GRADUATE ATTRIBUTES

1. **(KB) A knowledge base for Information Technology**: Demonstrated competence in university level Mathematics, Information Technology fundamentals, and specialized Software knowledge appropriate to the programme.

2. **(PA) Problem analysis**: An ability to use appropriate knowledge and skills to identify, formulate, analyze, and solve complex problems in order to reach substantiated conclusions

3. **(Inv.) Investigation**: An ability to conduct investigations of complex problems by methods that include appropriate experiments, analysis and interpretation of data and synthesis of information in order to reach valid conclusions.

4. **(Team) Individual and teamwork**: An ability to work effectively as a member and leader in teams, preferably in a multi–disciplinary setting.

5. **(Comm.) Communication skills**: An ability to communicate complex concepts within the profession and with society at large. Such ability includes reading, writing, speaking and listening, and the ability to comprehend and write effective reports and design documentation, and to give and effectively respond to clear instructions.

6. **(Prof.) Professionalism**: An understanding of the roles and responsibilities of the I.T Professional in society, especially the primary role of protection of the public and the public interest.

7. **(Impacts) Impact of Technology on society and the environment**: An ability to analyze social and environmental aspects of technology activities. Such ability includes an understanding of the interactions that technology has with the economic, social, health, safety, legal, and cultural aspects of society, the uncertainties in the prediction of such interactions; and the concepts of sustainable design and development and environmental stewardship.

8. **(LL) Life–long learning**: An ability to identify and to address their own educational needs in a changing world in ways sufficient to maintain their competence and to allow them to contribute to the advancement of knowledge

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SOURASHTRA COLLEGE, MADURAI– 625004

(An Autonomous Institution Re-accredited with 'B+' grade by NAAC)

B.Sc. INFORMATION TECHNOLOGY – SYLLABUS

(Under CBCS based on OBE)(with effect from 2021 – 2022)

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1	To prepare the graduates as successful professionals in Industry, Government sectors, Academia and Consultancy firms.
PEO 2	To make the graduates continuously acquire knowledge, theoretical and applied related to core areas of Information Technology and apply them in all fields.
PEO 3	To prepare graduates with the ability to gain multidisciplinary knowledge through real–time projects and internship training to meet industry needs.
PEO 4	To make the students get a substantial understanding on the concepts in the key areas of Information Technology and its applications.
PEO 5	To train the students to collaborate in diverse team environment to make positive contribution in the IT field.

UNDERGRADUATE (UG) PROGRAMME OUTCOMES (POs)

Undergraduate (B.A., B.Sc., B.Com., B.C.A., B.B.A., etc.,) is a 3–year degree programme with 6 semesters consisting the following Programme Outcomes (POs) under various criteria including critical thinking, problem solving, effective communication, societal/ citizenship/ ethical credibility, sustainable growth and employable abilities.

PO 1	**Critical Thinking**: Intellectual exploration of knowledge towards actions in clear and rational manner by understanding the logical connections between ideas and decisions.
PO 2	**Problem Solving**: Understanding the task/ problem followed by planning and narrow execution strategy that effectively provides the solution.
PO 3	**Effective Communication**: Knowledge dissemination by oral and verbal mechanisms to the various components of our society.
PO 4	**Societal/ Citizenship/ Ethical Credibility**: Realization of various value systems/ moral dimensions and demonstrate the empathetic social concern as well as equity in all the decisions, executions and actions.
PO 5	**Environmental Concern and Sustainable Growth**: Understanding the emerging environmental challenges and provide the possible contribution in sustainable development that integrates environment, economy and employment.
PO 6	**Skill Development and Employable Abilities**: Adequate training in relevant skill sector and creating employable abilities among the under graduates.

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PROGRAMME SPECIFIC OUTCOMES (PSOs)

On completion of **B.Sc. Information Technology Programme,** the students are expected to

PSO 1	develop as professionally competent citizens by applying the scientific knowledge of Computer Science with the ability to think clearly, rationally and creatively to support in evolving solutions to the social/public/scientific issues with responsible democratic participation
PSO 2	enterprise resourcefulness to identify, plan, formulate, design and evaluate solutions for complex computing problems that address the specific needs with appropriate consideration for Societal, Cultural, Environmental and Industrial domains.
PSO 3	develop holistically to ignite the lateral thinking ability in problem solving, acquisition of new skills, open–minded and organized way of facing problems with self–awareness and evolving analytical solutions
PSO 4	create and initiate innovations effectively and communicate efficiently with the computing community and society at large to bridge the gap between computing industry and academia
PSO 5	understand, assess and commit to professional and ethical principles, norms and responsibilities of the cyber world through Digital Literacy, and the ability for work efficacy as a part of a team and engage effectively with diverse stakeholders
PSO 6	embark on new ventures and initiatives with critical thinking and desire for more continuous learning focusing on life skills.

