wait and Signal mechanisms – Semaphores - P & V Operations – Deadlock-Deadlock Prevention-Deadlock Detection- Banker's Algorithm.

UNIT -IV: Device Management **(20 Hours)**

Techniques for Device Management-Dedicated, Shared and Virtual – Device characteristics-Serial Access Devices - Completely Direct Access - Direct Access Storage device- Magnetic disks -Optical

Discs-Flash memory - I/O Traffic Controller, I/O Scheduler, I/O Device Handlers – Communication among Devices-Management of I/O Requests.

UNIT- V: Information Management **(15 Hours)**

File system model – Symbolic File System- Basic file system - Access Control verification - General Model of a File System-Sequential Access-Direct/Random Access- Indexed sequential Access-Physical File System and Logical File System -Allocation strategy Module-Device Strategy Modules.

Total Lecture Hours-90

COURSE OUTCOME

Students are able to

1. Understand the evolution of operating system
2. Compare and contrast the various memory management schemes
3. Analyze various scheduling algorithm, deadlock prevention and avoidance algorithms
4. Understand the concept of device management
5. Describe the concepts of file management systems

TEXT BOOKS

1. Dhamdhere D.M , System Programming and Operating Systems –Tata McGraw Hill Publishing Co.,Limited, New Delhi.
2. Madnick.S.E and Donovan J J 2013, "Operating Systems" McGraw Hill International Book Co,New Delhi.

REFERENCE BOOKS

1. Dhamdhere .D.M, "Operating Systems: A Concept-Based Approach", McGraw Hill Education; NewDelhi.
2. Harvey Deitel M, 1984, "An Introduction to operating system" Addison - Wesley Publishing Co.New York.
3. James Peterson.L & Abraham Silbertschatz, 1987, "An Introduction to operating system" Addison -Wesley Publishing Co. New York.

E-RESOURCES

1. https://www.tutorialspoint.com/operating_system/index.htm
2. http://www.ddegjust.ac.in/studymaterial/mca-5/mca-105.pdf
3. http://www.freebookcentre.net/ComputerScience-Books-Download/Notes-on-Operating-Systems.html
4. http://www.freebookcentre.net/ComputerScience-Books-Download/Operating-Systems-Lecture-Notes-by-Stanford-University.html
5. http://www.freebookcentre.net/ComputerScience-Books-Download/Lecture-Notes-On-Operating-Systems-Mrs.-Sk-Abeeda.html

Semester: VI-CC- IX: Programming in PHP

Ins. Hrs. /Week:6 **Course Credit:6** **Course Code:**

OBJECTIVES

- To understand the Concepts of PHP
- To describe the concepts of functions in PHP
- To obtain knowledge in advance object oriented programming and file handling

UNIT- I : Essentials of PHP **(19 Hours)**

Getting PHP-Creating a First PHP Page-Mixing HTML and PHP-Using PHP "Here" Documents-Command Line PHP- Working with Variables –Creating constants-**Operators and Flow control:** PHP's Math operators-The PHP String Operators-Operators in PHP-PHP Operator Precedence-Decision making statements-Looping Statements-**Strings and Arrays:** The String Functions-Building Arrays-Handing Arrays with Loops-The PHP Array Functions-Sorting Arrays-Handling Multidimensional Arrays-Other Array Functions.

UNIT –II: Creating Functions **(18 Hours)**

Creating functions in PHP-Passing by Reference-Returning Data From Functions- Using Default Arguments- Introducing Variable Scope in PHP-Nesting Functions- **Reading Data in Web Pages:** Setting Up Web Pages to Communicate with PHP-Handling Controls-Handling File Uploads-Handling Buttons - **PHP Browser Handling Power:** Using PHP's Server Variables-Using HTTP Headers-Handling From Data with Custom Arrays- Performing Data Validation-Client Side Data Validation .

