



SOURASHTRA COLLEGE, MADURAI- 625004
(An Autonomous Institution Re-accredited with 'B' grade by NAAC)
B.Sc., MATHEMATICS (COMPUTER APPLICATION)
SYLLABUS
(Under CBCS w.e.f. 2017 – 2018 onwards)

645

I SEMESTER

Sl.No.	Subject Code	Nature	Subject Title	Hrs /Week	Exam hrs	CA	SE	Tot	Crd
1	17 UAC T11/H11/S11	PART I	Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2	17 UAC E11	PART II	English	6	3	25	75	100	3
3	17 UMC C11	PART-III CORE	Differential Calculus	4	3	25	75	100	4
4	17 UMC C12	PART-III CORE	Discrete Mathematics	4	3	25	75	100	3
5	17 UMC A11	PART-III ALLIED	C Language Theory	5	3	25	75	100	4
6	17 UMC SP1	PART-IV SBS	C Language Lab	3	3	40	60	100	3
7	14 UAC VE1	PART-IV	Value Education	2	3	25	75	100	2
			Total	30					22

Passed in the BOS Meeting
held on 15-3-17

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646

Part III : CORE	Title : DIFFERENTIAL CALCULUS	Subject Code : 17 UMC C11
Semester : I	Hours : 4 Hours / Week	Credits : 4

Objectives:

To develop the Students to know about Differential Calculus.

UNIT –I

Differentiation- Standard forms- general theorems on differential coefficients- Logarithmic differentiation-Differentiation of implicit functions- Differentiation of one function with respect to another.

UNIT-II

Successive differentiation: The n^{th} derivative - Standard results-Trigonometrical transformations- Formations of equations involving derivative.- Leibnitz's formula.

UNIT –III

Partial differentiation- Successive partial derivatives- Function of function rule- Total differential coefficient- Special case- Homogeneous functions- Partial derivatives of a function of two functions.

UNIT-IV

Tangents and normal-Equation of the tangent and normal at any point of the curve – Angle of intersection of curves sub tangent and sub normal – Length of arc- Polar co-ordinates.

UNIT-V

Envelopes, curvature of plane curves- Curvature- centre of curvature- Radius of curvature- co-ordinates of centre of curvature- Evolute and involute – p-r equations.

Textbook : Calculus – Volume I

Author : S.Narayanan, T.K.Manickavasakam Pillai.

Publication : S.Visvanathan(Printers & Publisers) PVT LTD - 2009

UNIT	CHAPTER	SECTION
I	II	2-7
II	III	1-2
III	VIII	1.1-1.7
IV	IX	1.1-4.6
V	X	2.1-2.8

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Part III : CORE	Title : DISCRETE MATHEMATICS	Subject Code : 17 UMC C12
Semester : I	Hours : 4 Hours / Week	Credits : 3

Objectives:

To develop the Students to know about Discrete Mathematics.

UNIT -I

RELATIONS: Cartesian product of two sets- Relations- Representation of relations- Operations of relations- Composite relations- Equivalence relations.

UNIT-II

CODING THEORY: Introduction- Hamming distance- Encoding message- Group codes- Decoding and error correction-An example of single error – Correcting code.

UNIT-III

True false statements – connectives – Atomic compound statements – Parsing trees – Truth table of formula – Tautology – Tautological implementations and formulae – Replacement process.

UNIT-IV

Normal forms – Disjunctive normal form and conjunctive normal form – Principle disjunctive normal form and principle conjunctive normal form.

UNIT-V

Lattices – Hasse diagram – Properties of Lattices – New lattices – Lattice homomorphism.

TEXT BOOK: DISCRETE MATHEMATICS

AUTHOUR : Dr.M.K.VENKADARAMAN, Dr.N.SRIDHARAN,
V.CHANDRASEKARAN.

PUBLICATIONS: THE NATIONAL PUBLISHING COMPANY-2012

UNIT	CHAPTER	SECTION
I	2	2,3,4,5
II	8	1-7
III	9	2-9
IV	9	11-12
V	10	1-3

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PART III : ALLIED	Title : C LANGUAGE THEORY	Subject Code : 17 UMC A11
Semester : I	Hours : 5 Hours / Week	Credits : 4

Objectives:

To develop the Students to know about C-Language Theory.

Unit I C Program – The form - Character Set – C Token – C Identifiers – Keywords – Constants – Data types – Variables – Float – Character – Void – The ‘const’ keyword – Operators – Assignment operators – Arithmetic operators – Relational operators – Logical operators – Auto Increment / Decrement operators – Ternary operator

Unit II scanf function – printf function – Simple if statement – Simple if-else statement – Bloc if statement – Block if-else statement – Nested ifs – Looping – for loop – looping using while – looping using do-while – break statement – continue statement – exit () function – switch statement – goto statement

Unit III One dimensional array – array initialization – two dimensional array – initialization of two dimensional arrays – two dimensional sorting – multidimensional arrays – what is a C function – return statement – calling a function – call by value – call by reference –calling a function with no argument and no return value – calling a function with arguments but no return value – calling a function with arguments and return values – nesting functions – functions with arrays – recursion

Unit IV Declaration of string variable – reading string – writing string – string handling functions – string handling using library functions – array of strings – what is a pointer – pointer operators – how to access a variable through pointer – pointer expression – call by value – call by reference

Unit V What is a structure – giving values to structure elements – structure initialization – arrays of structure – arrays within structure – nested structure – union – typedef – enumerated data type.

Textbook(s) : C Programming
 Author(s) : P.RadhaGanesan
 Publisher(s) : SciTech Publications
 Reference(s) : Programming in ANSI C by E.Balagurusamy

UNIT	CHAPTER	SECTION
I	1&2	1.9-2.18
II	3&4	3.2,3.5,4.2-4.6
III	5&6	5.1-5.7,6.1-6.8
IV	7&8	7.1-7.6,8.1-8.6
V	10	10.1-10.13

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PART – IV SBS	Title : C LANGUAGE LAB	Subject Code : 17 UMC SP1
Semester : I	HOURS : 3 hours / Week	CREDITS : 3

Objectives:

To develop the Students know about C Language Lab.

1. To calculate Simple Interest and Compound Interest
2. To calculate Sum of first n natural numbers
3. To find the biggest number among 3 numbers
4. To calculate the temperature from Celsius to Fahrenheit
5. To solve quadratic equation
6. To arrange the numbers in Ascending Order.
7. To find the product of two square matrices.
8. To compute the surface area and volume of a cube
9. To accept 'n' integers and store them in an array ar. The odd elements in the ar are copied into oar and other elements are copied into ear. Display the contents of oar and ear.
10. To find the reverse the number and its sum of the digits.
11. To find any one of the special numbers (Armstrong / Adam / Prime / Perfect)
12. To generate nth Addition / Multiplication Table where n and range are given.
13. To swap using temporary variable, arithmetic, and xor operators.
14. Check whether the given two square matrices are equal or not.