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B.Sc. INFORMATION TECHNOLOGY – II YEAR
COURSE STRUCTURE –III SEMESTER

S. No.	Subject Code	Subject Title	Hrs./ Week	Exam (Hrs.)	CA	SE	Total Marks	Credits
1.	21UACT31	**Part – I:Tamil** – காப்பியமும் நாடகமும்	6	3	25	75	100	3
	21UACH31	**Hindi** – Hindi – III						
	21UACS31	**Sanskrit** – Sanskrit – III						
2.	21UACE31	**Part – II: English** – English For Enrichment – III	6	3	25	75	100	3
3.	21UITC31	**Part – III: Core – 5:** Object Oriented Programming Using C++	5	3	25	75	100	4
4.	21UITCP3	**Part – III: Core – 6:** **Lab:** Object Oriented Programming Using C++	5	3	40	60	100	4
5.	21UITA31	**Part – III: Allied – 3:** Operations Research	4	3	25	75	100	4
6.	21UITSP1	**Part – IV: SBS – 3:** **Lab:** Office Automation	2	3	40	60	100	2
7.	21UITN31	**Part – IV: NME – 1:** Introduction to Information System	2	3	25	75	100	2
		TOTAL	**30**				**700**	**22**

COURSE STRUCTURE – IV SEMESTER

S. No	Subject Code	Subject Title	Hrs./ Week	Exam (Hrs.)	CA	SE	Total Marks	Credits
1.	21UACT41	**Part – I: Tamil** – சங்க இலக்கியமும் அற இலக்கியமும்	6	3	25	75	100	3
	21UACH41	**Hindi** – Hindi – IV						
	21UACS41	**Sanskrit** – Sanskrit – IV						
2.	21UACE41	**Part – II: English** – English For Enrichment – IV	6	3	25	75	100	3
3.	21UITC41	**Part – III: Core – 7:** Programming in Java	5	3	25	75	100	4
4.	21UITCP4	**Part – III: Core – 8:** **Lab:** Java Programming	5	3	40	60	100	4
5.	21UITA41	**Part –III: Allied – 4:** Numerical Methods	4	3	25	75	100	4
6.	21UITSP2	**Part – IV: SBS – 4:** **Lab:** Multimedia	2	3	40	60	100	2
7.	21UITN41	**Part – IV: NME – 2:** Introduction to MS–Office	2	3	25	75	100	2
8.		**Part – V:**Extension Activities	–	–	–	–	100	1
		TOTAL	**30**				**800**	**23**

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COURSE STRUCTURE –III SEMESTER

S. No.	Subject Code	Subject Title	Hrs./ Week	Exam (Hrs.)	CA	SE	Total Marks	Credits
1.	21UACT31	**Part – I:** **Tamil** – காப்பியமும் நாடகமும்	6	3	25	75	100	3
	21UACH31	**Hindi** – Hindi – III						
	21UACS31	**Sanskrit** – Sanskrit – III						
2.	21UACE31	**Part – II:** **English** – English For Enrichment – III	6	3	25	75	100	3
3.	21UITC31	**Part – III: Core – 5:** Object Oriented Programming Using C++	5	3	25	75	100	4
4.	21UITCP3	**Part – III: Core – 6:** **Lab:** Object Oriented Programming Using C++	5	3	40	60	100	4
5.	21UITA31	**Part – III: Allied – 3:** Operations Research	4	3	25	75	100	4
6.	21UITSP1	**Part – IV: SBS – 3:** **Lab:** Office Automation	2	3	40	60	100	2
7.	21UITN31	**Part – IV: NME – 1:** Introduction to Information System	2	3	25	75	100	2
		TOTAL	**30**				**700**	**22**

CA – Class Assessment (Internal)

SE – Summative Examination

SBS – Skill Based Subject

NME – Non –Major Elective

T – Theory

P – Practical

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITC31	**OBJECT ORIENTED PROGRAMMING USING C++**	**CORE –5**	**5**	**–**	**4**

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	**III**	**25**	**75**	**100**

NATURE OF COURSE	Employability	✓	Skill Oriented	✓	Entrepreneurship	

COURSE DESCRIPTION:
　　To gain the basic knowledge of object oriented programming concepts andtechniques.

COURSE OBJECTIVES:
1. To know the Basic of C++.
2. To understand about Class and Objects in C++.
3. To understand about various inheritance.

COURSE OUTCOMES (COs):
　　After the completion of the course, the students will be able to

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	gain knowledge about object oriented programming concept and know operators and expressions	**Upto K3**
CO 2	understand and illustrate functions, classes and objects	**Upto K3**
CO 3	develop a practical knowledge about constructor, operator overloading and type conversion	**Upto K3**
CO 4	learn various types of inheritance	**Upto K3**
CO 5	develop application using files and know the concept of error handling and files	**Upto K3**

K1 –KNOWLEDGE(REMEMBERING), K2 – UNDERSTANDING, K3 – APPLY

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OBJECT ORIENTED PROGRAMMING USING C++

UNIT –I: Principles of Object Oriented Programming (OOP):

Software Evolution – OOP Paradigm – Basic Concepts of OOP – Benefits of OOP– Object Oriented Languages – Application of OOP – Introduction to C++– tokens, keywords, identifiers, variables, Operators, manipulators, expressions and Control structures in C++.

UNIT –II: Functions:

Functions in C++ – Main Function – Function Prototyping – Call by reference – return by reference – function overloading – Friend and virtual functions.

Classes and Objects: Defining Member Functions – Making an outside Function Inline – Nesting of Member Functions– Private Member Function – Arrays within a Class – Static Member Functions – Arrays of Object – Friend Functions.