UNIT- III: Object-Oriented Programming **(18 Hours)**

Creating Classes and Objects–Setting Access to Properties and Methods-Constructors-Destructors-Basing One Class on Another with Inheritance-Overriding methods-Overloading Methods-Auto loading Classes-**Advanced Object Oriented Programming :** Creating Static Methods-Abstract Classes-Creating Interfaces-Creating Class Constants-Using Final Keyword-Cloning Objects .

UNIT -IV : File Handling **(18 Hours)**

Opening Files Using fopen -Reading a file Content-Closing a file –Writing a file with write –Locking Files-**Working with Databases:** Creating a MySQL Database-Creating a Table-Accessing the Database in PHP-Updating Databases -Inserting New Data Items into a Database– **Sessions, Cookies, and FTP:** PHP Cookie-Setting Cookies' Expiration-Working FTP- Sending E-mail-Storing Data in Sessions.

UNIT -V: Ajax **(17 Hours)**

Getting Started with Ajax-Writing Ajax-Creating the XML Http Request Object – Opening the XML Http Request Object –Handling Downloaded Data- Ajax with Some PHP-Passing Data to the Server with GET and POST Methods- Handling XML– **Drawing Images on the Server:** Creating an Image-Displaying Images in HTML Pages-Drawing Lines-Drawing Rectangles-Drawing Arcs-Drawing Polygons-Filling in figures-Drawing Text.

Total Lecture Hours-90

COURSE OUTCOME

Students are able to

1. Analyze the essentials of PHP
2. Understand about the functions in PHP
3. Describe about file handling methods in PHP
4. Implement various MySQL Database query
5. Understand the advanced concept AJAX

TEXT BOOKS

1. Gopalan N.P, Akilandeswari.J 2008, "Web Technology" A Developer's Perspective, Prentice Hall of India Private Limited, New Delhi.
2. Steven Holzner 2007, The PHP Complete Reference McGrawHillEducation, New Delhi,India.

REFERENCE BOOKS

1. Rajinder Kumar, Gunjan Gupta 2020. Web Development using PHP , First Edition,ISHAN Publications, Ambala, Haryana 134003,India.
2. Robin Nixon, "Learning PHP, MySQL &JavaScript With jQuery, CSS & HTML5" O'Reilly Publications, California, USA.
3. Vikram Vaswani 2008, PHP: A Beginner's Guide, Fourth Edition, McGraw Hill Education, New Delhi, India.

E-RESOURCES

1. https://www.tutorialspoint.com/php/php_tutorial.pdf
2. https://www.slideshare.net/hemaprasanth/ajax-ppt-4410119

Semester: VI-CP-VI: Programming in PHP Lab
Ins. Hrs. /Week: 5 **Course Credit: 4** **Course Code:**

OBJECTIVES

- To impart practical training in PHP Programming Language
- To design webpages using user defined function
- To develop programs using session and cookies

EXERCISES

1. Write a program to find the factorial of a number.
2. Write a program using Conditional Statements.
3. Write a program to find the maximum value in a given Multidimensional array.
4. Write a program to find the GCD of two numbers using user-defined functions.
5. Design a simple web page to generate multiplication table for a given number.
6. Design a web page that should compute one's age on a given date.
7. Write a program to download a file from the server.
8. Write a program to store the current date and time in a COOKIE and display the 'LastVisited' date and time on the web page.
9. Write a program to store page views count in SESSION, to increment the count oneach refresh and to show the count on web page.
10. Write a program to design a simple calculator.
11. Write a program to draw the human face.
12. Design an authentication web page in PHP with MySQL to check username and password.
13. Write a PHP program to generate menu creation (useful for web application).
14. Write a PHP program to create an PHP Ajax application.