TEXT BOOK: As per Theory Paper

REFERENCE BOOK: As per Theory Paper

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II SEMESTER

S. No	Sub. Code	Nature	Subject Title	Hrs /Week	Exam hrs	CA	SE	Tot	Crd
1	17 UAC T21/H21/S21	PART I	Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2	17 UAC E21	PART II	English	6	3	25	75	100	3
3	17 UMC C21	PART-III CORE	Integral Calculus	4	3	25	75	100	4
4	17 UMC C22	PART-III CORE	Classical Algebra	4	3	25	75	100	3
5	17 UMC A21	PART-III ALLIED	C++ Language Theory	5	3	25	75	100	4
6	17 UMC SP2	PART-IV SBS	C++ Language Lab	3	3	40	60	100	3
7	14 UAC ES1	PART-IV	Environmental Studies	2	3	25	75	100	2
			Total	30					22

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Part III CORE	Title : INTEGRAL CALCULUS	Subject Code : 17 UMC C21
Semester : II	Hours : 4 hours /week	Credits : 4

Objectives:

To develop the Students know about the Integral Calculus.

UNIT-I

Integration- Definite integral- Methods of integration- Integrals of functions- Involving a^2+x^2 forms of integrals.

UNIT –II

Integration of rational algebraic forms- Special cases- Integration of irrational functions.

UNIT –III

Properties of definite integrals- Integration by Parts- Reduction formulae-Bernoulli's formula.

UNIT-IV

Multiple integrals - Definition of double integrals- double integral in polar coordinates-Triple integrals.(Problems only)

UNIT-V

β and γ functions- Definitions- Recurrence formula of γ functions- Properties of β functions.- Relation between β and γ functions.

TEXT BOOK: CALCULUS-VOLUME II

AUTHOUR: S.NARAYANAN,T.K.ManivasamPillai

PUBLICATIONS : S.VISVANATHAN. (Printers & Publishers) -Pvt.Ltd.-2009

UNIT	CHAPTER	SECTION
I	I	1- 6
II	I	7-10
III	I	11-15.1
IV	V	1-4
V	VII	2-5

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PART - III CORE	Title : CLASSICAL ALGEBRA	Subject Code : 17 UMC C22
Semester : II	HOURS : 4 hours /week	CREDITS : 3

Objectives:

To develop the Students know about classical algebra

UNIT –I

SEQUENCES: Introduction – Bounded sequences – Monotonic sequences – problems – Divergent and oscillating sequences – The algebra of limits – Problems.

UNIT-II

Behaviors of monotonic sequences – Some theorems on limits – Cesaro's theorems – Cauchy's second limit theorem – Problems.

UNIT– III

SERIES AND POSITIVE TERMS: Definite series – Cauchy's general principle of convergence – Comparison test – Kummer's test – D'Alembert's ratio test – Raabe's test – Gauss test – Problems.

UNIT-IV

THEORY OF EQUATIONS: Introduction – Formation of equations – Relation between roots and co-efficients – Reciprocal equations – Problems.

UNIT-V

Transformations of equations – Removal of terms – Nature and position of roots – Descarte's rule of sign – Approximate solutions of numerical equations – Newton's method and Horner's method.

TEXT BOOK: (i) Sequence and series for unit I, II, III, New Gamma Publishing house, Edition 2006

(ii) Algebra for unit IV, V New Gamma Publishing house , Edition 2011.

AUTHOUR: Dr.S.ARUMUGAM & S. THANGAPANDI ISSAC.

UNIT	CHAPTER	SECTION
I	3	3.0-3.6
II	3	3.7,3.8
III	4	4.1-4.3
IV	5	5.1,5.2,5.4
V	5	5.5,5.7,5.10

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PART – III ALLIED	Title : C++ LANGUAGE THEORY	Subject Code : 17 UMC A21
Semester : II	HOURS : 5 hours / Week	CREDITS : 4

Objectives:

To develop the Students know about C++ Language Theory.

Unit I : Software Evolution – Basic Concepts of Objects Oriented Programming – Benefit of Object Oriented Programming - Applications of Objected Oriented Programming - What is C++ - An Example with Class – Structure of C++ Program

Unit II : Tokens – Keywords – Identifiers & Constants – Basic Data Types – User-Defined Data Types – Derived Data Types – Operators in C++ - Scope Resolution Operator – Expressions and their types – Operator Overloading – Control Structures

Unit III : Inline functions – Default Arguments – Function Overloading – Specifying a Class – Defining Member Functions – Nesting of Member Functions – Private Member Functions – Arrays within a Class – Memory Allocation for Objects – Static Data Members – Static Member Functions – Array of Objects – Objects as Function Arguments – Friendly Functions – Pointers to Members

Unit IV : Constructors – Multiple Constructors in a Class – Constructors with Default Arguments – Dynamic Initialization of Objects – Copy Constructor – Dynamic Constructors – Destructors – Defining Operator Overloading – Overloading Unary Operators - Overloading Binary Operators – Rules for Overloading Operators

Unit V : Introduction to Inheritance – Defining Derived Classes – Single Inheritance – Multilevel Inheritance – Multiple Inheritance – Hierarchical Inheritance - Hybrid Inheritance – Virtual Base Class – Constructors in Derived Class – Pointers to Objects – this Pointer – Virtual Functions

Textbook(s) : Programming in ANSI C++ by E.Balagurusamy

UNIT	CHAPTER	SECTION
I	1&2	1.2,1.5-1.8,2.1-2.6
II	3	3.1-3.7,3.13-3.24
III	4&5	4.6-4.9,5.3-5.18
IV	6&7	6.2-6.11,7.2-7.7
V	8&9	8.1-8.11,9.3-9.6



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PART – IV SBS	Title : C++ LANGUAGE LAB	Subject Code : 17 UMC SP2
Semester : II	HOURS : 3 hours / Week	CREDITS : 3

Objectives:

To develop the Students know about C++ Language Lab.

C++ PROGRAMMING LAB

1. To perform Area calculation using Function overloading (min three functions).
2. To perform string manipulation using functions overloading.
3. To demonstrate the concept of friend function.
4. To swap two values between two classes objects using friend function.
5. To find minimum of two numbers between two classes objects using friend function.
6. To overload unary minus operator which changes sign of given vector (3 elements).
7. To overload Binary +operator which adds two complex numbers?
8. Implementation of mathematical operations on strings { Overload two operators + and <= }
9. To demonstrate single inheritance of a public data member and a private data member
10. To process students mark list using multiple inheritance.
11. To process employee details using hierarchical inheritance.
12. To process inventory details using multilevel inheritance.
13. To process family details using hybrid inheritance
14. To illustrate the use of Virtual base class
15. To illustrate the macro definition.

TEXTBOOK : Programming in ANSI C++ by E.Balagurusamy

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III SEMESTER

S. No	Subject Code	Nature	Subject Title	Hrs / Week	Exam hrs	CA	SE	Total	Crd
1	17 UAC T31/H31/S31	PART I	Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2	17UACE31	PART II	ENGLISH	6	3	25	75	100	3
3	17UMCC31	PART-III CORE	Modern Algebra	4	3	25	75	100	4
4	17UMCC32	PART-III CORE	Differential equations	4	3	25	75	100	3
5	17UMCA31	PART-III ALLIED	VISUAL BASIC Theory	5	3	25	75	100	4
6	17UMCSP3	PART-IV SBS	VISUAL BASIC Lab	3	3	40	60	100	3
7	17UMCN31	PART-IV NME	FUNDAMENTALS of Mathematics - I	2	3	25	75	100	2
Total				30					22

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PART - III CORE	Title : MODERN ALGEBRA	Subject Code : 17 UMC C31
Semester : III	HOURS : 4 hours /week	CREDITS : 4

Objectives:

To develop the Students know about Modern Algebra.