UNIT –III: Constructors and Destructors:

Introduction – Constructors – Parameterized Constructors – Constructors with Default Arguments – Copy constructors – Dynamic Constructors – .Destructors.

Operator Overloading and Type Conversions: Defining Operator Overloading – Overloading Unary Operators, Binary Operators – Rules for Overloading Operators – Type Conversions.

UNIT –IV: Inheritance:

Single inheritance – Multilevel Inheritance – Multiple inheritance – Hierarchical Inheritance – Hybrid Inheritance – Pointers, virtual functions and polymorphism, Managing I/O operations.

UNIT –V: Working with files:

Classes for file stream operations – Opening and closing a file – Detecting End of file – File pointers – Updating a file – Error Handling during file operations– command line arguments.

TEXT BOOK:

Object Oriented programming with C++ – E.Balagurusamy, 6th Edition Tata McGraw Hill, New Delhi.

CHAPTERS and SECTIONS (For UNIT – I, II, III,IV and V)

Unit – I: Chapter 1: 1.2, 1.4, 1.5, 1.6, 1.7, 1.8   Chapter 3: 3.1, 3.2, 3.3, 3.4, 3.10, 3.13, 3.19, 3.24

Unit – II: Chapter 4: 4.2, 4.3, 4.4, 4.5,4.9, 4.10 Chapter 5: 5.4, 5.6, 5.7, 5.8, 5.9, 5.12, 5.13, 5.15

Unit – III: Chapter 6: 6.1, 6.2, 6.3, 6.4, 6.7, 6.8, 6.11   Chapter 7: 7.2, 7.3, 7.4, 7.7, 7.8

Unit – IV: Chapter 8: 8.3, 8.5, 8.6, 8.7, 8.8. Chapter 9: 9.1 to 9.6 Chapter 10: 10.1 to 10.6

Unit – V: Chapter 11: 11.2, 11.3, 11.4, 11.5, 11.6,11.8,11.9, 11.10

REFERENCE BOOKS:

P. Radha Ganesan, *Programming Skills in C++,* Scitech publications.

Fundamentals of Programming C++ by Richard L. Halterman,

DIGITAL TOOLS::

https://www.javatpoint.com/cpp–tutorial,   https://www.learncpp.com/
https://www.w3schools.com/CPP,   https://www.programiz.com/cpp–programming

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2		2			
CO2		2	1			1
CO3		2				
CO4	2			1		3
CO5		2	1	1	2	3

3. Advanced Application2. Intermediate Development1. Introductory Level

COURSE DESIGNER: Prof. S. E. HEMAPRIYA

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITCP3	LAB : OBJECT ORIENTED PROGRAMMING USING C++	CORE – 6 LAB	–	5	4

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	III	40	60	100

NATURE OF COURSE	Employability	✓	Skill Oriented	✓	Entrepreneurship	

COURSE DESCRIPTION:

This course is to develop student's practical knowledge to write coding using object oriented programming code and implement in various applications.

COURSE OBJECTIVES:

1. To understand about programming in C++
2. To understand about programming in OOPs.
3. To write reusable modules (collection of functions)

COURSE OUTCOMES (COs):

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

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	write programs using simple concepts of C++	Upto K3
CO 2	write programs using OOP's paradigm – Classes and objects	Upto K3
CO 3	applying constructors , destructors and overloading – functions	Upto K3
CO 4	utilize operators and Implementing types of Inheritance.	Upto K3
CO 5	Design to write program using Files (Sequential and Random)	Upto K3

K1 – KNOWLEDGE(REMEMBERING), K2 – UNDERSTANDING, K3 – APPLY

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LAB : OBJECT ORIENTED PROGRAMMING USING C++

Lab Cycle:

1. Program to display student details using class and object.

2. Program to calculate simple interest using Inline function.

3. Program to find maximum of two objects of two different classes using Friend functions.

4. Program to assign integer values using Constructors (copy, default and parameterized).

5. Program using to find the volume of various objects using Function Overloading concept.

6. Program to toggle the sign of an integer number using Unary Operator - overloading.

7. Program to add two complex numbers using Binary + operator overloading.

8. Program to calculate the total and average marks of a student using Single Inheritance.

9. Program to calculate the Academic and sports marks of a student using multiple Inheritance.

10. Program to find area of various objects using Hierarchical Inheritance using Virtual function.

COURSE DESIGNER: Prof. S. E. HEMAPRIYA

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITA31	OPERATIONS RESEARCH	ALLIED – 3	4	–	4

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	III	25	75	100

NATURE OF COURSE	Employability		Skill Oriented	✓	Entrepreneurship	

COURSE DESCRIPTION:

This course helps to understand the basic principles of Operations Research, Mathematical formulation, Graphical solution of LPP, Simplex Method Algorithm, Solving Transportation Problem and Assignment Problem.

COURSE OBJECTIVE:

To solve application problems like travelling salesman problem, graphical method, least cost method, vogel's approximation method using various tech.