COURSE OUTCOME

Students are able to

1. Implement the basic concepts of PHP
2. Design programs using user defined functions
3. Apply file handling methods
4. Use Image functions to draw images
5. Create simple web page

Semester: VI-MBE-II: Cloud Computing

Ins. Hrs. /Week:6 **Course Credit:5** **Course Code:**

OBJECTIVES

- To understand the basic concepts of Cloud Computing
- To introduce the concepts of Cloud Architecture
- To provide knowledge about advance Cloud Computing Security Services

UNIT- I: Cloud Computing Foundation (18 Hours)

Introduction to Cloud Computing: Cloud Computing in a Nutshell – Roots of Cloud Computing – Layers types of Clouds – Desired features of a Cloud – Cloud Infrastructure Management – Challenges and Risks -Move to Cloud Computing – Working of Cloud Computing- Pros and Cons of Cloud Computing – Migrating into cloud- Cloud services model - Private and Public cloud.

UNIT –II: Cloud Computing Architecture (18 Hours)

Cloud Computing Technology – Cloud Life Cycle Model- Reference Model for Cloud Computing-Cloud Industry Standard-Cloud Architecture – Cloud Modeling and Design - **Virtualization:** Foundation – Grid, Cloud and Virtualization – Virtualization and Cloud Computing-Pitfalls of Virtualization-Anatomy of Virtualization- Infrastructures - CPU Virtualization- Network and Storage Virtualization.

UNIT- III: Data Storage and Cloud Computing (18 Hours)

Data Storage – Introduction to Enterprise Data Storage-Data Storage Management-File Systems - Cloud Storage – Cloud Data Stores-Using Grids for Data Storage-Data Management for Cloud Storage-Provisioning Cloud Storage-Data Intensive Technologies for Cloud Computing-Cloud Storage from LANs to WANs – **Cloud Computing Services:** Cloud Services – CloudComputing at Work.

UNIT- IV: Monitoring and Management (18 Hours)

An Architecture for Federated Cloud Computing: Introduction – A typical Use case – The Basic Principles of Cloud Computing – A Federated Cloud Computing Model – Security Considerations – Service Providers Perspective of SLA Management in Cloud Computing – **Cloud Computing Tools:** Tools and Technologies for Cloud Cloud Mashaps – Apache Hadoop – CloudTools.

UNIT- V: Cloud Applications **(18 Hours)**

Moving Applications to the Cloud – Cloud Opportunities – Business Opportunities using Cloud-Managing Desktop and Devices in Cloud-Cloud Desktop-Scientific applications in the Cloud-Microsoft Cloud Services – Window Azure Platform- Google Cloud Applications – Amazon Cloud Services – Cloud Applications- Cloud Software for Private Banking, Asset Management and Fund Management.

Total Lecture Hours-90

COURSE OUTCOME

Students are able to

1. Understand Cloud Computing and different Cloud service and deployment models
2. Describe importance of virtualization along with their technologies
3. Use and Examine different cloud computing services
4. Understand the cloud computing security
5. Understand the cloud applications and concepts of Amazon cloud services

TEXT BOOKS

1. Rajkumar Buyya 2011, James Broberg, Andrzej Goscinsky, "Cloud Computing Principles and Paradigms", Wiley Pvt. Ltd, India.
2. Srinivasan.A and Suresh.J 2014, Cloud Computing – A Practical Approach for Learning and Implementation, Pearson Publicaion, India.

REFERENCE BOOK

1. Barrie Sonsinsky 2011, "Cloud Computing Bible",1st Edition, Wiley India Pvt.Ltd., New Delhi. Kannammal.A 2015, "Fundamentals of Cloud Computing", 1st Edition . Cengage Learning PrivateLimited, India.
2. Mehul Mahrishi Kamal Kant Hiran,Ruchi Doshi, Dr.Fagbola Temitayo 2019. "Cloud Computing", 1st Edition , BPB Publications, New Delhi.

