



JEPPIAAR INSTITUTE OF TECHNOLOGY

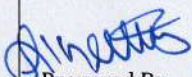
(An Autonomous Institution)

"Self-Belief | Self-Discipline | Self-Respect"

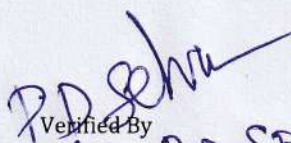
Kunnam, Sunguvarchatram, Sriperumbudur – 631 604.



DEPARTMENT OF INFORMATION TECHNOLOGY
AUTONOMOUS CURRICULUM & SYLLABUS R2024
CHOICE BASED CREDIT SYSTEM


Prepared By

(S. K. Remy)


Verified By
(Dr. P. D. SELVAM)

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.


Approved By

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

**JEPPIAAR INSTITUTE OF TECHNOLOGY**

(An Autonomous Institution)

"Self-Belief | Self-Discipline | Self-Respect"

Kunnam, Sunguvarchatram, Sriperumbudur – 631 604.

**VISION AND MISSION OF THE INSTITUTION****VISION**

Jeppiaar Institute of Technology aspires to provide technical education in futuristic technologies with the perspective of innovative, industrial and social application for the betterment of humanity

MISSION

M1	To produce competent and disciplined high-quality professionals with the practical skills necessary to excel as innovative professionals and entrepreneurs for the benefit of the society.
M2	To improve the quality of education through excellence in teaching and learning, research, leadership and by promoting the principles of scientific analysis, and creative thinking.
M3	To provide excellent infrastructure, serene and stimulating environment that is most conducive to learning.
M4	To strive for productive partnership between the Industry and the Institute for research and development in the emerging fields and creating opportunities for employability.
M5	To serve the global community by instilling ethics, values and life skills among the students needed to enrich their lives.

Prepared By

Verified by

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

Approved By

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604


JEPPIAAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

"Self-Belief | Self-Discipline | Self-Respect"

Kunnam, Sunguvarchatram, Sriperumbudur – 631 604.



VISION AND MISSION OF THE DEPARTMENT

VISION

The department will be an excellent centre to impart futuristic and innovative technological education to facilitate the evolution of problem-solving skills along with knowledge application in the field of Information Technology, understanding industrial and global requirements and societal needs for the benefit of humanity.

MISSION

M1	Produce competent and high-quality professional computing graduates in software development considering global requirements and societal needs thereby maximizing employability
M2	Enhance evolution of professional skills and development of leadership traits among the students by providing favourable infrastructure and environment to grow into successful entrepreneurs.
M3	Training in multidisciplinary skills needed by industries, higher educational institutions, research establishments and Entrepreneurship.
M4	Impart human values and ethical responsibilities in professional activities.

PROGRAM EDUCATIONAL OBJECTIVES

PEO 1	The graduates will use fundamental knowledge in science, mathematics and computing skills for creative and innovative application.
PEO 2	Graduates will be competent and employable by providing excellent infrastructure to learn and contribute for the welfare of the society.
PEO 3	Graduates will undertake research and higher education
PEO 4	Graduates will work in multidisciplinary setup and maximize job opportunities.
PEO 5	Graduates grow as professionals with values and integrity.

PROGRAM OUTCOMES

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
------------	---

Prepared By

Verified By

Approved By

Head of the Department

 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL

 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

PO2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
PO3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice
PO9	Individual Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES

PSO 1	Students are able to analyse, design, implement and test any software with the programming and testing skills they have acquired.
PSO 2	Students are able to design and develop algorithms for real time problems, scientific and business applications through analytical, logical and problem solving skills.
PSO 3	Students are able to provide security solutions for networks components and data storage and management which will enable them to work efficiently in the industry.


Prepared By


Verified By


Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnathur, Senguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnathur, Senguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604


JEPPIAAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

"Self-Belief | Self-Discipline | Self-Respect"

Kunnam, Sunguvarchatram, Sriperumbudur – 631 604.



DEPARTMENT OF INFORMATION TECHNOLOGY
CURRICULUM AND SYLLABI FOR SEMESTERS I TO VIII

SEMESTER – I

S.No	Course Code	Course Title	Category	Periods			Credits	CIE	SEE	TOTAL
				L	T	P				
1	AIP001	Induction Program		0	0	0				
THEORY										
2	AMA101	Matrices and Calculus	BS	3	1	0	4	40	60	100
3	APH101	Computational Physics	BS	3	0	0	3	40	60	100
4	ACS101	Principles of Programming	PC	3	0	0	3	40	60	100
5	ACS102	Python Programming	ES	3	0	0	3	40	60	100
6	AMC101	Employment Enhancement Skills	MC	3	0	0	0	40	60	100
7	AMC102	Professional Ethics and Human Values	MC	2	0	0	0	-	-	100
8	AHS101	Language Enhancement	HS	2	0	0	1	40	60	100
PRACTICALS										
9	APH301	Computational Physics Laboratory	BS	0	0	4	2	60	40	100
10	ACS301	Python Programming Laboratory	ES	0	0	4	2	60	40	100
11	AEEC301	Mini Project /Professional Practices	EEC	0	0	2	1	60	40	100
		Total		18	1	10	19			

Prepared By

Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

Verified by

Approved By
 PRINCIPAL
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur

SEMESTER – II

SEMESTER – II										
S.No	Course Code	Course Title	Category	Periods			Credits	CIE	SEE	TOTAL
				L	T	P				
THEORY										
1	AMA102	Discrete Mathematics	BS	3	1	0	4	40	60	100
2	AEC103	Basics of Electrical and Electronics Engineering	BS	3	0	0	3	40	60	100
3	AAI101	Introduction to Data Science	ES	3	0	0	3	40	60	100
4	ACS103	Computer Organization	PC	3	0	0	3	40	60	100
5	ACS104	Fundamentals of Cloud Computing	ES	3	0	0	3	40	60	100
6	AMC103	Indian Constitution	MC	2	0	0	0	-	-	100
PRACTICALS										
7	AEC302	Basic Electrical and Electronics Engineering Laboratory	ES	0	0	4	2	60	40	100
8	ACS302	Cloud Computing Laboratory	ES	0	0	4	2	60	40	100
9	AHS301	Communication Skills and Technical Writing	HS	0	0	2	1	60	40	100
10	AMC301	Yoga and Happy Living	MC	0	0	3	0	-	-	100
11	AEEC302	Mini Project / Professional Practices	EEC	0	0	2	1	60	40	100
			Total	17	1	15	22			

SEMESTER – III

SEMESTER – III										
S.No	Course Code	Course Title	Category	Periods			Credits	CIE	SEE	TOTAL
				L	T	P				
THEORY										
1	AMA105	Probability And Statistics	BS	3	0	0	3	40	60	100
2	ACS105	Object Oriented Programming	PC	3	0	0	3	40	60	100
3	ACS107	Data Structures and Algorithms Using Python	PC	3	0	0	3	40	60	100
4	AMB152	Entrepreneurship and Innovation	PC	3	0	0	3	40	60	100
5	AHS102	Skill Enhancement -I	HS	2	0	0	1	40	60	100
6	AMC108	Environmental Engineering and Sustainability	MC	2	0	0	0	-	-	100
PRACTICALS										
7	ACS303	Object Oriented Programming Laboratory	PC	0	0	4	2	60	40	100
8	ACS304	Data Structures and Algorithms Laboratory	PC	0	0	4	2	60	40	100
9	AEEC303	Mini Project /Professional Practices	EEC	0	0	2	1	60	40	100
			Total	14	0	10	18			

[Signature]
Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

[Signature]
PRINCIPAL
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604



JEPPIAAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

"Self-Belief | Self-Discipline | Self-Respect"

Kunnam, Sunguvarchatram, Sriperumbudur – 631 604.



DEPARTMENT OF INFORMATION TECHNOLOGY
AUTONOMOUS CURRICULUM & SYLLABUS R2024
CHOICE BASED CREDIT SYSTEM

SEMESTER I

[Signature]
 Prepared By

[Signature]
 Verified by

[Signature]
 Approved By

Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604


JEPPIAAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

"Self-Belief | Self-Discipline | Self-Respect"

Kunnam, Sunguvarchatram, Sriperumbudur – 631 604.