UNIT I SET

Introduction – The concept of a set – Set inclusion – Union of sets – Intersection of sets – Difference of sets – Complement of a set – Symmetric Difference of two sets – Cartesian product of sets.

UNIT II RELATIONS AND MAPPING

Relations – Equivalence Relations – Partial order - Functions – Binary Operations.

UNIT III GROUPS

Introduction – Definition and Example – Elementary Properties of a Group – Equivalent Definitions of a Group - Permutation Groups - Subgroups – Cyclic Groups .

UNIT IV GROUPS

Order of an Element - Cosets and Lagrange's Theorem – Normal Subgroups and Quotient Groups – Isomorphism – Homomorphisms.

UNIT V RINGS

Definition and Example – Elementary properties of rings – Isomorphism – Types of rings – Characteristic of a ring – Subrings.

TEXT: Modern Algebra, S.Arumugam, Isaac, Scitech Publications, Edition 2003.

UNIT I	CHAPTER	1	SECTION	1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8.
UNIT II	CHAPTER	2	SECTION	2.1, 2.2, 2.3, 2.4, 2.5.
UNIT III	CHAPTER	3	SECTION	3.0, 3.1, 3.2, 3.3, 3.4, 3.5,3.6
UNIT IV	CHAPTER	3	SECTION	3.7, 3.8, 3.9, 3.10, 3.11.
UNIT V	CHAPTER	4	SECTION	4.1, 4.2, 4.3, 4.4, 4.5, 4.6.



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PART - III CORE	Title : DIFFERENTIAL EQUATIONS	Subject Code : 17 UMC C32
Semester : III	HOURS : 4 hours /week	CREDITS : 3

Objectives:

To develop the Students know about Differential Equations.

UNIT I

Differential Equation – Equations of First Order and First Degree – Exact Differential Equations – Integrating Factors – Linear Equations – Bernoulli's Equations.

UNIT II

Linear Equations of Higher Order – Linear Equation with Constant Co-efficients – Methods of Finding complementary Functions – Methods of Finding Particular Integrals – Homogeneous Linear Equations.

UNIT III

Linear Equations with Variable Coefficients – Removal of First Derivative – Changing the Independent Variables – Methods of Variation of Parameters – Simultaneous Linear Differential Equations.

UNIT IV Laplace Transform – Inverse Laplace Transform and application of D.E using Laplace Transform.

UNIT V Partial Differential Equations – Formation – Elimination of Arbitrary Functions – First Order Partial Differential Equations – Lagrange's Equations – Standard Forms.

Textbook(s) : Differential Equations & Applications
Author(s) : Dr. S.Arumugam & Prof. A.Thangapandi Issac
Publication(s) : New Gamma Publishing House, 2008

Unit I	Chapter 1	Section: 1.1 – 1.6
Unit II	Chapter 2	Section: 2.1 – 2.4
Unit III	Chapter 2	Section: 2.5 – 2.6
Unit IV	Chapter 3	Section: 3.1 – 3.2
Unit V	Chapter 4	Section: 4.1 – 4.4

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PART - III	Title : VISUAL BASIC THEORY	Subject Code : 17 UMC A31
ALLIED		
Semester : III	HOURS : 5 hours / Week	CREDITS : 4

Objectives:

To develop the Students know about Visual Basic Theory.

Unit I

Introduction to Visual Basic – Visual Basic 6.0 Programming Environment – Working with Forms – Developing an application

Unit II

Variables, Data types and Modules – Procedures and Control Structures – Arrays in Visual Basic – Examples & Exercises

Unit III

Introduction - Creating and Using Controls – Working with Control Arrays – Examples & Exercises

Unit IV

Introduction – Mouse Events – Dialog Boxes – Examples & Exercises

Unit V

Introduction - Graphics for Application – Multiple Document Interface – Using FlexGrid Control – Examples & Exercises

TEXT: Visual Basic 6.0 Programming, Content Development Group, TMH Publications, Chennai.

UNIT I	Sections	1.1, 1.2, 1.3, and 1.4	Pages: 001 – 017
UNIT II	Sections	1.5, 1.6, and 1.7	Pages: 017 – 033
UNIT III	Sections	2.1, 2.2, and 2.3	Pages: 067 – 083
UNIT IV	Sections	3.1, 3.2, and 3.3	Pages: 109 – 128
UNIT V	Sections	4.1, 4.2, 4.3, and 4.4	Pages: 162 – 179

REFERENCE:EBook:Computer Programming Concepts & Visual Basic, David I. Schneider

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PART - IV SBS	Title : VISUAL BASIC LAB	Subject Code : 17 UMC SP3
Semester : III	HOURS : 3 hours /week	CREDITS : 3

Objectives:

To develop the Students know about Visual Basic Lab.

1. Write a program in VB to manipulate arithmetic / string operations.
2. Write a program in VB to manipulate matrix operations.
3. Write a program in VB to check whether Adam / Armstrong / Perfect / Prime or not.
4. Write a program in VB to print Fibonacci sequences for a given range.
5. Write a program in VB to calculate Simple Interest / Compound Interest / EMI
6. Write a program in VB to generate EB Bill / Student Mark sheet / Result Analysis.
7. Write a program in VB to generate Customer / Employee / Student Report.
8. Write a program in VB to create simple explorer using controls.
9. Write a program in VB to display student data using controls.
10. Write a program in VB to create login / logoff form.
11. Write a program in VB to create a database using controls.
12. Write a program in VB to sort given numbers / strings.

REFERENCE: Visual Basic 6.0 Programming, Content Development Group, TMH Publications, Chennai.

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PART IV : NME	Title : FUNDAMENTALS OF MATHEMATICS- I	Subject Code : 17 UMC N31
Semester : III	Hours : 2 Hours / Week	Credits : 2

Objectives:

To enable the students to acquire the basic knowledge in Calculus and matrices.

Unit I

Theory of indices, ratio and proportion.(Page 54 to 65 in Text Book)

Unit II

Differential calculus and Integral calculus (Simple problems). (Page 192 to 235 and Page 283 to 308 in Text Book)

Unit III

Theory of Matrices-Addition, Multiplication of two matrices.
(Page 329 to 375 in Text Book)

Unit IV

Finding the nth term and sum to n terms of an A.P and G.P-Arithmetic mean.

Unit V

Solving the quadratic equations-finding the roots- forming the equation when roots are given (only second degree).

Text Book:

Business mathematics by .M.Manoharan, Dr.C.Elango and K.L.Eswaran,Paramount publications-Reprint 2007.