E- RESOURCES

1. https://www.javatpoint.com/cloud-computing-architecture

2. https://www.tutorialspoint.com/cloud_computing/index.htm

Semester: VI-MBE-II: Mobile Computing

Ins. Hrs. /Week:6 **Course Credit:5** **Course Code:**

Objective

- To introduce the concepts of mobile computing and its architecture
- To understand Synchronization Process
- To understand Operating Systems in Mobile Computing

UNIT- I: Mobile Communication **(20 Hours)**

Guided Transmission-Unguided Transmission (Wireless Transmission) –Modulation Methods and Standards for Voice-oriented Data Communication Standards - Modulation Methodsand Standards for Data and Voice Communication-**Mobile Computing**: Novel Applications-Limitations of Mobile Computing - **Mobile Computing Architecture**: Programming Languages-Functions of Operating Systems-Functions of Middleware for Mobile Systems- Mobile Computing Architectural Layers- Protocols Layer- **Mobile Devices**: Hand Held Mobile Smartphones with Multimedia Functionalities Smartcards Smart Sensors - **Mobile System Networks**: Cellular Network WLAN Network and Mobile IP Ad-hoc Networks - **Data Dissemination:** Synchronization - **Mobility Management Security**: cryptography Algorithms Digital Signatures and Digital Certificate.

UNIT –II: Mobile Devices and Systems **(20 Hours)**

Cellular Networks and Frequency Reuse – Mobile- Smartphones, Smart Mobiles, and Systems- Smartphone Features- Digital Music Players- Bluetooth and Wi-Fi- GPS- Gyroscope and Accelerometer- Digital Compass and Magnetometer Camera- 2D and 3D Graphics and HDMI-**Handheld Pocket Computers**: Handheld Devices- Windows CE Based Devices- Mac OS Based Devices- Symbian OS Based Devices - Linux Based Mobile Devices- e-Book Reader- **Smart Systems**: Smartcards -Smart Labels - RFID- Smart Tokens- Sensors -Actuators- Sensors and Actuators for Robotic Systems- Smart Appliances- Set-top Boxes- **Limitations of Mobile Devices**: Quality and Security of Service- Hardware Limitations- **Automotive Systems**: Speech Recognition System Messaging System GPS Based Navigation System Automobile Start and Malfunction Login Sensor and Actuator Programming Entertainment Systems Real- time Application Programming.

UNIT -III: GSM Services and System Architecture **(20 Hours)**

Services- Subsystems of GSM Architecture- GSM Architecture - **Radio Interfaces of GSM**: Space Division Multiple Access -Time Division Multiple Access- Frequency Division Multiple Access- Format of a Data Burst Traffic and Control Data Channels- Control data channels- **Protocols of GSM**: Mobile Station-Base Transceiver Signalling Protocols- Base Transceiver Base Station Controller Signalling Protocols- Base Station Controller-Mobile Services Switching Centre Signalling Protocols- Localization- Call Handling Mobile-PSTN Calls- Mobile-Mobile Calls- PSTN-Mobile Calls- Message Exchanges between Mobile Station-Base Transceiver-**Handover**: Types of Handover-Handover in GSM- **Security**: Authentication - TMSI- Encryption- New Data Services- **General Packet Radio Service**: GPRS System Architecture- GPRS Protocol Layers- High-speed Circuit Switched Data.

UNIT- IV: Data Synchronization in Mobile Computing Systems (15 Hours)

Synchronization in Mobile Computing Systems – Usage Models for Synchronization in Mobile Application-Domain-dependent Specific Rules for Data Synchronization Personal Information Manager Synchronization and Conflict Resolution Strategies Synchronizer - **Synchronization Software for Mobile Devices**: HotSync-ActiveSync- IntelliSyn - **Synchronization Protocols**: Bluetooth-IrDA-WAP2.0 Architecture, Gateway, and Application Environment.

UNIT V- Mobile Agent (15 Hours)

Mobile Agent Design- Aglets- Application Framework -**Application Server**: Sun Java System Web Server-IBM WebSphere MQe- Oracle Application Server -Portals- **Gateways**: Protocol Conversion Gateway-Transcoding Gateway or Proxy- Residential Gateway- Service Discovery **Device Management:** Device Support Infrastructure- User, Device, and Network Profiles- Directory Service -Open Mobile Alliance Device Management(OMADM)- **Mobile File Systems**: CODA File System Disconnected Operations- CODA File System Deficiencies-Security**.**

Total Lecture Hours-90

COURSE OUTCOMES

Students are able to

1. Understand the principles and theories of mobile computing technologies
2. Describe about the mobile devices and system
3. Deal with GSM and Similar Architectures
4. Describe about the Data Synchronization in Mobile Computing System
5. Analyze about mobile operating systems

TEXT BOOKS

1. KumkumGarg 2010, Mobile Computing, Pearson Education,India.
2. Rajkamal 2011, Mobile Computing, Oxford University Press, United Kingdom.