AMA101 - MATRICES AND CALCULUS							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	BS	3	1	0	4
Preamble	<ul style="list-style-type: none">➤ Introduce the matrix techniques and to explain the nature of the matrix.➤ Provide the necessary basic concepts of a few numerical methods and give procedures for solving numerically different kinds of problems occurring in Engineering and Technology.➤ Familiarize the students with differential calculus.➤ Understand techniques of calculus which are applied in the Engineering problems.➤ Acquaint the student with mathematical tools needed in evaluating multiple integrals and their applications						
Unit 1	MATRICES					9+3	
Matrices - Eigen values and eigenvectors - Diagonalization of matrices using orthogonal transformation – Cayley Hamilton Theorem (without proof) - Quadratic forms - Reduction to canonical form using orthogonal transformation							
Unit 2	SOLUTION OF LINEAR SYSTEM OF EQUATIONS AND EIGENVALUE PROBLEMS					9+3	
Solution of linear system of equations - Gauss elimination method – Pivoting - Gauss Jordan method - Gauss Seidel iterative method - Matrix Inversion by Gauss Jordan method - Eigen values of a matrix by Power method – Jacobi method.							
Unit 3	DIFFERENTIAL CALCULUS					9+3	
Limit of a function-Continuity-Derivatives-Differentiation rules (sum, product, quotient, chain rules)-Implicit Differentiation-Logarithmic Differentiation-Applications: Maxima and Minima of functions of one variable							
Unit 4	INTEGRAL CALCULUS					9+3	
Definite and Indefinite integrals - Substitution rule - Techniques of Integration: Integration by parts, Trigonometric integrals, Trigonometric substitutions, Integration of rational functions by partial fraction, Integration of irrational functions – Improper integrals.							
Unit 5	MULTIPLE INTEGRALS					9+3	
Double integrals – Change of order of integration – Double integrals in polar coordinates – Area enclosed by plane curves – Triple integrals – Volume of solids –Change of variables in double and triple integrals – Applications: Moments and centres of mass, moment of inertia.							
TOTAL: 60							
TEXTBOOKS							
1	Grewal B.S., “Higher Engineering Mathematics”, Khanna Publishers, New Delhi, 43rd Edition, 2014.						
2	Erwin Kreyszig, " Advanced Engineering Mathematics ", John Wiley and Sons, 10th Edition, New Delhi, 2016						
3	Grewal. B.S., and Grewal. J.S., Numerical methods in Engineering and Science,						

Prepared By

Verified By

Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

Khanna Publishers, 9th Edition, New Delhi, 2001.	
REFERENCES	
1	Ramana. B.V., " Higher Engineering Mathematics ", McGraw Hill Education Pvt. Ltd, New Delhi, 2018.
2	N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008
COURSE OUTCOMES:	
At the end of the course, learners will be able to	
	Bloom's Taxonomy Level
CO1	Demonstrate the matrix techniques in solving the related problems in engineering and technology. K4
CO2	Apply matrix methods to solve system of linear equations K3
CO3	Apply differential calculus tools in solving various application problems K3
CO4	Apply different methods of integration in solving practical problems. K3
CO5	Evaluate multiple integrals to conduct investigations of complex problems K5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	-	-	-	-	-	-	1		1	1	-
CO2	3	2	1	-	-	-	-	-	-	-	-		1	1	-
CO3	3	2	3	-	-	-	-	-	-	-	-		1	1	-
CO4	3	2	3	-	-	-	-	-	-	-	1		-	1	-
CO5	3	2	3	-	-	-	-	-	-	-	-		1	-	-

APH101 - COMPUTATIONAL PHYSICS							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	BS	3	0	0	3
Preamble	<ul style="list-style-type: none">➤ To instill knowledge on physics of semiconductors, determination of charge carriers and device applications.➤ The students will acquire knowledge on the concepts of Photonics➤ To provide the basic concepts of quantum mechanics and various formalism of quantum mechanics➤ To acquire the knowledge of basic sciences required to understand the fundamentals of nano materials➤ To motivate the students towards the applications of quantum mechanics and quantum computing						
Unit 1	PHOTONICS AND SEMICONDUCTOR DEVICES					9	
Intrinsic Semiconductor- Energy Band Diagram- -Direct and Indirect Band Gap Semi-Conductors – Diode Laser-Hall Effect and Devices- Logic Gates-AND,OR, NOT,NAND, E-OR,E-NOR Gates. Introduction to theory of Laser-Characteristics-Spontaneous and Stimulated Emission- Einstein's Coefficients – Population Inversion- Applications of Photonics.							

Prepared By

Verified By

Approved By

Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

Unit 2	DIFFERENTIAL EQUATIONS IN COMPUTATIONAL PHYSICS	9
Solution of differential equations: Taylor series method, Euler method, Runge Kutta method, predictor-corrector method. Eigen values and Eigen vectors of matrix: Determinant of a matrix, characteristic equation of a matrix, eigen values and eigen vectors of a matrix, power method.		
Unit 3	FUNDAMENTALS OF QUANTUM MECAHNICS	9
Photons and light waves- Electrons and matter waves- The Schrodinger equation (Time dependent and time independent wave equation)- Physical significance of wave function- particle in an infinite potential well: 1D, 2D and 3D Boxes-Degeneracy and Non-Degeneracy.		
Unit 4	INTRODUCTION TO NANO MATERIAL	9
Introduction to nanomaterial -Electron density in bulk material - Size dependence of Fermi energy - Quantum confinement - Quantum structures - Density of states in quantum well, quantum wire and quantum dot structure - Band gap of nanomaterial- Properties and Applications of nano materials- Tunneling: single electron phenomena and single electron transistor-Quantum dot laser.		
Unit 5	QUANTUM INFORMATION AND COMPUTING	9
Quantum computing: Introduction - Postulates of quantum Mechanics- Differences between quantum and classical computation. Quantum system for information processing-quantum states-Classical bits-quantum bits or qubits - Density matrices- Entanglement-Quantum gates-C-NOT Gate-Bloch sphere.		
TOTAL: 45		
TEXTBOOKS		
1	Hitendra K Malik, A K Singh, "Engineering Physics" Tata Mcgraw Hill Education Private Limited, New Delhi 2010.	
2	Vanchna Singh, Sheetal Kumar, "Engineering Physics" Cengage Learning India Pvt.Ltd. Delhi 2010.	
3	V Rajendran, "Engineering Physics" Tata Mcgraw Hill Education Private Limited, New Delhi 2011.	
REFERENCES		
1	Dattu R Joshi, "Engineering Physics" Tata Mcgraw Hill Education Private Limited, New Delhi 2010.	
2	A Marikani, "Engineering Physics" PHI Learning Private Limited New Delhi 2010.	
3	Kenneth B. Howell, " Ordinary Differential Equations" CRC Press , 21 January 2023	
COURSEOUTCOMES:		
At the end of the course, learners will be able to		Bloom's Taxonomy Level
CO1	Understand clearly of semiconductor physics and functioning of semiconductor devices.	K2
CO2	Solution of differential equations to understand the computational physics.	K2
CO3	Understand the basic concepts and principles of quantum mechanics	K2
CO4	Explain the effects of quantum confinement on the electronic structure and corresponding physical and chemical properties of materials	K2
CO5	Apply the quantum mechanical principals and basic concept of quantum computing	K3

Prepared By

Verified By

Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarachattam, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarachattam, Sriperumbudur
Chennai, Tamilnadu-631 604

CP/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	1	1	1	1	1	1	1	1	-	-	-
CO2	3	3	2	2	1	1	1	1	1	1	1	1	-	-	-
CO3	3	3	2	2	1	1	1	1	1	1	1	1	-	-	-
CO4	3	3	3	3	1	1	1	1	1	1	1	1	-	-	-
CO5	3	3	3	3	1	1	1	1	1	1	1	1	-	-	-

ACS101 PRINCIPLES OF PROGRAMMING							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	PC	3	0	0	3
Preamble	<ul style="list-style-type: none">➤ Be exposed to the basics of computers and number systems.➤ Learn to think logically and write pseudo code or draw flow charts for problems.➤ Be familiar with syntax and programming in C.➤ To develop modular applications in C using functions, pointers and structures➤ To do input/output and file handling in C						
Unit 1	INTRODUCTION TO COMPUTERS					9	
Introduction – Characteristics of Computers – Evolution of Computers – Computer Generations – Classification of Computers – Basic Computer organization – Number Systems-Number Conversion							
Unit 2	PROBLEM SOLVING AND COMPUTER SOFTWARE					9	
Problem formulation – Problem Solving - Algorithm – Flow Charts – Pseudocode - Computer Software –Types of Software – Software Development Steps – Internet Evolution - Basic Internet Terminology – HTML -Getting connected to Internet Applications. Application Software Packages- Introduction to Office Packages							
Unit 3	INTRODUCTION TO C					9	
Overview of C – structure of a C program – compilation and linking processes, Constants, Variables and Data Types – Operators and Expressions – Managing Input and Output operators – Decision Making – Arrays, Branching and Looping, Handling of Character Strings.							
Unit 4	FUNCTIONS, POINTERS AND STRUCTURES					9	
Built-in Functions-User-defined Functions – Definitions – Declarations -Call by reference – Call by value – Structures and Unions – Pointers – The Preprocessor – Developing a C Program.							
Unit 5	FILE MANIPULATION					9	
Introduction, Character Input output in Files, Command Line Arguments, String Input Output in Files, High level Disk I/O Functions, Direct Input Output, Error Handling functions, File Positioning, Introduction to Preprocessor, Macro substitution, File Inclusion.							
TOTAL: 45							
LIST OF EXPERIMENTS							
1. I/O statements, operators, expressions							

Prepared By

Verified by

Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

2. Decision-making constructs: if-else, goto, switch-case, break-continue
3. Loops: for, while, do-while
4. Arrays: 1D and 2D, Multi-dimensional arrays, traversal
5. Strings: operations
6. Functions: call, return, passing parameters by (value, reference), passing arrays to function.
7. Recursion
8. Pointers: Pointers to functions, Arrays, Strings, Pointers to Pointers, Array of Pointers
9. Structures: Nested Structures, Pointers to Structures, Arrays of Structures and Unions.
10. Files: Reading and writing, File pointers, file operations, random access, processor directives.