COURSE OUTCOMES (COs):

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

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	understand about various models, methods, tools and techniques and scope of OR.	Upto K3
CO 2	understand and apply slack and surplus variables in LPP , Mathematical formulation and solving Graphically	Upto K3
CO 3	apply artificial variable technique in two–phase method and Understand Duality concepts in LPP	Upto K3
CO 4	understand Assignment Problem and apply in Travelling Salesman Problem	Upto K3
CO 5	understand various methods to find initial basic feasible solution and determine Optimal solution	Upto K3

K1 –KNOWLEDGE(REMEMBERING), K2 – UNDERSTANDING, K3 – APPLY

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OPERATIONS RESEARCH

UNIT – I:
Definition of OR – Development of OR – History of OR – Mathematical Modeling – Characteristics & Phases – Tools, Techniques & Methods – Scope of OR – Uses of OR.

UNIT – II:
Linear Programming Problem– Formulation of LPP – Managerial Problems in LPP – Different forms of LPP – Matrix Form, Standard Form, Canonical Form, and Slack & Surplus Variables – Graphical Solution: General, No Feasible, Unbounded Problems.

UNIT – III:
Solving the Linear Programming Problem with three variables: Simplex Method – Computational Procedure – Artificial Variables Technique – Big M Method with two variables only.

UNIT – IV:
Mathematical formulation of Assignment problem– Method for solving the assignment Problem.– Hungarian Algorithm method – Balanced Assignment problem – Unbalanced Assignment problem – Traveling Salesman Problem.

UNIT – V:
Mathematical Formulation of Transportation Problem – Balanced Transportation Problem – Unbalanced Transportation Problem – Finding the Initial Basic Feasible Solution – North West Corner Rule, Column Minima Method, Row Minima Method, and Matrix Minima Method – Vogel's Approximation Method, Finding Optimality for Transportation Problem.

TEXT BOOK:
Resource Management Techniques – Prof. V. Sundaresan, K. S. Ganapathy Subramanian, K. Ganesan A. R. Publications

CHAPTERS and SECTIONS (For UNIT – I, II, III,IV and V)
Unit I –Chapter 1(1.1 to 1.7), **Unit II**–Chapter 2(2.1,2.2,2.3,2.5), Chapter 3(3.1 , 3.2)
Unit III–Chapter 3(3.3, 3.4, 3.2,3.2.1), **Unit IV**–Chapter 8(8.2, 8.3, 8.5, 8.6, 8.7, 8.9)
Unit V –Chapter 7(7.1 to 7.5)

REFERENCE BOOKS:
1. Arumugam and Issac, *Linear Programming Problem*, Prentice Hall 2002.
2. Kanti and Swarap, Manmohan, *Operation Research*, Harvard University Press, 2001.
3. J.D. Sharma, *Operation Research*, Prentice Hall 2001

DIGITAL TOOLS:: (E – Learning Resources)
1. https://www.businessmanagementideas.com/personnel–management/operation–research/top–6–methods–used–in–operation–research/6727
2. https://www.analyticsvidhya.com/blog/2017/02/lintroductory–guide–on–linear–programming–explained–in–simple–english/
3. https://towardsdatascience.com/operations–research–in–r–transportation–problem–1df59961b2ad

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1			2		
CO2		2	2	2		2
CO3					2	2
CO4	2		2	3		1
CO5		2	1	3	2	

3. Advanced Application 2. Intermediate Development   1. Introductory Level

COURSE DESIGNER: Prof. V. B. SHAKILA

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITSP1	**LAB : OFFICE AUTOMATION**	**SBS – 3 LAB**	–	**2**	**2**

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	**III**	**40**	**60**	**100**

NATURE OF COURSE	Employability	✓	Skill Oriented		Entrepreneurship	

COURSE DESCRIPTION:

　　This course helps the students get the basic practical knowledge in Documentation, Worksheet and Power Point presentation.

COURSE OBJECTIVES:

1. To understand the concept of Document Preparation using **MS–WORD**.
2. To understand the concept of designing worksheet using **MS–EXCEL.**
3. To understand the concept of designing slides using **MS–POWER POINT.**

COURSE OUTCOMES (CO):

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

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO1	understand the concept of text manipulation, numbering and bullet.	**Upto K3**
CO2	understand the usage of footer and head in word processor.	**Upto K3**
CO3	learn about basic of excel or work sheet. Use of formulae and built–in function.	**Upto K3**
CO4	develop the power point presentation in effective manner	**Upto K3**
CO5	use wizards to develop presentations	**Upto K3**

K1– KNOWLEDGE (REMEMBERING),K2–UNDERSTANDING,K3–APPLY

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LAB: OFFICE AUTOMATION

LAB CYCLE

MS – WORD

1. Text Manipulations
2. Usage of Numbering, Bullets, Footer and Headers
3. Usage of Spell check, and Find &Replace
4. Text formatting
5. Picture insertion and alignment
6. Creation of documents, using templates
7. Creation of templates
8. Mail Merge Concepts
9. Copying Text & Pictures from Excel

MS – EXCEL

1. Cell Editing
2. Table Formatting
3. Usage of Formulae and Built–in Functions
4. Data Sorting
5. Data Filtering
6. Worksheet Preparation
7. Implementing charts
8. Usage of Auto Formatting

MS – POWER POINT

1. Inserting Clip arts and Pictures
2. Frame movements of the above
3. Insertion of new slides
4. Preparation of Organization Charts
5. Presentation using Wizards
6. Usage of design templates

COURSE DESIGNER: Prof. S.E.HEMAPRIYA

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITN31	**INTRODUCTION TO INFORMATION SYSTEM**	**NME – 1**	**2**	**–**	**2**

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	**III**	**25**	**75**	**100**

NATURE OF COURSE	Employability		Skill Oriented	✓	Entrepreneurship	

COURSE DESCRIPTION:
This course helps to learn the basic concept of hardware and software.