REFERENCE BOOKS

1. Jonathan Stark, Brian Jepson 2012, “Building Android Apps with HTML, CSS, and JavaScript”, 2 Edition, O'Reilly Media, USA.
2. Jochen Schiller, “Mobile Communications”, Second Edition, By Pearson, India.
3. Prasant Kumar Pattnaik and Rajib Mall 2012, “Fundamentals of Mobile Computing”, PHI Learning Private Limited, New Delhi

E-RESOURCES

1. https://www.tutorialspoint.com/mobile_computing/index.htm
2. https://india.oup.com/orcs/9780199455416/
3. https://www.igi-global.com/book/mobile-computing-wireless-networks/127615
4. https://www.tutorialspoint.com/mobile_computing/mobile_computing_useful_resources.htm
5. https://www.intechopen.com/books/subject/communications-and-security-mobile-computing

Bharathidasan University, Tiruchirappalli – 24

Gender Studies

Objectives

To make boys and girls aware of each others strengths and Weakness.
To develop sensitivity towards both genders in order to lead an ethically enriched life.
To promote attitudinal change towards a gender balanced ambience and women empowerment .

Unit – I

Concepts of Gender: Sex – Gender – Biological Determinism – Patriarchy – Feminism – Gender Discrimination – Gender Division of labour – Gender Stereotyping – Gender Sensitivity – Gender Equity – Equality – Gender Mainstreaming - Empowerment.

Unit – II

Women's Studies vs Gender Studies : UGC's Guidelines – VII to XI Plans – Gender Studies : Beijing Conference and CEDAW – Exclusiveness and Inclusiveness.

Unit – III

Areas of Gender Discrimination : Family – Sex Ratio – Literacy – Health – Governance – Religion Work Vs Employment – Market – Media – Politics – Law – Domestic Violence – Sexual Harassment – State Policies and Planning .

Unit – IV

Women Development and Gender Empowerment : Initiatives – International Women's Decade – International Women's Year – National Policy for Empowerment of Women – Women Empowerment Year 2001 – Mainstreaming Global Policies .

Unit – V

Women's Movements and Safeguarding Mechanism : In India National /State Commission for Women(NCW) – All Women Police Station – Family Court – Domestic Violence Act – Prevention of Sexual Harassment at Work Place Supreme Court Guidelines – Maternity Benefit Act – PNDT Act – Hindu Succession Act 2005 – Eve Teasing Prevention Act – Self Help Groups – 73rd and 74th Amendment for PRIS