Unit I	Page No: 54-65
Unit II	Page No: 192-235,283-308
Unit III	Page No: 329-375
Unit IV	Refer Relevant Book
Unit V	Refer Relevant Book

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IV SEMESTER

S. No.	Subject Code	Nature	Subject Title	Hours / Week	Exam hrs	CA	SE	Total	Crd
1	17 UAC T41/H41/S41	PART I	Tamil/Hindi/Sanskrit	6	3	25	75	100	3
2	17UACE41	PART II	ENGLISH	6	3	25	75	100	3
3	17UMCC41	PART-III CORE	Linear Algebra	4	3	25	75	100	4
4	17UMCC42	PART-III CORE	Number Theory	4	3	25	75	100	3
5	17UMCA41	PART-III ALLIED	JAVA Language Theory	5	3	25	75	100	4
6	17UMCSP4	PART-IV SBS	JAVA Language Lab	3	3	40	60	100	3
7	17UMCN41	PART-IV NME	Fundamentals of Mathematics II	2	3	25	75	100	2
8		PART-V	Extension Activities	0				100	1
			Total	30					23

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PART - III CORE	Title : LINEAR ALGEBRA	Subject Code : 17 UMC C41
Semester : IV	HOURS : 4 hours /week	CREDITS : 4

Objectives:

To enable the students to acquire the basic knowledge in Linear Algebra.

UNIT I

Vector spaces – Definition and Examples – Subspace – Linear Transformation-
Fundamental theorem of homomorphism.

UNIT II

Span of a Set – Linear Independents – Basis and Dimensions – Rank Nullity – Matrix
of a Linear Transformation.

UNIT III

Inner product space – Definition and Examples – Orthogonality – Orthogonal
Complement.

UNIT IV

Introduction – Algebra of Matrices – Types of Matrices – The Inverse of the Matrix –
Elementary Transformations – Rank of Matrix – Simultaneous Linear Equations –
Characteristics Equation and Cayley – Hamilton Theorem – Eigen Values and Eigen Vectors.

UNIT V

Introduction – Bilinear forms – Matrix of a bilinear form – Quadratic forms –
Reduction to Quadratic form.

Textbook(s) : Modern Algebra
Author(s) : Dr. S.Arumugam & Prof A.Thangapandi Issac
Publication(s) : 2003, Scitech Publications (India) Private Ltd, Chennai.

Unit I	Chapter 5	Section:	5.1-5.3
Unit II	Chapter 5	Section:	5.4-5.8
Unit III	Chapter 6	Section:	6.1-6.3
Unit IV	Chapter 7	Section:	7.1-7.8
Unit V	Chapter 8	Section:	8.0-8.2

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PART - III CORE	Title : NUMBER THEORY	Subject Code : 17 UMC C42
Semester : IV	HOURS : 4 hours /week	CREDITS : 3

Objectives:

To develop the Students know about Number Theory.

UNIT-I

DIVISIBILITY: Divisibility of integers – Division of Algorithms – Greatest common divisor – Least common multiple – Examples.

UNIT II

PRIME AND COMPOSITE NUMBERS: Prime number – Composite number – Co-primes – Twin primes – Euclid’s theorem – Unique factorization theorem – Divisors of integers – Arithmetic functions – product of divisors – Perfect numbers – Euclid’s theorems – Euler functions – Example problems.

UNIT III

DISTRIBUTION OF PRIMES: Introduction – Fermat’s conjecture – Mersenne number – Gap theorem – Example problems.

UNIT IV

CONGRUENCES: Definitions – Theorems – Residue theorem – Magic numbers – Divisibility tests – Linear congruence – Chinese Remainder theorem.

UNIT V

THEOREMS OF FERMAT’S WILSON: Introduction – Fermat’s theorem – Wilson’s theorem – Lagranges’s theorem – Wolstenholme theorem.

TEXT BOOK: ELEMENTS OF NUMBER THEORY.

AUTHOUR: KUMARAVELU & SUSHEELA KUMARAVELU.

PUBLICATIONS : SKV – FIRST EDITION 2002.

UNIT	CHAPTER	PAGENUMBER
I	3	45-59
II	4	61-106
III	5	148-162
IV	6	163-206
V	7	208-244



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PART - III ALLIED	Title : JAVA LANGUAGE THEORY	Subject Code : 17 UMC A41
Semester : IV	Hours : 5 Hours / Week	Credits : 3

Objectives:

To develop the Students know about Java Language.

UNIT I

Object Oriented Programming Concepts - Features of Java Language - Types of Java Programs - Java Architecture – Literals - Data types - Variables

UNIT II

Structure of a Java program – Comments - Expressions and Statements - Type Conversions - Arithmetic Operators - Bitwise Operators - Relational Operators - Boolean Logical Operators - Ternary Operators (?)

UNIT III

The if ... else statement - The switch statement - The while statement - The do ... while statement - The for statement - The break statement - The continue statement - One-Dimensional Arrays - Multi-Dimensional Arrays

UNIT IV

Defining a Class - The new Operator and Objects - The dot (.) Operator - Method Declaration and Calling – Constructors - Method Overloading – Creating Subclasses - Method Overriding - Object Destruction and Garbage Collection

UNIT V

Package - The import Statement - Access Modifier – Interfaces - Types of Exceptions - Catching Exceptions – Multitasking - Creating a Thread – Applet Basics – Methods of Building an Applet – The HTML Applet Tag – Colors in Applet

TEXT: Programming in Java 2 by Dr. K. Somasundaram

UNIT	CHAPTER	SECTIONS
UNIT I	1 & 2	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3
UNIT II	3 & 4	3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5
UNIT III	5 & 6	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 6.1, 6.2
UNIT IV	7 & 8	7.1, 7.2, 7.3, 7.4, 7.5, 7.8, 8.1, 8.2, 8.6
UNIT V	9, 12, 15 & 16	9.1, 9.2, 9.3, 9.4, 12.1, 12.2, 15.1, 15.2, 16.1, 16.2, 16.6, 16.8

REFERENCE:

EBook: Java 2, The Complete Reference, Fifth Edition, Herbert Schildt.

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PART - IV SBS	Title : JAVA LANGUAGE LAB	Subject Code : 17 UMC SP4
Semester : IV	Hours : 3 hours / Week	Credits : 3

Objectives:

To develop the Students know about Java Language Lab.

1. Write a program in Java to manipulate arithmetic / string operations.
2. Write a program in Java to manipulate matrix operations.
3. Write a program in Java to check whether Adam / Armstrong / Perfect / Prime or not.
4. Write a program in Java to print Fibonacci sequences for a given range.
5. Write a program in Java to calculate Simple Interest / Compound Interest / EMI
6. Write a program in Java to implement function overloading.
7. Write a program in Java to implement operator overloading
8. Write a program in Java to implement single inheritance.
9. Write a program in Java to implement package.
10. Write a program in Java to create console / windows application.
11. Write a program in Java to create applet application.
12. Write a program in Java to sort given numbers / strings.
13. Write a program to read 10 values in an array (assume that you read all values positive). Then change each even value in the array with its half value and each odd value with its double value. After change, count how many values are even and how many values are odd. Display the counting.
14. Write a program to generate the following series :

50	40	30	20	10
60	47	34	21	8
70	54	38	22	6

REFERENCE:

EBook: Java 2, The Complete Reference, Fifth Edition, Herbert Schildt.



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PART - IV NME	Title : FUNDAMENTALS OF MATHEMATICS – II	Subject Code : 17 UMC N41
Semester : IV	HOURS : 2 hours /week	CREDITS : 2

Objectives:

To enable the students to acquire the basic knowledge in statistics

UNIT I:

Mean, median, mode (problems only)

UNIT II:

Geometric mean, Harmonic mean, range, quartile deviation (problems only)

UNIT III:

Mean deviation, standard deviation (problems only)

UNIT IV:

Curve fitting (linear and quadratic only) (Simple Problems only).