TEXTBOOKS

1	Ashok.N.Kamthane, "Computer Programming", Pearson Education (India)
2	Behrouz A.Forouzan and Richard.F.Gilberg, "A Structured Programming Approach Using C", II Edition, Brooks-Cole Thomson Learning Publication

REFERENCES

1	Pradip Dey, Manas Ghosh, "Programming in C", Oxford University Press
2	Byron Gottfried, "Programming with C", 2 nd Edition, (Indian Adapted Edition), TMH publications
3	Stephen G.Kochan, "Programming in C", Third Edition, Pearson Education India.
4	Brian W.Kernighan and Dennis M.Ritchie, "The C Programming Language", Pearson Education Inc.
5	E.Balagurusamy, "Computing fundamentals and C Programming", Tata McGraw-Hill Publishing Company Limited.

COURSEOUTCOMES:**At the end of the course, learners will be able to****Bloom's Taxonomy****Level**

CO1	To enable the student to learn the major components of a computer system	K2
CO2	To demonstrate knowledge on logical thinking and problem solving	K3
CO3	Design and implement applications on C Programming constructs using arrays and strings	K3
CO4	Develop and implement modular applications in C using functions, structures and pointers.	K3
CO5	Design applications using sequential and random access file processing.	K3

CP/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	2	2	-	-	-	-	1	1	2	2	2	1
CO2	2	3	2	3	2	-	-	-	2	2	3	2	3	2	1
CO3	2	3	2	1	1	-	-	-	2	2	3	2	2	3	1
CO4	2	3	2	2	3	-	-	-	2	2	3	2	2	3	1
CO5	2	3	1	2	2	-	-	-	-	-	-	1	3	2	2

Prepared By

Verified by

Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL

Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

ACS102 - PYTHON PROGRAMMING							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	ES	3	0	0	3
Preamble	<ul style="list-style-type: none">➤ To understand the basics of algorithmic problem solving.➤ To learn to solve problems using Python conditionals and loops.➤ To define Python functions and use function calls to solve problems.➤ To use Python data structures - lists, tuples, dictionaries to represent complex data.➤ To do input/output with files in Python.						
Unit 1	BASICS OF PYTHON PROGRAMMING					9	
Overview of programming language- Python history-Interactive mode – script mode-Tokens:Literal-Keyword-Delimiter-Identifier-Data types: Integer-Floating-Complex-Boolean-String-Indentation-Input operation-Comments							
Unit 2	CONTROL STRUCTURE, OPERATORS AND FUNCTIONS					9	
Statements: if, if-else, nested if, if –elif - Iterative statements: while, for, Nested loops, else in loops, break, continue and pass statements. Operators: Arithmetic-Membership-Identity-Bitwise Functions: Types, parameters, arguments: positional arguments, keyword arguments, parameters with default values, functions with arbitrary arguments, Scope of variables: Local and global scope, Recursion							
Unit 3	COLLECTIONS, STRINGS AND REGULAR EXPRESSIONS					9	
List: Create Access, Negative Indices, Slicing, Splitting, List Methods, and comprehensions Tuples: Create, Indexing and Slicing, Operations on tuples. Dictionary: Create, add, traversing and replace values, operations on dictionaries. Sets: Create and operations on set. Strings: Formatting, Comparison, Slicing, Splitting, Stripping, Negative indices, String functions. Regular expression: Matching the patterns, Search and replace							
Unit 4	FILE HANDLING AND EXCEPTIONS					9	
Files: Open, Read, Write, Append, Tell, Seek and Close. Errors and Exceptions: Syntax Errors, Exceptions, Handling Exceptions, Raising Exceptions, Exception Chaining, Userdefined Exceptions, Defining Clean-Up actions							
Unit 5	NUMPY, PANDAS, MATPLOTLIB					9	
Introduction - Basics of NumPy - N-dimensional Array in NumPy – Methods and Properties - Basics of SciPy - Broadcasting in NumPy Array Operations - Array Indexing in NumPy, Pandas - Introduction - Series - Data Frame - Matplotlib - Basics - Figures and Axes - Method subplot() - Axis container							
TOTAL: 45							
TEXTBOOKS							
1	Ashok Namdev Kamthane, Amit Ashok Kamthane “Programming and Problem Solving with Python”, 2 nd edition , Mc Graw Hill						
2	Dr.R.Nageswara Rao, “Core Python Programming”, 3 rd edition, Deamtech Publisher						
REFERENCES							
1	Paul Dietel, Harvey Deitel, “ Python for Programmers”, Pearson						
2	Reema Thareja,” Problem Solving and programming with Python, Oxford						

Prepared By

Verified by

Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

University Press		
COURSEOUTCOMES: At the end of the course, learners will be able to		Bloom's Taxonomy Level
CO1	Develop algorithmic solutions to simple computational problems.	K3
CO2	Develop and execute simple Python programs.	K3
CO3	Write simple Python programs using conditionals and loops for solving problems.	K2
CO4	Decompose a Python program into functions.	K3
CO5	Represent compound data using Python lists, tuples, dictionaries etc.	K3

CP/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	2	2	-	-	-	-	1	1	2	2	2	1
CO2	2	3	2	3	2	-	-	-	2	2	3	2	3	2	1
CO3	2	3	2	1	1	-	-	-	2	2	3	2	2	3	1
CO4	2	3	2	2	3	-	-	-	2	2	3	2	2	3	1
CO5	2	3	1	2	2	-	-	-	-	-	-	1	3	2	2

AMC101 - EMPLOYMENT ENCHANCEMENT SKILLS							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	MC	2	0	0	0
Preamble							
Unit 1	RESUME WRITING					6	
Resume: Objective; Formats; Meticulous & Attention to Detail; Organizing Information; Highlight skills; Mistakes to avoid; Qualification & Skill; SWOT Analysis; Assignment – Draft Resume & Corrections							
Unit 2	INTERVIEW SKILLS					6	
Types of Interviews; Preparation – Company, Role, Brush up Concepts, Technical Strengths; Strengths & Weakness; Importance of Grooming; Interview Questions – HR & Technical; Non Verbal Communication; Negotiation Skills; How to start/end an interview; Group Discussion; Assignment – Preparation for “Tell me about yourself”, Mock Interviews.							
Unit 3	PROFESSIONAL ETIQUETTES					6	
Workplace Etiquette – Global & Local; Culture Sensitivity; Gender Sensitivity; Communication Netiquettes – Phone, Email, Social Media; Avoid Gossip; How to be personable yet be professional. Meetings: Types of meetings; Agenda; Schedule & Participants; Materials required; Minutes of Meeting.							
Unit 4	PRESENTATION SKILLS					6	
What is a Presentation; Develop an effective slide; Know your Slides; Know your Audience; Barriers in Presentation; Time Management; Listening to the silent audience; Question & Answer session;							

Prepared By

Verified by

Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604.