References

1. Bhasin Kamala, Understanding Gender : Gender Basics , New Delhi : Women Unlimited , 2004
2. Bhasin Kamala, Exploring Masculinity: Gender Basics , New Delhi: Women Unlimited ,2004
3. Bhasin Kamala , What is Patriarchy? : Gender Basics, New Delhi :Women Unlimited ,1993
4. Pernau Margrit, Ahmad Imtiaz, Reifeld Hermut (ed.,)Family and Gender : Changing Values in Germany and India ,New Delhi :Sage Publications,2003
5. Agarwal Bina, Humphries Jane and Robeyns Ingrid(ed.,) Capabilities , Freedom , and Equality: Amartya Sen's Work from a Gender Perspective,New Delhi : Oxford University Press ,2006
6. Rajadurai. S.V,Geetha.V,Themes in Caste Gender and Religion, Tiruchirappalli : Bharathidasan University ,2007
7. Misra Geetanjali, Chandiramani Radhika (ed.,) Sexuality , Gender and Rights: Exploring Theory and Practice in South and Southeast Asia, New Delhi : Sage Publication ,2005
8. Rao Anupama (ed.,) Gender &Caste : Issues in Contemporary Indian Feminism, New Delhi : Kali for Women, 2003
9. Saha Chandana , Gender Equity and Gender Equality : Study of Girl Child in Rajasthan , Jaipur: Rawat Publication ,2003.
10. Krishna Sumi, (ed.,),Livelihood and Gender : Equity in Community Resource Management, New Delhi : Sage Publication ,2004
11. Pludi.A Michele(ed.,) praeger Guide to the Psychology of Gender ,London : Praeger Publisher ,2004
12. Wharton .S Amy , The Sociology of Gender : An Introduction to Theory and Research , USA : Blackwell Publishing ,2005
13. Mohanty Manoranjan(ed.,) Class ,Caste ,Gender : Readings in Indian Government and Politics – 5,New Delhi : Sage Publications ,2004.
14. Arya Sadhna Women ,Gender Equality and the State ,New Delhi :Deep &Deep Publication, 2000
15. Mishra .O.P,Law Relating to Women &Child ,Allahabad :Central Law Agency ,2001
16. Chari Leelavathi ,Know Your Rights ,Madras; Tamilnadu Social Welfare Board,1987
17. Bhattacharya Malini , Sexual Violence and Law ,Kolkata; West Bengala Commission for Women ,2002
18. Sexual Harassment at the Workplace – A Guide , New Delhi ;Sakshi,1999

******

NON MAJOR ELECTIVE

Semester: III-NME-I-Working Principles of Internet
Ins. Hrs. /Week:2 Course Credit:2 Course Code:

OBJECTIVES

- To acquire the basic knowledge in Internet
- To understand about the working of web pages and markup language
- To provide the new technologies and safeguarding on the internet

UNIT-I: Introduction to Internet (7 Hours)

Computer Networks send Data across the Internet-TCP/IP Works- Understanding the Internet Software Structure-Internet Addresses and Domain Network- Routers- **Connecting to the Internet:** Process of computers connecting to the Internet-Working of Wireless Connections and Wifi.

UNIT-II: Communicating on the Internet (5 Hours)

Introduction to Email and Email Spam-working of Newsgroups -Internet Chat and Instant messaging Work-Skype and VoIP Work- Blogging and RSS (Really Simple Syndication) Work-Working of Intranets-Shopping on the Internet.

UNIT-III: World Wide Web Works (6 Hours)

Working of Web Pages and Web Browsers -Working of Hypertext and URLs –Websites Work with Databases Web Host Servers Work- **Using Common Internet Tools:** Telnet-FTP-CGI Scripting Works-Java, ActiveX and JavaScript Work-Working of Google and mapsites.

UNIT-IV: Multimedia on the Internet (6 Hours)

Working of Music and Audio work on the Internet- iPods, iTunes and Podcasting Work- Music Sharing and File Sharing-Multicast IP and the MBone Work-Created Virtual Reality by VRML (Virtual Reality Modeling Language) - Animation on the Web Works.

UNIT-V: Safeguarding on the Internet (6 Hours)

Firewall works-Hackers can cripple the personal computers and Internet-Dangers of Wireless Networking-viruses work-Internet sites can invade Privacy-Dangers of Spyware and Phishing-Cryptography, Privacy and Digital Certificates-working of Government and Workplace Surveillance - Parental Control on the Internet.

Total Lecture Hours-30

COURSE OUTCOME

Students are able to

1. Understand the basic concepts of internet
2. Analyze the working of websites, web pages and markup language
3. Illustrate the common internet tools
4. Implement the concept of multimedia on the internet
5. Determine appropriate mechanism for safeguarding on the internet

TEXT BOOKS

1. Harvey & Paul Dietel & Associates, Harvey Dietal and Abbey Dietel 2011, Internet and world wide webFifth Edition, Pearson Education, London, England.
2. Preston Gralla 2006, How the Internet Works, , Eighth Edition Pearson Education, London, England

REFERENCE BOOKS

1. Alexis Leon, Chand (G/L).S 2012, Internet for Everyone, Second Edition, S. Chand (G/L) & Company Ltd,S. Chand (G/L) & Company Ltd, New Delhi, India.
2. Douglas Comer.E, 2019, The Internet Book, Fifth Edition CRC Press Taylor &Francis Group, Boca Raton, Florida.
3. Keith Sutherland 2000, Understanding the Internet, First Edition, Butterworth-Heinemann Publication, Oxford United Kingdom.