UNIT V:

Analysis of Time series (linear trend method and seasonal variation) (problems only)

Text Book:

Statistics by S.Arumugam and Isaac, New Gamma Publications

UNIT	CHAPTER	SECTIONS
UNIT I	2	2.0-2.3
UNIT II	2	2.4,3.1
UNIT III	3	3.1
UNIT IV	5	5.1
UNIT V	10	10.1&10.2

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V SEMESTER

S. No.	Subject Code	Nature	Subject Title	Hours / Week	Exam hrs	CA	SE	Tot	Crd
1	17 UMC C51	PART-III CORE	Graph Theory	5	3	25	75	100	4
2	17 UMC C52	PART-III CORE	Real Analysis	5	3	25	75	100	4
3	17 UMC C53	PART-III CORE	Statistics	5	3	25	75	100	4
4	17 UMC C54	PART-III CORE	Quantitative Aptitude	5	3	25	75	100	4
5A	17 UMCE51	PART-III ELECTIVE	Web Technology Theory*	5	3	25	75	100	5
5B	17UMCEP1	PART-III ELECTIVE	Web Technology Lab*	5	3	40	60	100	5
6A	17 UMCE52	PART-III ELECTIVE	Unix Theory*	5	3	25	75	100	5
6B	17UMCEP2	PART-III ELECTIVE	Unix Lab*	5	3	40	60	100	5
7A	17 UMCE53	PART-III ELECTIVE	LaTeX Theory*	5	3	25	75	100	5
7B	17UMCEP3	PART-III ELECTIVE	LaTeX Lab*	5	3	40	60	100	5
8	16USSS51	Self Study	Soft Skills	-	-	-	-	100	-
			Total	30				700	26

***Either (5A & 5B) (or) (6A & 6B) (or) (7A & 7B) are to be selected as Elective papers**

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PART - III CORE	Title : GRAPH THEORY	Subject Code : 17 UMC C51
Semester : V	HOURS : 5 hours /week	CREDITS : 4

Objectives: To enable the Students to acquire the basic knowledge in Graph Theory.

UNIT I

Graphs – Degree - Sub graphs, Isomorphism, Ramsey Numbers - Independent Sets and Coverings - Intersection Graphs - Matrices of Graphs - Operations on Graphs.

UNIT II

Degree Sequences - Graphic Sequences - Walks, Trails, and Paths -Connectedness and Components – Blocks - Connectivity

UNIT III

Eulerian Graphs - Hamiltonian Graphs – Trees - Characterization of Trees - Centre of a Tree.

UNIT IV

Chromatic Number and Chromatic Index – The Five Color Theorem - Four Color Theorem - Chromatic Polynomials

UNIT V

Definitions and Basic Properties of Diagraphs - Paths and Connections in Diagraphs – Diagraphs and Matrices

Textbook(s) : Invitation to Graph Theory
Author(s) : Dr. S.Arumugam & S.Ramachandran
Publication(s) : Scitech Publications, Nov 2012

Reference Book(s) : Graph Theory by S.Kumaravelu & Susheela Kumaravelu

Unit I	Chapter 2	Sections: 2-2.9
Unit II	Chapter 3 & 4	Sections: 3.0,3.1,3.2, 4.1-4.4
Unit III	Chapter 5 & 6	Sections: 5.1,5.2,6.1,6.2
Unit IV	Chapter 9	Sections: 9.1-9.4
Unit V	Chapter 10	Sections : 10.1-10.3

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PART III : CORE	Title : REAL ANALYSIS	Subject Code : 17 UMC C52
Semester : V	HOURS : 5 hours /week	CREDITS : 4

Objectives: To enable the Students to acquire the basic knowledge in Real Analysis.

UNIT 1:

Sets and Functions – Countable Sets – Uncountable Sets – Inequalities of Holder and Minkowski – Metric Spaces – Definitions and Examples.

UNIT 2:

Bounded Sets in a Metric Space – Open Ball in a Metric Space – Open Sets – Subspaces – Interior of a Set – Closed Sets – Closure – Limit Point – Dense Sets.

UNIT 3:

Introduction – Completeness – Baire's Category Theorem – Continuity – Homeomorphism – Uniform Continuity.

UNIT 4:

Introduction – Definition and Examples – Connected Subsets of \mathbb{R} – Connectedness and Continuity

UNIT 5:

Introduction – Compact Space – Compact Subsets of \mathbb{R} – Equivalent Characterization for compactness.

TEXT: Modern Analysis, S. Arumugam, Issac, New Gamma Publishing House – 2007.

Reference Book(s) :

UNIT	CHAPTER	SECTIONS
UNIT I	1	1.1, 1.2, 1.3, 1.4
UNIT II	2&3	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8, 2.9, 2.10, 3.0, 3.2
UNIT III	4	4.0, 4.1, 4.2, 4.3
UNIT IV	5	5.0, 5.1, 5.2, 5.3
UNIT V	6	6.0, 6.1, 6.2, 6.3

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PART - III CORE	Title : STATISTICS	Subject Code : 17 UMC C53
Semester : V	HOURS : 5 hours /week	CREDITS : 4

Objectives:To enable the Students to acquire the basic knowledge in Statistical methods.

UNIT –I

CENTRAL TENDENCIES: Introduction – Arithmetic mean – Partition values – (Median , Quantities , Deciles, percentiles) – Mode – Geometric mean - Harmonic mean .

UNIT-II

MEASURES OF DISPERSION AND CURVE FITTING: Introduction – Standard deviation – Coefficient of Variation –Variance – Curve fitting - Principles of least squares – Fitting line and parabola.

UNIT –III

PROBABILITY: Introduction – Conditional probability – Properties of independent events – Baye’s theorem – Boole’s inequalities.

UNIT IV

RANDOM VARIABLES: Introduction – Distribution function - Discrete Random Variable – Mathematical Expectations – Mathematical Expectations Continuous Random Variable –Mean value – Variance – Standard deviation – Central moment.

UNIT V

SOME SPECIAL DISTRIBUTIONS: Binomial distribution – Moments of Binomial distribution – Mode of binomial distribution – Fitting of Binomial distribution – Poisson distribution – Mode of passion distribution – Fitting Poisson distribution of the observed data.

TEXT BOOK: STATISTICS

AUTHOUR: ARUMUGAM & ISSAC.

PUBLISHER: New Gamma Publishing House July 2011.

UNIT	CHAPTER	PAGES
I	2	11-57
II	3&5	60-80 & 95-105
III	11	274-303
IV	12	303-330
V	13	343-370

Reference Book: Statistical Methods by S.P.Gupta.

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PART - III CORE	Title: QUANTITATIVE APTITUDE	Subject Code : 17 UMC C54
Semester : V	HOURS : 5 hours /week	CREDITS : 4

Objectives: To enable the Students to acquire the basic knowledge in Aptitude.