Feedback.		
Unit 5	COMMUNICATION AT WORKPLACE	6
Language & Communication; Types of Communication – Internal & External, Formal & Informal; Direction of Communication Flow – Downward, Upward, Lateral, Diagonal; Team Work; Emotional Intelligence		
		TOTAL: 30
TEXTBOOKS		
1	“Soft Skills & Employability Skills” by Sabina Pillai&Agn Fernandez	
2	“Soft Skills” by Meenakshi Raman &ShaliniUpadhyay	
3	“Campus Recruitment” by Ramanadhan Ramesh Babu, Israel Battu, Akash R Bhutada&Vijaya Lakshmi Krishnan	
REFERENCES		
1	“Personality Development & Soft Skills (Old Edition)” by Barun K Mitra	
2	“Soft Skills Training: A Workbook to develop Skills for Employment” by Frederick H Wentz	
3	“Ten Soft Skills You Need to Advance Your Career(Andre Keys Book 9)” by Lisa Smith	
4	“Get Your First Job: A Companion For Getting Your First Job – A Guide to Employability Skills & Career Planning” by AJ Balasubramanian&Dr J Sadakkadulla	

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	2	2	-	-	-	-	1	1	2	2	2	1
CO2	2	3	2	3	2	-	-	-	2	2	3	2	3	2	1
CO3	2	3	2	1	1	-	-	-	2	2	3	2	2	3	1
CO4	2	3	2	2	3	-	-	-	2	2	3	2	2	3	1
CO5	2	3	1	2	2	-	-	-	-	-	-	1	3	2	2

AMC102 - PROFESSIONAL ETHICS AND HUMAN VALUES							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	MC	2	0	0	0
Preamble	➤ To create an awareness on Engineering Ethics and Human Values. ➤ To understand social responsibility of an engineer. ➤ To appreciate ethical dilemma while discharging duties in professional life.						
Unit 1	HUMAN VALUES						2
Morals, Values and Ethics – Integrity – Work Ethic – Honesty – Courage –Empathy – Self-Confidence – Character							
Unit 2	ENGINEERING ETHICS						4
Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional							

Prepared By

Verified By

Approved By

Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.
Valuing Time - Co-operation - Commitment

Unit 3	ENGINEERING AS SOCIAL EXPERIMENTATION	3
Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study		

Unit 4	SAFETY, RESPONSIBILITIES AND RIGHTS	3
Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the three mile island and chernobyl case studies		

Unit 5	GLOBAL ISSUES	3
Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors -moral leadership		

TOTAL: 15

TEXTBOOKS

1	Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York 1996
2	Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004

REFERENCES

1	Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint now available).
2	Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Wadsworth Thompson Leatning, United States, 2000 (Indian Reprint now available).
3	John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
4	Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	1	-	-	-	2	1	-	-	2	-	2	-	1	-
CO2	1	-	1	-	2	-	-	-	2	-	-	-	-	-	-
CO3	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
CO4	-	2	-	-	-	-	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	2	-	-	-	2	-	2	-	1	-	-



Prepared By

Verified by





Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

AHS101 - தமிழ்மரபு

AHS101 - தமிழர்மரபு							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	HS	2	0	0	1
Preamble							
அலகு I	மொழிமற்றும்இலக்கியம்					3	
<p>இந்திய மொழிக் குடும்பங்கள்-திராவிட மொழிகள்-தமிழ் ஒரு செம்மொழி தமிழ் செவ்விலக்கியங்கள்-சங்க இலக்கியத்தின் சமயச்சார் பற்ற தன்மை சங்க இலக்கியத்தில்கிர்தல் அறம் - திருக்குறளில் மேலாண்மைக் கருத்துக்கள்-தமிழ்க் காப்பியங்கள்,தமிழகத்தில் சமணபௌத்த சமயங்களின் தாக்கம்-பக்தி இலக்கியம்,ஆழ்வார்கள் மற்றும் நாயன்மார்கள்-சிறுநிலக்கியங்கள்-தமிழில் நவீன இலக்கியத்தின் வளர்ச்சி தமிழ் இலக்கியவளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகியோரின் பங்களிப்பு.</p>							
அலகு II	மரபு -பாறை ஓவியங்கள் முதல் நவீன ஓவியங்கள் வரை சிற்பக்கலை					3	
<p>நடுகல் முதல் நவீன சிற்பங்கள் வரை - ஐம்பொன்சிலைகள்- பழங்குடியினர் மற்றும் அவர்கள் தயாரிக்கும் கைவினைப்பொருட்கள், பொம்மைகள் - தேர்செய்யும்கலை - சுடுமண்சிற்பங்கள் - நாட்டுப்புறத்தெய்வங்கள் - குமரி முனையில் திருவள்ளுவர் சிலை - இசைக்கருவிகள் - மிருதங்கம் , பறை, வீணை, யாழ், நாதஸ்வரம் - தமிழர்களின் சமூகபொருளாதார வாழ்வில் கோவில்களின் பங்கு.</p>							
அலகு III	நாட்டுப் புறக்கலைகள் மற்றும் வீரவிளையாட்டுகள்					3	
<p>தெருக்கூத்து,கரகாட்டம், வில்லுப்பாட்டு, கணியான்கூத்து, ஓயிலாட்டம், தோல்பாவைக்கூத்து, சிலம்பாட்டம், வளரி, புலியாட்டம், தமிழர்களின் விளையாட்டுகள்</p>							
அலகு IV	தமிழர்களின் திணைக் கோட்பாடுகள்					3	
<p>தமிழகத்தின் தாவரங்களும்,விலங்குகளும் - தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக்கோட்பாடுகள் - தமிழர்கள் போற்றிய அறக்கோட்பாடு - சங்ககாலத்தில் தமிழகத்தில் எழுத்தறிவும், கல்வியும் - சங்ககால நகரங்களும் துறைமுகங்களும் - சங்ககாலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி - கடல் கடந்த நாடுகளில் சோழர்களின் வெற்றி.</p>							
அலகு V	இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு					3	
<p>இந்திய விடுதலைப் போரில் தமிழர்களின் பங்கு - இந்தியாவின் பிறப்பகுதிகளில் தமிழ்ப் பண்பாட்டின் தாக்கம் - சுயமரியாதை இயக்கம் - இந்திய மருத்துவத்தில், சித்த மருத்துவத்தின்பங்கு - கல்வெட்டுகள், கையெழுத்துப்படிகள் - தமிழ்ப் புத்தகங்களின் அச்சு வரலாறு.</p>							

Prepared By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)

Verified By

PRINCIPAL
Approved By
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Senguvarchatram, Sriperumbudi
Chennai, Tamilnadu-631 604

		Total: 15
TEXTBOOKS		
1	தமிழகவரலாறு – மக்களும்பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு:தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).	
2	கணினித்தமிழ் – முனைவர்இல. சுந்தரம். (விகடன்பிரசுரம்).	
3	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)	
REFERENCES		
1	கீழடி – வைகை நதிக்கரையில் சங்க கால நகர நாகரிகம் (தொல்லியல்துறைவெளியீடு)	
2	பொருறை ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)	
3	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies	
4	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)	

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	2	-	1	-	2	-	-	-
CO5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

AHS101 -HERITAGE OF TAMILS							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		2	HS	1	0	0	1
Preamble							
UNIT I	LANGUAGE AND LITERATURE					3	
Language Families in India - Dravidian Languages – Tamil as a Classical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan.							
UNIT II	HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE					3	
Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.							
UNIT III	FOLK AND MARTIAL ARTS					3	
Therukoothu, Karagattam, VilluPattu, KaniyanKoothu, Oyilattam, Leather puppetry, Silambattam.							

Prepared By

Head of the Department

Verified by

Department of Information Technology

Jeppiaar Institute of Technology (Autonomous)

Sriperumbudur-631 604.

Principal

Jeppiaar Institute of Technology (Autonomous)

Kunnam, Sanguvarchatram, Sriperumbudur

Chennai, Tamilnadu 631 604

Valari, Tiger dance - Sports and Games of Tamils.		
UNIT IV	THINAI CONCEPT OF TAMILS	3
Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas		
UNIT V	CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE	3
Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.		
		Total: 15
TEXTBOOKS		
1	தமிழகவரலாறு – மக்களும்பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு:தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).	
2	கணினித்தமிழ் – முனைவர்இல. சுந்தரம். (விகடன்பிரசுரம்).	
3	Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)	
REFERENCES		
1	கீழடி – வைகை நதிக்கரையில் சங்க கால நகர நாகரிகம் (தொல்லியல்துறைவெளியீடு)	
2	பொருறை ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)	
3	Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies)	
4	The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)	

[Signature]
Prepared By

[Signature]
Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Singuvarchatram, Sriperumbudur-631 604.