E-RESOURCES

1. https://bit.ly/3eeWOg1
2. https://bit.ly/3ndFqwx
3. https://bit.ly/3xcCAw3

Semester: IV-NME-II: Fundamentals of Information Technology

Ins. Hrs. /Week: 2 **Course Credit: 2** **Course Code:**

OBJECTIVES

- To obtain knowledge in basic of computers
- To comprehend the concept of software
- To understand about the new technologies of internet

UNIT-I: Introduction to computer systems **(7 Hours)**

Generation of Computers-Classification of Digital Computer systems-Anatomy of Digital Computer-Computer Architecture-Number Systems-**Memory Units**: RAM-ROM-PROM-EPROM-EEPROM-Auxiliary Storage Devices-Input Devices-Output Devices.

UNIT-II: Computer Software and Software Development **(5 Hours)**

Introduction to Computer Software-System Software-Application Software-**Operating System**: Functions of Operating System-**Programming Languages:** Machine language-Assembly Level Language-High Level Language-General Software Features and Trends-**Telecommunications:** Introduction to Telecommunication-communication systems-Distributed Systems.

UNIT-III: Database Management Systems **(6 Hours)**

Data Processing: File processing-Introduction to Database Management Systems-Types of DBMS-**Database Design**: Data Normalization-First Normal Form-Second Normal Form-Third Normal Form-Boyce Codd Normal Form-Relationship-**Multimedia:** Introduction to Multimedia-Multimedia Tools-graphics effect and technique-**Virtual Reality:** Uses of Virtual Reality.

UNIT-IV: New Technologies in Information Technology **(6 Hours)**

Electronic Commerce-Data Warehouses and Data Marts-**Data Mining:** Functions of Data Mining-**On-Line Analytical Processing (OLAP)**: -Uses of OLAP- **Computer Networks**: Size of Networks-Communication Media-WWW and Internet-Internet Protocols-Email-Web Design.

UNIT-V: Internet & World Wide Web **(6 Hours)**

Electronic Mail-advantages and disadvantages of Email-Intranets-advantages and disadvantages of Intranet-Computers at Home- Education- Science- Medicine and Engineering-**Introduction to Computer Security:** Computer Viruses- Bombs-Worms.

Total Lecture Hours-30

COURSE OUTCOME

Students are able to

1. Understand the basic concepts of computer
2. Represent the computer software and software development
3. Understand the basic concepts of database management systems
4. Understand the concept of new technologies in information technology
5. Understand the concepts of internet and intranet

TEXT BOOKS

1. Alexis Leon And Mathews Leon 2009, Fundamentals of Information Technology, Vikas Publishing House Pvt. Ltd, New Delhi, India.
2. Harvey & Paul Dietel & Associates, Harvey Dietel and Abbey Dietel 2011. Internet and world wide web Fifth Edition, Pearson Education, London, England.

REFERENCE BOOKS

1. Alexis Leon, Chand (G/L).S 2012, Internet for Everyone, Second Edition, S. Chand (G/L) & Company Ltd, S. Chand (G/L) & Company Ltd, New Delhi, India
2. Doja. M.N 2005, Fundamentals of Computers and Information Technology, First Edition, Deep & Deep Publications, New Delhi, India.
3. Rajaraman.V 2018. Introduction to Information Technology, Third Edition, PHI Learning**,** New Delhi,India.

E-RESOURCES

1. https://bit.ly/3d5XDsd
2. https://bit.ly/3d9vtg5
3. https://bit.ly/3wN5ItJ