COURSE OBJECTIVES:
1. To learn the basics of Computer.
2. To learn the knowledge about Input and Output Devices
3. To learn the about Telecommunication and Network.

COURSE OUTCOMES (COs):
After the completion of the course, the students will be able to

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	understand the concept of various classification of computers.	**Upto K3**
CO 2	understand the concept of memory types	**Upto K3**
CO 3	learn about various input and output devices and technologies	**Upto K3**
CO 4	understand the concept of software and programming languages.	**Upto K3**
CO 5	apply the concept of network topologies.	**Upto K3**

K1–KNOWLEDGE(REMEMBERING), K2–UNDERSTANDING, K3–APPLY

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INTRODUCTION TO INFORMATION SYSTEM

UNIT – I: Introduction to Computers:
Introduction – Importance of Computers – Characteristics of Computer – Uses of Computers – Overview of Computer System – Parts of a Computer – Importance of Hardware.
Classification of Computers: Introduction – Portable computers – Personal Computers – Workstations – minicomputers – mainframes – Super Computer – Comparison of computers.
UNIT – II: Central Processing Unit:
Introduction – CPU– Memory – Registers – Instruction set – Machine Cycle – How the CPU and Memory work–
Computer Memory: Introduction –Random Access Memory – Read Only Memory.
UNIT – III: Secondary Storage Devices:
Introduction – Classification of Secondary Storage Devices – Advantages of Secondary Storage Devices –
Input Devices and Technologies: Introduction – keyboard – Mouse – Trackball – Game Controllers – Scanners – Barcode Reader –OCR – Digitizer – Voice Recognition – web Cams – Digital Camera – Video Cameras.
UNIT – IV: Output Devices and Technologies:
Introduction – Monitor – Printer – Plotter
Computer Software: Introduction – What is Computer Software – Classification of Software – Operating System – Utilities – Compilers and Interpreters–
Programming Language: Introduction – Machine Language – Assembly Language – High Level Language – Types of High Level Language.
UNIT – V: Telecommunication and Network:
Introduction – Telecommunication Process – Communication Process – Communication Media – Characteristic of Communication Media – Types of Networks – Network Topologies – Network Protocols.
TEXT BOOK:
Introduction to Information Systems- Alexis Leon and Mathews Leon McGraw Hill Education Second Reprint 2009.
CHAPTERS and SECTIONS (For UNIT – I, II, III,IV and V)
Unit I: Pages–17–24,29–37 ,**Unit II:** Pages–38 – 47,51–56,**Unit III:** Pages–57–58, 71–84,
Unit IV: Pages– 87–98,101,105,106,113–120 , **Unit V :**Page 143 – 161
REFERENCE BOOKS:
1. Introduction to Computers, Peter Norton, sixth edition, Mc – Graw Hill Companies.
2. Fundamental of Computer, V. Rajaraman Fifth edition, Kindle Edition
DIGITAL TOOLS:
1. https://www.tutorialspoint.com/classification–of–computers
2. https://www.geeksforgeeks.org/what–is–a–storage–device–definition–types–examples/
3. https://www.javatpoint.com/types–of–computer–network

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3					
CO2		2		3		2
CO3	3			2	1	
CO4		2	2	3	2	1
CO5		2	2	3	2	1

3. Advanced Application 2. Intermediate Development   1. Introductory Level

COURSE DESIGNER: Prof. T. S. B. ARUNPRASANTH

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COURSE STRUCTURE – IV SEMESTER

S. No	Subject Code	Subject Title	Hrs./ Week	Exam (Hrs.)	CA	SE	Total Marks	Credits
1.	21UACT41	**Part – I:** **Tamil** – சங்க இலக்கியமும் அற இலக்கியமும்	6	3	25	75	100	3
	21UACH41	**Hindi** – Hindi – IV						
	21UACS41	**Sanskrit** – Sanskrit – IV						
2.	21UACE41	**Part – II: English** – English For Enrichment – IV	6	3	25	75	100	3
3.	21UITC41	**Part – III: Core – 7:** Programming in Java	5	3	25	75	100	4
4.	21UITCP4	**Part – III: Core – 8:** **Lab:** Java Programming	5	3	40	60	100	4
5.	21UITA41	**Part –III: Allied – 4:** Numerical Methods	4	3	25	75	100	4
6.	21UITSP2	**Part – IV: SBS – 4:** **Lab:** Multimedia	2	3	40	60	100	2
7.	21UITN41	**Part – IV: NME – 2:** Introduction to MS–Office	2	3	25	75	100	2
8.		**Part – V:** Extension Activities	–	–	–	–	100	1
		TOTAL	30				800	23

CA – Class Assessment (Internal)

SE – Summative Examination

SBS – Skill Based Subject

NME – Non –Major Elective

T – Theory

P – Practical

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SOURASHTRA COLLEGE, MADURAI– 625004

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B.Sc. INFORMATION TECHNOLOGY – SYLLABUS

(Under CBCS based on OBE)(with effect from 2021 – 2022)

COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITC41	PROGRAMMING IN JAVA	CORE – 7	5	–	4

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	IV	25	75	100

NATURE OF COURSE	Employability	✓	Skill Oriented	✓	Entrepreneurship	

COURSE DESCRIPTION:

This course helps to provide the fundamental knowledge of Java programming language which enhances the user to write the internet programming.