[Signature]
PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Singuvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604.
Approved By

APH301 COMPUTATIONAL PHYSICS LAB							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	BS	0	0	4	2
Preamble	<ul style="list-style-type: none">➤ To learn the proper use of various kinds of physics laboratory equipment.➤ To learn how data can be collected, presented and interpreted in a clear and concise manner .➤ To make the student an active participant in each part of all exercises.						
LIST OF EXPERIMENTS							
1.Torsional pendulum - Determination of rigidity modulus of wire and moment of inertia of regular and irregular objects							
2.Simple harmonic oscillations of cantilever							
3. Non-uniform bending - Determination of Young's modulus							
4. Uniform bending - Determination of Young's modulus							
5. Laser- Determination of the wavelength of the laser using grating							
6. Air wedge - Determination of thickness of a thin sheet/wire							
7. (a) Optical fibre -Determination of Numerical Aperture and acceptance angle (b) Compact disc- Determination of width of the groove using laser.							
8.Ultrasonic interferometer – determination of the velocity of sound and compressibility of liquids							
				TOTAL:60			
COURSEOUTCOMES:				Bloom's Taxonomy Level			
At the end of the course, learners will be able to							
CO1	Understand the functioning of various physics laboratory equipment.			K2			
CO2	Use graphical models to analyze laboratory data.			K4			
CO3	Use mathematical models as a medium for quantitative reasoning and describing physical reality.			K2			
CO4	Access, process and analyze scientific information.			K4			
CO5	Solve problems individually and collaborative.			K3			

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	1	1	-	-	-	-	-	-	-	-	-	-
CO2	3	3	3	1	1	-	-	-	-	-	-	-	-	-	-
CO3	3	2	3	1	1	-	-	-	-	-	-	-	-	-	-
CO4	3	3	2	1	1	-	-	-	-	-	-	-	-	-	-
CO5	3	2	3	1	1	-	-	-	-	-	-	-	-	-	-

Prepared By

Verified By

Approved By

Head of the Department
Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Senguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Senguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

ACS301 - PYTHON PROGRAMMING LABORATORY							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	ES	0	0	4	2
Preamble	<ul style="list-style-type: none">➤ To understand the problem solving approaches.➤ To learn the basic programming constructs in Python.➤ To practice various computing strategies for Python-based solutions to real world problems.➤ To use Python data structures - lists, tuples, dictionaries.➤ To do input/output with files in Python.						
LIST OF EXPERIMENTS							
1. Identification and solving of simple real life or scientific or technical problems, and developing flow charts for the same. (Electricity Billing, Retail shop billing, Sin series, weight of a motorbike, Weight of a steel bar, compute Electrical Current in Three Phase AC Circuit, etc.)							
2. Python programming using simple statements and expressions (exchange the values of two variables, circulate the values of n variables, distance between two points).							
3 Scientific problems using Conditionals and Iterative loops. (Number series, Number Patterns, pyramid pattern)							
4. Implementing real-time/technical applications using Lists, Tuples. (Items present in a library/Components of a car/ Materials required for construction of a building –operations of list & tuples)							
5. Implementing real-time/technical applications using Sets, Dictionaries. (Language, components of an automobile, Elements of a civil structure, etc.- operations of Sets & Dictionaries)							
6. Implementing programs using Functions. (Factorial, largest number in a list, area of shape)							
7. Implementing programs using Strings. (reverse, palindrome, character count, replacing characters)							
8. Implementing programs using written modules and Python Standard Libraries (pandas, numpy. Matplotlib, scipy)							
9. Implementing real-time/technical applications using File handling. (copy from one file to another, word count, longest word)							
10. Implementing real-time/technical applications using Exception handling. (divide by zero error, voter's age validity, student mark range validation)							
11. Exploring Pygame tool.							
12. Developing a game activity using Pygame like bouncing ball, car race etc.							
TOTAL: 60							
COURSEOUTCOMES:						Bloom's Taxonomy Level	
At the end of the course, learners will be able to							
CO1	Develop algorithmic solutions to simple computational problems					K3	
CO2	Develop and execute simple Python programs.					K3	
CO3	Implement programs in Python using conditionals and loops for solving problems.					K3	
CO4	Deploy functions to decompose a Python program.					K3	
CO5	Process compound data using Python data structures.					K3	

Prepared By

Verified by

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Singuvarchatram, Sriperumbudur-631 604.

PRINCIPAL
Approved By
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Singuvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

CP/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	1	1	1	-	-	-	-	2	2	2	-
CO2	3	2	-	-	1	1	1	-	-	-	-	2	2	2	-
CO3	3	2	-	-	1	1	1	-	-	-	-	2	2	2	-
CO4	3	2	-	-	1	1	1	-	-	-	-	2	2	2	-
CO5	3	2	-	-	1	1	1	-	-	-	-	2	2	2	-

AHS301 - COMMUNICATION SKILLS AND TECHNICAL WRITING							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	HS	0	0	2	1
Preamble	<ul style="list-style-type: none">➤ Impart a thorough understanding of the principles underlying effective technical communication.➤ Develop the skills necessary to tailor technical communication to diverse audience needs.➤ Enhance proficiency in using language techniques and understanding genres related to technical communication.➤ Equip students with the ability to utilize technological tools to improve technical communication practices.➤ Foster an awareness of ethical considerations and global perspectives in technical communication.						
Unit 1	PRINCIPLES OF TECHNICAL COMMUNICATION						12
Listening -Brief video snippets of conversational moments from movies and short documentaries Speaking- Presenting oneself, introducing others, inviting people, and explaining places. Reading - Short passages that need understanding include inference and critical analysis. Writing-Finishing missing phrases and constructing suggestions based on supplied information. Grammar- Who-Questions and Yes/No Questions - Parts of Speech. Vocabulary development: prefixes, suffixes, articles, countable and uncountable nouns.							
Unit 2	AUDIENCE-CENTERED COMMUNICATION						12
Listening: Deep Listening - Talk Shows and Debates. Reading: In depth Reading: Scanning Passages Speaking: Describe current issues, happenings, etc. Writing: Instructions, Recommendations, Note Taking, and Paragraph Writing Grammar: Continuous tenses, prepositions and articles Vocabulary: Phrasal verbs and one-word substitutes							
Unit 3	LANGUAGE TECHNIQUES AND GENRES IN TECHNICAL COMMUNICATION						12
Listening: Listening to lectures, podcasts, audio books. Reading: Interpretation of Tables, Charts and Graphs Speaking: SWOT Analysis on oneself and Narrating incidents Writing: Formal Letter Writing, Covering Letter and Memos. Grammar: Perfect Tenses and Discourse Markers							

Prepared By

Verified by

Approved By

Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kynnam, Sunguvarchattram, Sriperumbudur-631 604.

Jeppiaar Institute of Technology (Autonomous)
 Kynnam, Sunguvarchattram, Sriperumbudur
 Chennai, Tamilnadu-631 604

Vocabulary: Nouns, usage of keywords		
Unit 4	TECHNOLOGICAL TOOLS USED IN COMMUNICATION	12
Listening: Instructional videos, webinars on personal branding and networking and TED talks Reading: Manuals, Research papers or articles, Graphic narratives, AI tools used in reading Speaking: Participating in and conducting mock virtual meetings, focusing on presentation skills and etiquette. Mock networking events and Elevator Pitch Writing: E-Mails, drafting formal messages in social media handles, and Usage of AI prompts. Grammar: Adjectives, Verbs and Adverbs.		
Unit 5	ETHICAL AND GLOBAL PERSPECTIVES IN TECHNICAL COMMUNICATION	12
Listening: Podcasts, documentaries and webinars on digital ethics and cybersecurity. Reading: Articles on fundamental ethical principles and case studies. Speaking: Cultural sensitivity and representation cross-cultural communication strategies Mock meetings to practice global collaboration. Writing: Case study analysis reports on legal and ethical responsibilities. Proposals for implementing sustainable communication practices. Grammar: Reported Speech, Idioms and phrases and Loan words		
TOTAL: 60		
TEXTBOOKS		
1	Effective Technical Communication by M. Ashraf Rizvi (Author) 2nd Edition Paperback 2017	
2	Sylvan Barnet and Hugo Bedau, 'Critical Thinking Reading and Writing', Bedford/st. Martin's: Fifth Edition (June 28, 2004)	
3	Meenakshi Upadhyay, Arun Sharma – Verbal Ability and Reading Comprehension.	
4	Teaching Speaking: A Holistic Approach, Book by Anne Burns and Christine Chuen Meng Goh, Cambridge.	
REFERENCES		
1	Technical Communication: A Reader-Centered Approach" by Paul V. Anderson	
2	"Technical Writing: Process and Product" by Sharon J. Gerson and Steven M. Gerson	
3	"English for Engineers and Technologists: A Skill Approach" by Jeyanthi G. and Ramasamy P	
4	"A Handbook for Technical Writers and Editors" by M. Ragunathan and M. Sundararajan	
COURSEOUTCOMES:		
At the end of the course, learners will be able to		Bloom's Taxonomy Level
CO1	To create clear and successful technical publications, use core technical communication concepts.	K2
CO2	Modify technical communication to the requirements and expectations of various audiences.	K2
CO3	Use proper language and genres to effectively communicate technical knowledge.	K2
CO4	Use technology technologies to improve the generation, management, and dissemination of technical material.	K2

Prepared By

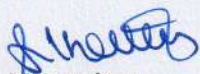
Verified by

Approved By


Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sanguvarchatram, Sriperumbudur-631 604.

Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sanguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

CO5	Navigate ethical quandaries and explore global views in technological communication methods.	K2
-----	--	----


Prepared By

Verified by


Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.


Principal
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604



JEPPIAAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

"Self-Belief | Self-Discipline | Self-Respect"

Kunnam, Sunguvarchatram, Sriperumbudur – 631 604.