UNIT –I

Numbers – HCF & LCM of numbers – Decimal Fractions

UNIT-II

Square roots & Cube roots – Average – Problems on Numbers – Problem on Ages

UNIT III

Percentage – Profit & Loss – Ratio & Proportion

UNIT IV

Time & Work – Time & Distance – Problems on Trains

UNIT V

Simple Interest – Compound Interest – Area – Volume & Surface areas

TEXT BOOK: Quantitative Aptitude, R.S.Aggarwal, Reprint 2007, S.Chand & Coy Ltd.

Reference Book(s) : .

UNIT	CHAPTER	SECTIONS
I	1,2,3	
II	5,6,7,8	
III	10,11,12	
IV	15,17,18	
V	21,22,24,25	

Note: First 10 problems from exercise in chapters may taken

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PART - III ELECTIVE	Title : WEB TECHNOLOGY THEORY	Subject Code : 17 UMC E51
Semester : V	HOURS : 5 hours / Week	CREDITS : 5

Objectives: To develop the Students know about Web Technology Theory.

Unit I

History of the internet – Internet services and Accessibility – Uses of the internet – Protocols – Web Concepts – The client / Server model of the web – Retrieving data from the web – How the web works – Web browsers Navigation features- Searching information on the web – Internet Standards - SGML – DTD – DTD Elements - Attributes

Unit II

Head Section – Body Section – Headers – Paragraphs – Text formatting – Linking – Internet Linking – embedding Images – Lists – Tables – Frames – Other special Tags and Characters – HTML forms

Unit III

Need of a Scripting Language – identifiers – Expressions – JavaScript Keywords – Operators – Statements – functions – the Window Object - The Document Object – Forms Object – Textbox and TextArea – Button, Radio button and Checkbox – The Select Object – The Date Object – The Math Object – The String Object – Arrays.

Unit IV

Embedding VBScript code in an HTML document – Comments – Variables – Array Variables – Assignment Operator – Numerical Operators – String concatenation – Sub procedure – Function Procedure – Conditional Statements – Looping Constructs

Unit V

Introduction – Cascading style Sheets – Coding CSS – Properties of Tags – Property Values – Other Style Properties – Inline Style Sheets – Embedded Style sheets – External Style Sheets – Grouping – Inheritance – Class as Selector – ID as Selector – Contextual Selectors

Textbook(s) : Web Technology.
 Author(s) : N.P.Gopalan, J.Akilandeswari
 Publication(s) : PHI Learning Pvt. Ltd, 2011

- Unit I : 1.2,1.3,1.4,1.5,1.6,1.6.1,1.6.2,1.6.3,1.6.4,1.6.5,1.7,4.2,4.2.1,4.2.2,4.2.3
- Unit II: 4.4,4.5,4.5.1,4.5.2,4.5.3,4.5.4,4.5.5,4.5.6,4.5.7,4.5.8,4.5.9,4.5.10,4.6
- Unit III: 5.1.1,5.2.1,5.2.2,5.2.3,5.2.4,5.2.5,5.2.6,5.3.1,5.3.2,5.3.3,5.3.4,5.3.5,5.3.6
- Unit IV: 5.4.1,5.4.2,5.4.3,5.4.5,6.1,6.2,6.3,6.4,6.4.1,6.5.1,6.5.2,6.5.3,6.6.1,6.6.2
- Unit V: 6.7,6.8,7.1,7.2,7.2.1,7.2.2,7.2.3,7.2.4,7.2.5,7.2.6,7.2.7,7.2.8,7.2.9,7.2.12.



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PART - III ELECTIVE	Title : WEB TECHNOLOGY LAB	Subject Code : 17 UMC EP1
Semester : V	HOURS : 5 hours / Week	CREDITS : 5

Objectives: To develop the Students know about Web Technology Lab.

1. Write a script to add two integers.
2. Write a script that reads five integers and determines the largest integer in the group.
3. Write a script that reads integers and determines its square root using Math object.
4. Write a script to find the number of occurrences of a given number in a set of stored numbers.
5. Write a script to compare two given numbers whose inputs are from HTML form.
6. Write a script to compare two strings using string object.
7. Write a recursive function to calculate the Fibonacci value of a given number.
8. Write a script to calculate and print the area of circle using function.
9. Write a function that determines pair of integers when the second is a multiple of the first.
10. Write a script to generate random numbers within 1 to 10 and display it in a table.
11. Write a function that takes an integer value and returns the number with its digits reserved.
12. Write a script function to display current data and time using date object.
13. Write a script to validate an HTML form.
14. Write a script to count the number characters entered by a user in a text box and limit it to a particular number.
15. Write a function for distance between two (x_1, y_1) and (x_2, y_2) . Incorporate this function into a script that enables the user to enter the coordinates of the points through an HTML form.



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PART - III ELECTIVE	Title : UNIX THEORY	Subject Code : 17 UMC E52
Semester : V	HOURS : 5 hours / Week	CREDITS : 5

Objectives: To develop the Students know about UNIX Theory.

UNIT – I Evolution of the UNIX System – Some Simple Commands – Changing Your Password with *passwd* – The Shell's Use of Special Characters – Print Current or Working Directory with *pwd* – List Directory Contents with *ls* – Changing Working Directory with *cd* – Creating User Directories with *mkdir* – Copying Files with *cp* – Moving and Renaming Files with *mv* – Removing Files with *rm* – Deleting Directories with *rmdir* –

Unit II

Ownership and Protection – Printing a File – Sorting Text Files with *sort* – Counting Things In a File with *wc* – Finding Text Patterns In a File with *grep* – Translating Characters with *tr* – Printing Files In Columns using *pr* – Comparing Files with *cmp* – Finding Commonality Between Files with *comm*

Unit III

The vi Text Editor – Calling up vi – Getting out of vi – Command Structure – Basic Cursor Movements – Simple Text Additions, Changes, and Deletions – Cursor Positioning over words – Introduction to *awk* –

Unit IV

Diagram of the Shell – Some Simple Shell Procedures – Naming Shell Procedures – Shell Variables – Shell Programming – Looping with the *for* statement – Conditional Execution with *if* – The *if* statement – The *exit* statement – The *else* statement – The *elif* statement – The *test* command

Unit V

Tests on Numerical values – Tests on File Types – Tests on Character Strings – Looping with the *while* statement – Altering loop execution with *break* and *continue* – The *until* statement – The *true* and *false* commands – Selective Execution using the *case* statement – Comments in Shell Programs.

Text Book: Introducing UNIX System V by Rachel Morgan and Henry McGilton – McGraw Hill Publications.

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PART - III ELECTIVE	Title : UNIX LAB	Subject Code : 17 UMC EP2
Semester : V	HOURS : 5 hours / Week	CREDITS : 5

Objectives: To develop the Students know about UNIX Lab

1. Write a Shell Script for Calculating Simple Interest
2. Write a Shell Script for Swapping Two Numbers
3. Write a Shell Script for Calculating Electricity Board Bill
4. Write a Shell Script for Check the given number is non negative or not
5. Write a Shell Script for Check the given number is odd or even
6. Write a Shell Script for Generate Armstrong Numbers
7. Write a Shell Script for Generate Prime Numbers
8. Write a Shell Script for Check the given number is Adam Number or not
9. Write a Shell Script for Generating nth Multiplication Table with m range.
10. Write a Shell Script for Generating Fibonacci Sequence
11. Write a Shell Script for Finding the Reversed and Sum of digits of given.
12. Write a Shell Script for Occurrence of a Character from given words.