COURSE OBJECTIVES:

1. To understand the programming knowledge in Java.
2. To understand about the concepts of object oriented programming.
3. To understand about the concepts of Multithread packages and exceptions

COURSE OUTCOMES (COs):

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

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	acquire fundamental knowledge about OOP Concepts and its applications.	Upto K3
CO 2	understand java operators and expressions and statement.	Upto K3
CO 3	understand about classes and methods and method overloading and overriding.	Upto K3
CO 4	apply the knowledge in Inheritance and Packages projects.	Upto K3
CO 5	develop application using multithreading concept.	Upto K3

K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING,K3–APPLY

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PROGRAMMING IN JAVA

UNIT – I:

Fundamentals of OOP JAVA Evolution - Overview of Java Language – Java Program structure – Java Tokens – Java Virtual Machine – Constants, Variables and Data types. Operators and Expressions: Arithmetic Operators – Relational, logical, assignment, Increment and decrement, conditional, Bit-wise, special operators – Arithmetic expressions, Evaluation of expressions – Type conversions - Operator precedence and associativity.

UNIT – II:

Decision making and branching– simple IF – IF... Else – Nested IF else – Switch Operator – Decision making and Looping – While statement -Do -FOR -Jumps in loops – Labeled Loops. Classes-Objects –Methods –Defining a class –Adding methods. Variables – creating objects –Accessing class members – Constructors methods overloading – static members' .Nesting of methods.

UNIT – III:

Inheritance –Overriding methods –Final variables and methods –Final classes-Finalize methods –Abstract methods and classes –Visibility control. Packages: System packages –Definition –Using system packages –Naming conventions – creating packages –Accessing a package –Using a package –Adding a class to a package.

UNIT – IV:

Interfaces – Definition – Extending interfaces – Implementing interfaces. Multithreaded programming: creating threads – Extending thread class – Life cycle of a thread –Using thread methods – Thread Exception.

UNIT – V:

Managing Errors and exceptions: Types of errors -Exceptions –Syntax of Exception handling code – Multiple Catch statements – Using Finally statement – Throwing our own exceptions –Applets – Writing Applets – Applet Life cycle – Applet Tag – Adding Applet to HTML file.

TEXT BOOK:

E.Balagurusamy, *A Primer Programming with Java,*5thEditionTata McGraw – HillPublishing Company Ltd., New Delhi, 2002

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CHAPTER:

Unit – I	Chapter 1.1,1.3, 1.4, Chapter : 2.9, Chapter : 3.5,3.6.3.7, Chapter : 4.1– 4.9 , Chapter : 5.1–5.15. (Page no 2,7,28–32,46–71)
Unit – II	Chapter 6.1–6.8 , Chapter 7.1–7.6 (Page no 81 – 138)
Unit – III	Chapter 8.1 – 8. 10, Chapter 9.1 – 95 (Page no 139–147, 153–161)
Unit – IV	Chapter 11.3–11.7, Chapter 12.1 – 12.7 (Page no 191–197,203–233)
Unit – V	Chapter 13.1 – 13.7 Chapter 14. 4,14.7 – 14.13,14.7 (Page no : 234 – 243, 250,254–259,261–263,268)

REFERENCE BOOKS:
1. Patrick Naughton& Herbert Schmidt, *The Complete reference Java 2*, 5th Edition, Tata Mc Graw Hill, 2006.
2. Jon Byous, *Java Technology: The Early years,* Sun Developer Network, 2005.

DIGITAL TOOLS::
1. https://www.javatpoint.com
2. https://beginnersbook.com/2017/08/variables–in–java/
3. https://www.programiz.com/java–programming

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3			3		
CO2	2			1		2
CO3	2		3		1	
CO4	2		3	2		2
CO5	3		2	2	3	3

3. Advanced Application 2. Intermediate Development   1. Introductory Level

COURSE DESIGNER: Prof. T.L.MEENALOCHANI

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITCP4	**LAB: JAVA PROGRAMMING**	**CORE – 8 LAB**	**–**	**5**	**4**

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	**IV**	**40**	**60**	**100**

NATURE OF COURSE	Employability	✓	Skill Oriented	✓	Entrepreneurship	

COURSE DESCRIPTION:
This course helps to develop the application using Java language and it mechanism to handle the software.

COURSE OBJECTIVES:
1. To improve the creativity during problem solving.
2. To understand the concepts of Java.
3. To develop programming skills in Java.

COURSE OUTCOMES (COs):
After the completion of the Course, the students will be able to

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	acquire advanced knowledge about OOP Concepts and its applications.	**Upto K3**
CO 2	understand Java structure and Java virtual machine and data types.	**Upto K3**
CO 3	understand about classes and methods and method overloading and overriding.	**Upto K3**
CO 4	apply exception handling mechanism in projects.	**Upto K3**
CO 5	develop application using multithreading concept. Applet development	**Upto K3**

K1– KNOWLEDGE (REMEMBERING),K2–UNDERSTANDING,K3–APPLY

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LAB: JAVA PROGRAMMING

LAB CYCLE:

1. Program using Switch–Case statement to perform the following operations.

   (i)   Sum of natural numbers.