DEPARTMENT OF INFORMATION TECHNOLOGY
AUTONOMOUS CURRICULUM & SYLLABUS R2024
CHOICE BASED CREDIT SYSTEM

SEMESTER II

[Signature]
 Prepared By

Verified by

[Signature]
Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

[Signature]
 Approved By

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

AMA102 DISCRETE MATHEMATICS								
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C	
		2	BS	3	1	0	4	
Preamble	<ul style="list-style-type: none">➤ Extend student's Logical and Mathematical ability to deal with abstraction➤ Acquire basics of set theory, functions and counting ,apply them in day to day problems➤ Understand the fundamental concepts of the Graph theory and Network connectivity➤ Gain the concepts to identify structures of algebraic nature, prove and use properties about them➤ Learn relations, Lattice, Boolean algebras and their properties to comprehend problems in computer Science.							
Unit 1	FOUNDATION OF LOGIC AND PROOFS					9+3		
Propositional Logic- Connectives - Propositional equivalences -Normal form -Predicates and Quantifiers - Nested Quantifiers -Validity of a well-formed formula- Rules of inference.								
Unit 2	COMBINATORICS					9+3		
Counting: The basics of counting - The pigeonhole principle - Permutations and Combinations - Recurrence relations: solving recurrence relations, generating functions - Inclusion-Exclusion principle : application of inclusion-exclusion.								
Unit 3	RELATIONS					9+3		
Relations - Equivalence relations - Functions - Bijections - Binary relations and graphs- Posets and Lattices -Hasse Diagrams - Boolean algebra.								
Unit 4	GRAPH THEORY					9+3		
Graphs and Graph models- Graph terminology and special types of Graphs - Matrix representation of Graphs and Graph isomorphism - connectivity - Eulerian and Hamiltonian Graphs.								
Unit 5	ALGEBRAIC STRUCTURE					9+3		
Algebraic structures with one binary operation - Semi groups and monoids - Groups - Subgroups - Homomorphism's - Normal subgroup and cosets - Lagrange's theorem - Algebraic structures (Definitions and simple examples only) with two binary operation- Ring, Integral domain and field.								
Total: 60								
TEXTBOOKS								
1	J.P.Tremblay., R.Manohar., "Discrete Mathematical Structures with Applications" Tata MCGRAW Hill 38 th edition 2010							
2	Kenneth.H. Rosen " Discrete Mathematics and its Applications" Tata MCGRAW Hill Special edition 2010							
3	T.Veerarajan "Discrete Mathematics with Graph Theory and Cominatorics" Tata MCGRAW Hill 33rd edition 2021							
REFERENCES								
1	Bernard Kolman., Robert Busby., Sharon C.Ross " Discrete Mathematical Structures " Pearson Publications 6 th edition 2013.							
2	Varsha H.Patil., Seymour Lipschutz., Mare lars lipson., " Discrete Mathematics" Revised 3 rd edition 2013							
3	https://home.iitk.ac.in/~aral/book/mth202.pdf							
4	https://archive.nptel.ac.in/courses/106/103/106103205							
COURSEOUTCOMES:							Bloom's Taxonomy	

Prepared By

Verified by

Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

CO1	Demonstrate the ability to write and evaluate a proof or outline the basic structure and give examples of each proof technique described.	K3
CO2	Apply counting principles to determine probabilities in engineering problems.	K3
CO3	Demonstrate the relations and functions and to determine their properties in solving engineering problems.	K3
CO4	Develop graph theory tools to map day-to-day applications.	K3
CO5	Expose to the concepts and properties of algebraic structures which provides solutions in design and analysis of algorithms.	K2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-
CO3	3	3	3	1	-	-	-	-	-	-	-	-	1	-	-
CO4	3	2	3	-	-	-	-	-	-	-	-	-	1	1	-
CO5	3	2	3	-	-	-	-	-	-	-	-	-	-	1	-
												1	1	-	-

AEC103 - BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

AEC103 - BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		2	BS	3	0	0	3
Preamble	<p>➤ This course provides the foundation for understanding various aspects of electrical and electronics engineering. From the basics of circuit theory to the intricacies of semiconductor devices, this subject delves into the heart of electrical and electronic systems.</p>						
Unit 1	ELECTRICAL CIRCUITS					9	
DC Circuits: Circuit Components: Conductor, Resistor, Inductor, Capacitor – Ohm's Law - Kirchhoff's Laws –Independent and Dependent Sources – Simple problems- Nodal Analysis, Mesh analysis with independent sources only (Steady state) Introduction to AC Circuits and Parameters: Waveforms, Average value, RMS Value, Instantaneous power, real power, reactive power, power factor.							
Unit 2	ELECTRICAL MACHINES					9	
Construction and Working principle- DC Separately and Self excited Generators, EMF equation, Types and Applications. Working Principle of DC motors, Torque Equation, Types and Applications. Working Principle of Single-Phase Induction Motor.							
Unit 3	ANALOG ELECTRONICS					9	
Resistor, Inductor and Capacitor in Electronic Circuits- Semiconductor Materials: Silicon & Germanium – PN Junction Diodes, Zener Diode –Characteristics – Bipolar Junction Transistor, JFET, MOSFET, I-V Characteristics.							
Unit 4	DIGITAL ELECTRONICS					9	
Review of number systems, binary codes, error detection and correction codes, Combinational logic-							

Prepared By

Head of the Department

Department of Information Technology

Jeppiaar Institute of Technology (Autonomous)

K. J. Somasundaram, Sriperumbudur-631 604

Jeppiaar Institute of Technology

K. J. Somasundaram, Sriperumbudur

Chennai, Tamilnadu-631 604

Approved By

representation of logic functions-SOP and POS forms, K-map representations - minimization using K maps (Simple Problems only).

Unit 5**MEASUREMENTS AND INSTRUMENTATION****9**

Functional elements of an instrument, Standards and calibration, Operating Principle, types -Moving Coil and Moving Iron meters, Instrument Transformers-CT and PT, DSO- Block diagram- Data Acquisition Systems.

TOTAL: 45**TEXTBOOKS**

- | | |
|---|--|
| 1 | Kothari DP and I.J Nagrah, "Basic Electrical and Electronics Engineering", Second Edition, McGraw Hill Education, 2020 |
| 2 | S.K.Bhattacharya "Basic Electrical and Electronics Engineering", Pearson Education, Second Edition, 2011 |
| 3 | Sedha R.S., "A textbook book of Applied Electronics", S. Chand & Co., 2008 |
| 4 | James A .Svoboda, Richard C. Dorf, "Dorf's Introduction to Electric Circuits", Wiley, 2018. |
| 5 | .K. Sawhney, Puneet Sawhney 'A Course in Electrical & Electronic Measurements & Instrumentation', DhanpatRai and Co, 2015. |

REFERENCES


- | | |
|---|--|
| 1 | Kothari DP and I.J Nagrah, "Basic Electrical Engineering", Fourth Edition, McGraw Hill Education, 2019 |
| 2 | Thomas L. Floyd, 'Digital Fundamentals', 11th Edition, Pearson Education, 2011 |
| 3 | Albert Malvino, David Bates, 'Electronic Principles, McGraw Hill Education; 1th edition, 2011 |
| 4 | Mahmood Nahvi and Joseph A. Edminister, "Electric Circuits", Schaum' Outline Series, McGraw Hill. |

COURSEOUTCOMES:**At the end of the course, learners will be able to****Bloom's Taxonomy Level**

CO1	Compute the electric circuit parameters for simple problems.	K2
CO2	Explain the working principle and applications of electrical machines.	K2
CO3	Analyze the characteristics of analog electronic devices.	K2
CO4	Explain the basic concepts of digital electronics.	K2
CO5	Explain the operating principles of measuring instruments	K2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
CO2	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
CO3	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
CO4	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
CO5	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1


Prepared By

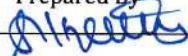

Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunquvachalam, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunquvachalam, Sriperumbudur-631 604
Approved By

CO4	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
CO5	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1

AAI101 - INTRODUCTION TO DATA SCIENCE										
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C			
		2	ES	3	0	0	3			
Preamble	<ul style="list-style-type: none">➤ To understand the data science fundamentals and process.➤ To learn to describe the data for the data science process.➤ To learn to describe the relationship between data.➤ To utilize the Python libraries for Data Wrangling.➤ To present and interpret data using visualization libraries in Python									
Unit 1	INTRODUCTION						9			
Data Science: Benefits and uses – facets of data - Data Science Process: Overview – Defining research goals – Retrieving data – Data preparation - Exploratory Data analysis – build the model–presenting findings and building applications - Data Mining - Data Warehousing – Basic Statistical descriptions of Data										
Unit 2	DESCRIBING DATA						9			
Types of Data - Types of Variables -Describing Data with Tables and Graphs –Describing Data with Averages - Describing Variability - Normal Distributions and Standard (z) Scores										
Unit 3	DESCRIBING RELATIONSHIPS						9			
Correlation –Scatter plots –correlation coefficient for quantitative data –computational formula for correlation coefficient – Regression –regression line –least squares regression line – Standard error of estimate – interpretation of r^2 –multiple regression equations –regression towards the mean										
Unit 4	PYTHON LIBRARIES FOR DATA WRANGLING						9			
Basics of Numpy arrays –aggregations –computations on arrays –comparisons, masks, Boolean logic – fancy indexing – structured arrays – Data manipulation with Pandas – data indexing and selection – operating on data – missing data – Hierarchical indexing – combining datasets –aggregation and grouping – pivot tables										
Unit 5	DATA VISUALIZATION						9			
Importing Matplotlib – Line plots – Scatter plots – visualizing errors – density and contour plots – Histograms – legends – colors – subplots – text and annotation – customization – three dimensional plotting – Geographic Data with Base map - Visualization with Sea born.										
TOTAL: 45										
TEXTBOOKS										
1	David Cielen, Arno D. B. Meysman, and Mohamed Ali, “Introducing Data Science”, Manning Publications, 2016. (Unit I)									
2	Robert S. Witte and John S. Witte, “Statistics”, Eleventh Edition, Wiley Publications, 2017.(Units II and III									
3	Jake Vander Plas, “Python Data Science Handbook”, O’Reilly, 2016. (Units IV and V)									
REFERENCES										
1	Allen B. Downey, “Think Stats: Exploratory Data Analysis in Python”, Green Tea Press, 2014.									