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PART - III ELECTIVE	Title : LATEX THEORY	Subject Code : 17 UMC E53
Semester : V	HOURS : 5 hours / Week	CREDITS : 5

Objectives: To develop the Students know about LATEX Theory.

UNIT – I What is TeX – What is LaTeX – Getting a Text Editor – Document Classes – Packages – Files you might Encounter – Big Projects – Preamble – Top Matter – Abstract – Sectioning Commands – Appendices – Table of Contents – Error Messages – Missing Package – Multiple Citations – No Cite – Standard Templates

UNIT – II Itemize – Enumerate – Description – Nested Lists – Customizing Lists – Inline Lists – Floating with *table* – The *tabular* environment – Basic Examples – Text Wrapping in Tables – Defining Multiple Columns – Rows Spanning Multiple Columns – Columns Spanning Multiple Rows – Spanning in both directions simultaneously – Create the Title – A Practical Example – Integrating the Title Page – Change Orientation of Specific Part

UNIT – III Change Orientation of Floating Environment – Standard Page Styles – Customizing with fancyhdr – Another Approach with fancyhdr – Page n of m – Multicolumn pages – Manual Page Formatting – Paragraph Alignment – Paragraph Indents – Line Spacing – Verbatim text – Multiline Comments – Quoting Text – Abstracts – Document Options – Supported Image Formats – Including Graphics – Borders

UNIT – IV Graphics Storage – Adding the color package – Entering Colored Text – Entering collared background or the text – Predefined colors – Symbols – Greek Letters – Operators – Powers and Indices – Fractions and Binomials – Continued Fractions – Multiplication of Two Numbers – Roots – Sums and Integrals – Brackets, Braces and Delimiters – Automatic Sizing – Manual Sizing – Matrices and Arrays

UNIT – V Matrices in Running Text – Adding Text To Equations – Formatting Text – Accents – Plus and Minus Signs – Controlling Horizontal Spacing – Introducing Text and Dots in Formulas – Dots – List of Mathematical Symbols –Equation Numbering – Subordinate Equation Numbering – Braces Spanning Multiple Lines – The cases Environment – Boxed Equations – Limits – Subscripts And Superscripts – Multiline Subscripts –Changing Font Size

Text Book: LaTeX by Wikibooks.

Reference Book(s): A Guide to LaTeX and Electronic Publishing, Fourth Edition
by Helmut Kopla and Patrick W.Daly

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PART - III ELECTIVE	Title : LATEX LAB	Subject Code : 17 UMC EP3
Semester : V	HOURS : 5 hours / Week	CREDITS : 5

Objectives: To develop the Students know about LATEX Lab

1. Write a LaTeX code to display Hello World! text
2. Write a LaTeX code to change the text as bold, italics, and typewriter.
3. Write a LaTeX code to create table content using section and subsection commands
4. Write a LaTeX code to display bullets using itemize and enumerate commands.
5. Write a LaTeX code to display trigonometry formulas using article class.
6. Write a LaTeX code to display Mathematical Equation using lim and sum commands.
7. Write a LaTeX code to display aligned mathematical derivations.
8. Write a LaTeX code to display given matrix using matrix command
9. Write a LaTeX code to display poem / program using verbatim command.
10. Write a LaTeX code to create slide presentation using beamer class.
11. Write a LaTeX code to rotate 60 degree of given some text.
12. Write a LaTeX code to create a letter using letter class.
13. Write a LaTeX code to create a report using article class.
14. Write a LaTeX code to create mathematical equations using amsmath class.
15. Write a LaTeX code to create a table using table and tabular commands.
16. Write a LaTeX code to create two column article using multicols command

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VI SEMESTER

S. No	Sub. Code	Nature	Subject Title	Hours / Week	Exam hrs	C A	SE	Tot	Crd
1	17 UMC C61	PART-III CORE	Numerical Methods	5	3	25	75	100	4
2	17 UMC C62	PART-III CORE	Complex Analysis	5	3	25	75	100	4
3	17 UMC C63	PART-III CORE	Operations Research	5	3	25	75	100	4
4	17 UMC C64	PART-III CORE	Fuzzy Sets	5	3	25	75	100	4
5	17UMC C65	PART-III CORE	Python Lab	5	3	25	75	100	4
6	17UMC EV1	PART-III ELECTIVE	Project & Viva-Voce	5	3	40	60	100	5
7	16UGKB61	Self Study	General Knowledge	-	-	-	-	100	-
Total				30				700	25

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PART - III	Title : NUMERICAL METHODS	Subject Code : 17 UMCC61
CORE		
Semester : VI	HOURS : 5 hours /week	CREDITS : 4

Objectives: To develop the Students know about Numerical methods.

UNIT I

Numerical Solutions of Algebraic and Transcendental Equations – Iteration Method – Newton – Method of False Positions – Solutions of Simultaneous Linear Equations – Gauss Elimination Method – Gauss’s Jordan Method – Gauss Jacobi Method – Gauss Seidel Method.

UNIT II

Finite Differences- Forward Difference and Backward Differences – Finite Differences – Operators – Relations – Properties – Finding Missing Terms – Inverse Operators – Factorial Notation Interpolation and Newton’s Forward and Backward Formulae.

UNIT III

Divided Differences and Properties – Newton’s Divided Differences Formula – Gauss Formula Stirling’s Formula – Bessel Formula – Laplace Everret’s formula – Lagrange Formula – Simple Problems – Inverse Interpolation using Lagrange Formulation.

UNIT IV

Numerical Differentiation – Finding the First and Second Derivatives – Maximum and Minimum Values of a function for a given data.

UNIT V

Numerical Integration – Newton’s Cote’s Formula – Trapezoidal Rule – Simpson’s One Third Rule – Simpson’s Three Eight Rule – Weddle’s Rule.

Textbook : Numerical Methods, Second Edition
Author(s) : Dr.S.Arumugam, Thangapandi Issac & Dr.A. Somasundaram
Publisher : Scitech Publications, Edition 2006.
Reference Book(s) : Numerical Methods in Science & Engineering
by Dr. M.K.Venkaraman

Unit I Chapter 3 & 4 - Sections : 3.0-3.4,4.0-4.8.
Unit II Chapter 6 - Sections : 6.0-6.4,7.0&7.1.
Unit III Chapter 7 - Sections: 7.2-7.6
Unit IV Chapter 8 - Sections: 8.0-8.4
Unit V Chapter 8 - Sections : 8.5

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PART - III CORE	Title : COMPLEX ANALYSIS	Subject Code : 17 UMC C62
Semester : VI	HOURS : 5 hours /week	CREDITS : 4

Objectives: To develop the Students know about Complex Analysis.

UNIT I

Analytic Functions – C~R Equations - Sufficient Conditions - Harmonic Functions.

UNIT II

Elementary Transformations - Bilinear Transformations - Cross Ratio - Fixed Points - Special Bilinear Transformations - Real Axis to Axis - Unit Circle to Unit Circle and Real Axis to Unit Circle only.