   (ii)   Factorial of a given number.

   (iii) Display the cubes of numbers between 1 to 100.

2. Program to print the mark list of a student using command line arguments.

3. Program to print the numbers in ascending order using control structure.

4. Program to find circumference and area of a triangle using Constructor Overloading

5. Program to display a string a particular number of times using Method Overloading.

6. Program to find the area of various objects using Run time polymorphism concept.

7. Program to get input marks of a student within the limit User Defined Exception.

8. Program to add two complex numbers using user defined package.

9. Program to print three types of multiplication tables using Multithreading.

10. Program to print the academic and sports marks of a student using interface.

11. Program to calculate Employee Net Pay in Applets using Parameter attributes.

12. Program to print the Employee details using Button, Label and Text Field.

COURSE DESIGNER: Prof. T. L. MEENALOCHANI

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B.Sc. INFORMATION TECHNOLOGY – SYLLABUS

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITA41	NUMERICAL METHODS	ALLIED – 4	4	–	4

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	IV	25	75	100

NATURE OF COURSE	Employability	☐	Skill Oriented	✓	Entrepreneurship	☐

COURSE DESCRIPTION:

This course helps to inculcate various mathematical methods such as Iteration method, Newton Raphson, Gauss Elimination, Gauss Seidel methods, Curve fitting, Newton's Interpolation, Lagrange's Interpolation, Numerical Differentiation and Integration, Euler's method, Taylor Series and Runge–Kutta Method.

COURSE OBJECTIVE:

To solve various application problems like iteration method, newton raphson method, trapezoidal rule etc. in computers

COURSE OUTCOMES (COs):

After the completion of the Course, the students will be able to

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	acquire knowledge about Iteration, Bisection, RegulaFalsi and Newton Raphson methods.	Upto K3
CO 2	understand Gauss Elimination and Gauss Seidal methods and apply Curve fitting method of least squares.	Upto K3
CO 3	understand about Newton's Interpolation and Lagrange's Interpolation formulae also apply in Numerical Problems.	Upto K3
CO 4	apply Newton's forward and backward difference formulae and applying Trapezoidal rule, Simpson's rule in Numerical Problems	Upto K3
CO 5	understand Euler's method, Taylor's Series method and Runge – Kutta method and their applications.	Upto K3

K1– KNOWLEDGE (REMEMBERING),K2–UNDERSTANDING,K3–APPLY

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NUMERICAL METHODS

UNIT – I:

ALGEBRAIC AND TRANSCENDENTAL EQUATIONS: Errors in Numerical computation – Iteration method – bisection method – Regular falsi method – Newton Raphson Method

UNIT – II:

SIMULATION EQUATION: Gauss Elimination method – calculation of inverse of matrix – Gauss seidal method. Curve fitting method of least squares

UNIT – III:

INTERPOLATION: Newton's interpolation formula – central differences interpolation formula – lagrange's interpolation formula – Inverse interpolation

UNIT – IV:

NUMERICAL DIFFERENTIATION: Newton's forward and back ward difference formula – **NUMERICAL INTEGRATION:** Trapezoidal rule – simpson's rule. Eigen values and eigen vectors of a matrix

UNIT – V:

NUMERICAL SOLUTION OF DIFFERENTIAL EQUATION: Euler's method– Taylor's series method – Range kutta method.

TEXT BOOK:

S. Arumugam and A. Thangapandiissac , A. Soma sundaram , *Numerical methods*, Scitech publication Chennai 2002.

REFERENCE BOOKS:

1. Mathews J.H, *Numerical Methods for Maths, science and Engineering*, PHI new Delhi 2001
2. *Introductory Methods of Numerical Analysis*, S. S. Sastry prentice Hall of India Pvt Ltd NewDelhi 4th edition 2001
3. *Numerical Methods*, T. Veerarajan and T. Ramachandran 2nd edition Tata Mc Graw Hill 2006

CHAPTERS and SECTIONS (For UNIT – I, II, III,IV and V)

Unit I : Chapter 3(3.0 to 3.5)   **Unit II :** Chapter 4(4.3, 4.5, 4.8) Chapter 2(2.4)
Unit III: Chapter 7(7.1 to 7.3, 7.6) **Unit IV:** Chapter 8(8.1, 8.2, 8.5) Chapter 5(5.0 to 5.2)
Unit V : Chapter 10(10.1 to 10.4)

DIGITAL TOOLS:

https://csw.uobaghdad.edu.iq/wp–content/uploads/sites/30/uploads/ computer%20science/ Lectures/2nd%20year/NUM%20ANALYSIS.pdf

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1			2		
CO2		2	2	2		2
CO3					2	2
CO4	2		2	3		1
CO5		2	1	3	2	

3. Advanced Application 2. Intermediate Development   1. Introductory Level
COURSE DESIGNER: Prof. A. R. GANESH BABU

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITSP2	**LAB : MULTIMEDIA**	**SBS – 4 LAB**	**–**	**2**	**2**

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	**IV**	**40**	**60**	**100**