Prepared By



Verified By

Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

Approved By

PRINCIPAL
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

COURSEOUTCOMES: At the end of the course, learners will be able to		Bloom's Taxonomy Level
CO1	Define the data science process	K1
CO2	Understand different types of data description for data science process	K2
CO3	Gain knowledge on relationships between data	K2
CO4	Use the Python Libraries for Data Wrangling	K3
CO5	Apply visualization Libraries in Python to interpret and explore data	K3

CP/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	2	2	-	-	-	-	1	1	2	2	2	1
CO2	2	3	2	3	2	-	-	-	2	2	3	2	3	2	1
CO3	2	3	2	1	1	-	-	-	2	2	3	2	2	3	1
CO4	2	3	2	2	3	-	-	-	2	2	3	2	2	3	1
CO5	2	3	1	2	2	-	-	-	-	-	-	1	3	2	2

ACS103 - COMPUTER ORGANIZATION							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		2	PC	3	0	0	3
Preamble	<ul style="list-style-type: none">➤ To identify the functional units in a digital computer system.➤ To distinguish between the various ISA styles.➤ To trace the execution sequence of an instruction through the processor.➤ To evaluate different computer systems based on performance metrics.➤ To understand the fundamentals of memory and I/O systems and their interface with the processor						
Unit 1	FUNDAMENTALS OF COMPUTER SYSTEMS					9	
Functional Units of a Digital Computer – Operation and Operands of Computer Hardware – Software Interface – Translation from a High Level Language to Machine Language – Instruction Set Architecture – RISC and CISC Architectures – Addressing Modes – Performance Metrics – Power Law – Amdahl’s Law.							
Unit 2	ARITHMETIC FOR COMPUTERS					9	
Addition and Subtraction – Fast Adders – Multiplication: Booths Algorithm, Bit Pair Recoding – Division: Restoring and Non-Restoring – Floating Point Numbers: Single and Double Precision – Arithmetic Operations – ALU Design.							
Unit 3	PROCESSOR					9	
Design Convention of a Processor – Building a MIPS Datapath and designing a Control Unit – Execution of a Complete Instruction – Hardwired and Micro programmed Control – Introduction to Multicore – Graphics Processing Units- Case study: NVIDIA GPU							
Unit 4	MEMORY AND I/O					9	
Types of Memories – Need for a hierarchical memory system –Cache memories– Memory Mapping							

Prepared By

Verified by

Approved By

Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnath, Senguvarchatram, Sriperumbudur-631 604.

Jeppiaar Institute of Technology (Autonomous)
 Kunnath, Senguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

Improving Cache Performance – Virtual Memory – Memory Management Techniques – Accessing I/O devices – Programmed Input/output – Interrupts – Direct Memory Access.

Unit 5**PARALLEL ARCHITECTURE****9**

Exploitation of more ILP –Dynamic Scheduling: Tomasulo's Algorithm –Array Processor- Vector Processor – Basic Concepts of Pipelining – Pipelined Implementation of Datapath and Control Unit – Hazards – Structural, Data and Control Hazards–Overview of Next Generation Processors.

TOTAL: 45**TEXTBOOKS**

1	David A. Patterson, John L. Hennessy, "Computer Organization and Design: The Hardware/Software Interface", Fifth Edition, Morgan Kaufmann/Elsevier, 2013.
2	Carl Hamacher, Zvonko Vranesic, Safwat Zaky, Naraig Manjikian, "Computer Organization and Embedded Systems", Sixth Edition, Tata McGraw Hill, 2012.

REFERENCES

1	William Stallings, "Computer Organization and Architecture – Designing for Performance", Tenth Edition, Pearson Education, 2016.
2	John L. Hennessy, David A. Patterson, "Computer Architecture – A Quantitative Approach", Morgan Kaufmann / Elsevier Publishers, Fourth Edition, 2007.
3	V.P. Heuring, H.F. Jordan, "Computer Systems Design and Architecture", Second Edition, Pearson Education, 2004.
4	Douglas E. Comer, "Essentials of Computer Architecture", Sixth Edition, Pearson Education, 2012

COURSE OUTCOMES:**At the end of the course, learners will be able to****Bloom's Taxonomy Level**

CO1	Interpret assembly language instructions.	K2
CO2	Design the ALU circuits.	K3
CO3	Implement a control unit as per the functional specification.	K3
CO4	Analyze memory, I/O devices and cache structures for processor.	K3
CO5	Evaluate the performance of computer systems.	K5

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	2	2	-	-	-	-	1	1	2	2	2	1
CO2	2	3	2	3	2	-	-	-	2	2	3	2	3	2	1
CO3	2	3	2	1	1	-	-	-	2	2	3	2	2	3	1
CO4	2	3	2	2	3	-	-	-	2	2	3	2	2	3	1
CO5	2	3	1	2	2	-	-	-	-	-	-	1	3	2	2


Prepared By


Verified By


Approved By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sanguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604.

Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sanguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

ACS104 - FUNDAMENTALS OF CLOUD COMPUTING							
Programme & Branch	B.Tech & IT	Sem	Category	L	T	P	C
		2	ES	3	0	0	3
Preamble	<ul style="list-style-type: none">➤ To understand the principles of cloud architecture, models and infrastructure.➤ To understand the concepts of virtualization and virtual machines.➤ To gain knowledge about virtualization Infrastructure.➤ To explore and experiment with various Cloud deployment environments.➤ To learn about the security issues in the cloud environment.						
Unit 1	BASIC CONCEPTS OF CLOUD COMPUTING						9
Network-Based Systems- Concepts of Distributed Systems. Definition of Cloud, Concepts of Cloud Computing. Cloud Service Providers, NIST Cloud Computing, Cloud Characteristics							
Unit 2	CLOUD INFRASTRUCTURE						9
Cloud Pros and Cons. Layered Architectural Design, Cloud Delivery Models. Cloud Deployment Models, Architectural Design Challenges, Cloud Storage - Storage-as-a-Service – Advantages of Cloud Storage - Cloud Storage Providers - S3.							
Unit 3	VIRTUALIZATION BASICS						9
Virtual Machine and its architecture-VM primitive operations- Virtual Infrastructures- Data Center Virtualization for Cloud Computing-Levels of Virtualization Implementation – VMM Design Requirements, Virtualization Support at the OS Level, Physical versus Virtual Clusters. Live VM Migration Steps							
Unit 4	BUILDING CLOUD NETWORKS						9
Designing and Implementing a Data Center-Based Cloud Installing Open Source Cloud service. Virtual Box – Eucalyptus Public Cloud Platforms: Google App Engine, Amazon Web Services (AWS). Google Cloud Platform. Emerging Cloud Software Environments							
Unit 5	CLOUD SECURITY AND APPLICATIONS						9
Cloud Security Infrastructure Security Network level security- Host level security, Application level security- Data privacy and security Issues. Access Control and Authentication in cloud computing, IAM Security Standards							
TOTAL: 45							
TEXTBOOKS							
1	Kai Hwang, Geoffrey C. Fox, Jack G. Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things, Morgan Kaufmann Publishers, 2012.						
2	Mastering Cloud Computing Foundations and Applications Programming RajkumarBuyya, Christian Vechhiola, S. ThamaraiSelvi						
REFERENCES							
1	Cloud Computing: Concepts, Technology & Architecture by Thomas Erl, Ricardo Puttini, Zaigham Mohammad 2013						
2	Krutz, R. L., Vines, R. D, "Cloud security. A Comprehensive Guide to Secure Cloud Computing", Wiley Publishing, 2010						
COURSEOUTCOMES:							Bloom's Taxonomy
Prepared By							Approved By