UNIT III

Definite Integral - Cauchy's Fundamental Theorem - Cauchy's Integral Formulae and Formulae for Derivatives - Morera's Theorem - Cauchy's Inequality - Liouville's Theorem - Fundamental Theorem of Algebra.

UNIT IV

Taylor's Theorem, Laurent's Theorem - Singular Points – Poles - Argument Principle - Rouché's Theorem.

UNIT V

Calculus of Residues - Evaluation of Definite Integrals

Text Book(s) : Complex Analysis
Author(s) : Dr. S.Arumugam, A.Thangapandi Issac, Dr. A. Somasundaram
Publication(s) : Scitech Publications.

Reference Book(s) : Complex Analysis by T.K.Manicavachagom Pillay & others

Unit I	Chapter 2	Sections: 2.0-2.8
Unit II	Chapter 3	Sections: 3.1-3.5
Unit III	Chapter 6	Sections: 6.1-6.4
Unit IV	Chapter 7	Sections: 7.1-7.4
Unit V	Chapter 8	Sections : 8.1-8.3

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PART - III CORE	Title : OPERATIONS RESEARCH	Subject Code : 17 UMCC63
Semester : VI	HOURS : 5 hours /week	CREDITS : 4

Objectives: To develop the Students know about Operations Research.

UNIT I : LINEAR PROGRAMMING PROBLEM

Introduction – Mathematical formulation of the problem – Graphical solution method – Some exceptional cases – General LPP – Canonical and Standard forms of LPP.

UNIT II: LINEAR PROGRAMMING PROBLEM

Introduction of simplex method – Fundamental properties of solutions – The computational procedure – Two phase method, Big M method – Solution of simultaneous linear equations – General primal dual pair – Primal dual pair in matrix form – Duality and simplex method - Dual simplex method.(omit Theorems)

UNIT III: TRANSPORTATION PROBLEM

General transportation problem – The transportation table – Duality in transportation problem – Loops in Transportation tables – LP formulation of the Transportation problem – Solution of a Transportation problem – Finding an initial basic feasible solution – Test for optimality – Degeneracy in transportation problem – Transportation algorithm (MODI METHOD) – Stepping stone solution method – Some exponential cases – Time minimization transportation problem – Transshipment problems.

UNIT IV: ASSIGNMENT PROBLEM

Introduction – Mathematical formulation of the problem – The assignment method – Special cases in assignment problems – A typical assignment problem – The travelling salesman problem.

UNIT V: GAMES AND STRATEGIES

Introduction – Two-person zero-sum games – Some basic terms – The maxmin-minimax principle – Games without saddle points-mixed strategies – Graphical solution of 2×n and m×2 games – Dominance property – Arithmetic method for n×n games – General solution of m×n rectangular games- Game against passivity – Limitations and Extensions.

TEXT : OPERATIONS RESEARCH by Kanti Swarup, P.K.Gupta, Man Mohan Sultan Chand & Sons Publications, IX Edition,

Reference Book(s) : Operations Research by S.D.Sharma

Unit I	Chapter 2,3	Pages: 2.1,2.2,3.2-3.5.
Unit II	Chapter 4,5	Pages: 4.1-5.9
Unit III	Chapter 10	Pages: 10.2-10.15
Unit IV	Chapter 11	Pages: 11.1-11.6
Unit V	Chapter 17	Pages: 17.1-17.9.



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PART - III CORE	Title : FUZZY SETS	Subject Code : 17 UMCC64
Semester : VI	HOURS : 5 hours /week	CREDITS : 4

Objectives: To develop the Students know about Fuzzy Sets.

Unit I Fuzzy Set Theory.

Introduction – Number system – Interval – Sets – representations – Types of sets – Subsets – Universal sets – Operation on sets – Difference of two sets – Results – Venn diagram – Solved examples.

Unit II Fuzzy Set Theory.

Fuzzy Sets – Definitions – Types of fuzzy sets – Properties of fuzzy sets – Important operations – Fuzzy vs crisp – Solved Problems.

Unit III Operations on Fuzzy Sets.

Introduction – Important theorems – Extension principle of fuzzy sets – Fuzzy compliment – Further operations on fuzzy sets.

Unit IV Fuzzy Numbers And Arithmetic.

Definitions – Fuzzy arithmetic – Arithmetic operations of fuzzy number in the of--- cut sets – Fuzzy equations – Solved problems.

Unit V Fuzzy Relations.

General definitions – Projections and cylindrical fuzzy relations n- Composition – Relational join – Binary relations on single set – Compatibility relation – Solved problems.

Text Book: Fuzzy Sets & their applications, Pragati Edition by Dr.Sudhir Pundir, Dr. Rimple Pundir, First Edition, 2006.

Reference Book(s) :

Unit I	Chapter 1	Sections: 1.1-1.15
Unit II	Chapter 1	Sections: 1.16-1.21
Unit III	Chapter 2	Sections: 2.1-2.5
Unit IV	Chapter 3	Sections: 3.1-3.8, 3.9 (omit theorem)
Unit V	Chapter 4	Sections: 4.1 – 4.6

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PART - III CORE	Title : PYTHON LAB	Subject Code : 17 UMC C65
Semester : VI	HOURS : 5 hours /week	CREDITS : 4

Objectives: To develop the Students know about Python Lab

1. Write a code in Python to print "Hello World!"
2. Write a code in Python to add two numbers.
3. Write a code in Python to find the largest among three numbers
4. Write a code in Python to check whether the given number is odd or not
5. Write a code in Python to check whether a number is prime / Armstrong or not
6. Write a code in Python to find the factorial of a number
7. Write a code in Python to calculate the area of a rectangle
8. Write a code in Python to solve the quadratic equation
9. Write a code in Python to sum of the given natural numbers.
10. Write a code in Python to convert decimal to binary, octal and hexadecimal
11. Write a code in Python to find highest common factor and greatest common divisor
12. Write a code in Python to find factors of the given number
13. Write a code in Python to find the factorial value of given number using recursion.
14. Write a code in Python to add two rectangular matrices
15. Write a code in Python to transpose the given matrix
16. Write a code in Python to multiply two matrices
17. Write a code in Python to check whether the given string is palindrome or not
18. Write a code in Python to sort words in alphabetic order

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PART - III ELECTIVE	Title : PROJECT WORK & VIVA-VOCE	Subject Code : 17 UMC EV1
Semester : VI	HOURS : 5 hours /week	CREDITS : 5

Objectives:

- To give exposure on software development and maintenance
 - To train students, a systematic way of Report writing
 - To practice students for project presentation
1. A maximum of two students can join to do the project work
 2. Students must undertake the project work under the guidance of a faculty member
 3. Progressive reports have to be submitted to the guide periodically
 4. The internal test marks is 40 and is divided into the following components.
 - (i) Two Presentations - $2 \times 10 = 20$ marks
 - (ii) Progressive Reports - 10 marks
 - (iii) Internal Viva-voce - 10 marks
 5. The external examination will be jointly conducted by both the Internal and external examiners
 6. The students must submit 3 copies (2 copies for 2 students + 1 copy for the Dept.) of their Project Report two weeks before the external examination.
 7. The maximum marks for the external examination is 60 and it may be divided into the following components.
 - (i) Project Report - 20 marks
 - (ii) Project Presentation - 20 marks
 - (iii) Project viva-voce - 20 marks

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