NATURE OF COURSE	Employability	✓	Skill Oriented	✓	Entrepreneurship	

COURSE DESCRIPTION:
To learn about animations and designing using multimedia software

COURSE OBJECTIVE:
To enable the students to create invitation, greeting cards , effects , coloring and also about to make animations

COURSE OUTCOMES (COs):
After the completion of the Course, the students will be able to

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	change image using object tools	**Upto k3**
CO 2	display the text to 3D effects ,coloring	**Upto k3**
CO 3	merge images, making photo galleries	**Upto k3**
CO 4	move objects using guide layer	**Upto k3**
CO 5	develop morphing an object ,masking a text	**Upto k3**

K1– KNOWLEDGE (REMEMBERING),K2–UNDERSTANDING,K3–APPLY

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LAB: MULTIMEDIA

PHOTOSHOP:

1. Create Photo gallery in Photoshop.

2. Clone an object in Photoshop.

3. Create Rain Effect in Photoshop.

4. Create Water Effect in Photoshop.

5. Create Lighting and Lens Effect in Photoshop.

6. Merge two pictures in Photoshop.

7. Create 3D Text Effect in Photoshop.

8. Design a Visiting Card in Photoshop.

FLASH:

9. Create Bouncing Ball Effect in Flash.

10. Create Cinema Style Text Effect in Flash.

11. Create Shape Morphing in Flash.

12. Create Text to Shape Morphing in Flash.

13. Change from one Text to another (Text to Text Morphing) in Flash.

14. Create Count Down Effect in Flash.

COURSE DESIGNER: Prof. S.E.HEMAPRIYA

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COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
21UITN41	**INTRODUCTION TO MS – OFFICE**	**NME – 2**	**2**	**–**	**2**

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	**IV**	**25**	**75**	**100**

NATURE OF COURSE	Employability	✓	Skill Oriented	✓	Entrepreneurship	

COURSE DESCRIPTION:

To learn about Word processing, simple calculation and Presentation

COURSE OBJECTIVE:

To enable the students to prepare Documentation, Formatting Text, Cell, Paragraph and Presentation with animation.

COURSE OUTCOMES (COs):

After the completion of the Course, the students will be able to

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	know about Formatting , Layouts Documents	**Upto K3**
CO 2	learn about creation of documents	**Upto K3**
CO 3	understand about Functions, Formulas, bars	**Upto K3**
CO 4	learn about labeling, Aligning text	**Upto K3**
CO 5	gain knowledge about Presentation	**Upto K3**

K1– KNOWLEDGE (REMEMBERING),K2–UNDERSTANDING,K3–APPLY

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INTRODUCTION TO MS – OFFICE

UNIT – I: Word Processing

Word Wrapping – Adding or deleting text – Selecting, Copying, Moving Text –Search and Replace **– Character Formatting and Style :** Page Formatting –Margin **setting** and column – Justification Text **– Document View :** Normal, Print Layout, Web lay out, Reading Layout, outline, Document Map.

UNIT – II: Menus

Menu bar – Creating a New Blank Doc – Toolbars – Standards Toolbars **–** New, Copy, Cut, Paste, Spelling and Grammar, Save , undo buttons **– Formatting Toolbar:** Font button, Font size Button , Bold , Italic, Underline **– Changing the size of a document** – Minimize, Restore, Close, Maximize button.

UNIT – III: Spreadsheet

Spreadsheet basic: cell and cell address, cell pointer, label and values, formulas, function – **Excel Toolbars :**Title bars, Menu bar, Standard Toolbar**,** Formatting Toolbar, Formula bar , Status bar.

UNIT – IV: Working in Excel Work book

Working in Excel Work book : Rownumber , Column Heading , Vertical ,Horizontal Scroll bar, Select all button, Sheet tabs – Entering Data in a cell address: Enter a label/text, Enter a value/number, Aligning label/text in a cell – Changing the content : Deleting, Replacing, Modifying existing content in a cell.

UNIT – V:

Deleting Rows and Columns – Inserting Rows and Columns – Aligning data – Aligning data angle.

Working in PowerPoint: PowerPoint components – Formatting Text – Changing Font and Font color – Changing the background – deleting a slide – closing the presentation.

TEXT BOOK:
 Comdex Computer Coursekit – Vikas Gupta Dreamtech Press 2005.

REFERENCES BOOK:
 Computer basic with office Automation – Archana Kumar

Chapter:
Unit I: Page no – 186 – 190, **Unit II:** Page no – 195–201 , 204–206
Unit III: Page no – 296 – 303, **Unit IV:** Page no 305 – 310
Unit V: Page no: 342–344,348–350 (Excel) , Page no: 451,458–462 Powerpoint Presentation

DIGITAL TOOLS:
1. **https://www.javatpoint.com/ms–word–tutorial**
2. **https://www.tutorialspoint.com/word/index.htm**
3. **https://www.javatpoint.com/powerpoint–tutorial**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	1	1		2	2	
CO2		2		3		2
CO3	1			2	1	
CO4	2	1	1	3	2	1
CO5		2	2	3	2	1

3. Advanced Application 2. Intermediate Development   1. Introductory Level

COURSE DESIGNER: Prof. T. S. B. ARUNPRASANTH

Passed in the BOS Meeting held on 19/03/2022   **Signature of the Chairman**