Prepared By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

Principal
Approved By
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

At the end of the course, learners will be able to		Level
CO1	Understand the design challenges in the cloud.	K2
CO2	Apply the concept of virtualization and its types.	K3
CO3	Experiment with virtualization of hardware resources.	K3
CO4	Develop and deploy services on the cloud and set up a cloud environment.	K3
CO5	Explain security challenges in the cloud environment.	K2

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	1	-	-	-	2	3	1	2	3	3	3
CO2	2	2	2	3	3	-	-	-	1	2	2	3	1	1	3
CO3	3	3	3	3	3	-	-	-	2	1	1	2	2	1	3
CO4	3	3	1	1	1	-	-	-	1	3	1	3	2	1	1
CO5	3	2	2	2	3	-	-	-	2	3	2	2	2	3	3

AMC103 - INDIAN CONSTITUTION							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		2	MC	2	0	0	0
Preamble	<ul style="list-style-type: none">➤ This Course intends to impart a comprehensive outlook about the nature of the Indian constitution; rights and duties of the citizens, Political Institutions of Central and State governments and its relationship with each other and the organization and functions of local government.➤ A detailed analysis of the functions of the statutory bodies are incorporated in this course.						
Unit 1						9	
Constitutional Assembly – Philosophy – Preamble – Salient Features of Indian Constitution							
Unit 2						9	
Fundamental Rights – Directive Principles of State Policy – Fundamental Duties.							
Unit 3						9	
Union Executive – President: Election – Powers and Functions – Council of Ministers – Prime Minister: Position and Powers – Relationship between Prime Minister and President. State Executive – Governor: Powers and functions – Chief Minister: Position and Powers – Relationship between Chief Minister and Governor.							
Unit 4						9	
Union Legislature: Structure, Powers and Functions – Speaker: Power and Functions – Procedures of Constitutional Amendment – State Legislature: Structure, Powers and Functions.							
Unit 5						9	
Judiciary – Supreme Court: Powers and Functions – High Court : Powers and Functions – Judicial Review							
TOTAL: 45							

Prepared By

Verified by

Approved By

Head of the Department
 Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

TEXTBOOKS

1	Siwach,J.R, Dynamics of Indian Government and Politics, New Delhi: Sterling, 1985.
2	Narang, A.S., Indian Government and Politics New Delhi: Gitanjali ,1995

REFERENCES

1	Thakur, R. The Government and Politics of India : London: Macmillan, 1995.
2	Gupta,D.C, Indian Government and Politic, New Delhi, 1996

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1		-	-	-	3	3	3	-	3	-	2	-	1	-
CO2	2		-	-	-	3	3	3	-	3	-	2	-	1	-
CO3	2		-	-	-	3	3	3	-	3	-	2	-	1	-
CO4	-	3	-	-	-	3	3	3	-	3	-	2	-	1	-
CO5	1		-	-	-	3	3	3	-	3	-	2	-	1	-

AEC302 - BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY

Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		2	ES	0	0	4	2
Preamble	➤ Soldering and testing simple electronic circuits; ➤ Assembling and testing simple electronic components on PCB. ➤ Study of basic electrical and digital equipment.						

LIST OF EXPERIMENTS

1. Soldering simple electronic circuits and checking continuity.
2. Assembling and testing electronic components on a small PCB.
3. Study of electronic components and equipment's.
 - (a) Resistor Color coding using digital multi-meter.
 - (b) Assembling electronic components on breadboard.
4. Verification of Logic Gates
5. Verification of Half Adder and Full Adder
6. Measurement of electrical quantities-voltage current, power & power factor in RLC circuit
7. Verification of KVL, KCL
8. Verification of Thevenin, Norton, Superposition Theorem
9. Fluorescent lamp wiring
10. Stair case wiring
11. Study of iron box wiring and working
12. Assembly and dismantle of computer/ laptop

TOTAL: 60**COURSE OUTCOMES:**

At the end of the course, learners will be able to

Bloom's Taxonomy Level

CO1	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.	K3
CO2	Demonstrate the wiring of various electrical joints in common household electrical wire work.	K3

Prepared By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Sriperumbudur

Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarpetram, Sriperumbudur
Chennai, Tamilnadu-631 604

Approved By

CO3	Test the working of basic logic gates.	K3
CO4	Understand the working of basic electrical devices	K3
CO5	Apply basic electrical concepts to implement basic electrical circuits.	K3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
CO2	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
CO3	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
CO4	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
CO5	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1

ACS302 CLOUD COMPUTING LABORATORY

Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		2	ES	0	0	4	2
Preamble	<ul style="list-style-type: none"> ➤ To learn the basics and types of Virtualization ➤ To understand the Hypervisors and its types ➤ To Explore the Virtualization Solutions ➤ To Experiment the virtualization platforms 						

LIST OF EXPERIMENTS

1. Create type 2 virtualization in VMWARE or any equivalent Open Source Tool. Allocate memory and storage space as per requirement. Install Guest OS on that VMWARE.
2. Find a procedure for the following
 - a. Shrink and extend virtual disk
 - b. Create, Manage, Configure and schedule snapshots
 - c. Create Spanned, Mirrored and Striped volume
 - d. Create RAID 5 volume
3. Desktop Virtualization using VNC and Chrome Remote Desktop
4. Create type 2 virtualization on ESXI 6.5 server
5. Create a VLAN in CISCO packet tracer
6. Install KVM in Linux
7. Create Nested Virtual Machine (VM under another VM)
8. Install a C compiler in the virtual machine created using a virtual box and execute Simple Programs
9. Install Google App Engine. Create a hello world app and other simple web applications using python/java.
10. Find a procedure to transfer the files from one virtual machine to another virtual machine

TOTAL: 60

COURSE OUTCOMES:

At the end of the course, learners will be able to

Bloom's Taxonomy Level

CO1	Analyze the virtualization concepts and Hypervisor	K4
CO2	Apply the Virtualization for real-world applications	K3
CO3	Install & Configure the different VM platforms	K2
CO4	Experiment with the VM with various software	K4
CO5	Develop and deploy services on the cloud and setup a cloud environment	K3

Prepared By

Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)

Verified by

Jeppiaar Institute of Technology (Autonomous)
Kannam, Senguvanchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

Approved By

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	1	-	-	-	2	3	1	2	3	3	3
CO2	2	2	2	3	3	-	-	-	1	2	2	3	1	1	3
CO3	3	3	3	3	3	-	-	-	2	1	1	2	2	1	3
CO4	3	3	1	1	1	-	-	-	1	3	1	3	2	1	1
CO5	3	2	2	2	3	-	-	-	2	3	2	2	2	3	3

AHS301 - COMMUNICATION SKILLS AND TECHNICAL WRITING							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		1	HS	0	0	2	1
Preamble	<ul style="list-style-type: none">➤ Impart a thorough understanding of the principles underlying effective technical communication.➤ Develop the skills necessary to tailor technical communication to diverse audience needs.➤ Enhance proficiency in using language techniques and understanding genres related to technical communication.➤ Equip students with the ability to utilize technological tools to improve technical communication practices.➤ Foster an awareness of ethical considerations and global perspectives in technical communication.						
Unit 1	PRINCIPLES OF TECHNICAL COMMUNICATION					12	
Listening -Brief video snippets of conversational moments from movies and short documentaries Speaking- Presenting oneself, introducing others, inviting people, and explaining places. Reading - Short passages that need understanding include inference and critical analysis. Writing-Finishing missing phrases and constructing suggestions based on supplied information. Grammar- Who-Questions and Yes/No Questions - Parts of Speech. Vocabulary development: prefixes, suffixes, articles, countable and uncountable nouns.							
Unit 2	AUDIENCE-CENTERED COMMUNICATION					12	
Listening: Deep Listening - Talk Shows and Debates. Reading: In depth Reading: Scanning Passages Speaking: Describe current issues, happenings, etc. Writing: Instructions, Recommendations, Note Taking, and Paragraph Writing Grammar: Continuous tenses, prepositions and articles Vocabulary: Phrasal verbs and one-word substitutes							
Unit 3	LANGUAGE TECHNIQUES AND GENRES IN TECHNICAL COMMUNICATION					12	
Listening: Listening to lectures, podcasts, audio books. Reading: Interpretation of Tables, Charts and Graphs Speaking: SWOT Analysis on oneself and Narrating incidents Writing: Formal Letter Writing, Covering Letter and Memos. Grammar: Perfect Tenses and Discourse Markers Vocabulary: Nouns, usage of keywords							

Prepared By

Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
K. Ram Sundararaman Sriperumbudur-631 604.


Verified by

Principal
Jeppiaar Institute of Technology (Autonomous)
K. Ram Sundararaman, Sriperumbudur
Chennai, Tamilnadu-631 604

Approved By

Unit 4	TECHNOLOGICAL TOOLS USED IN COMMUNICATION	12
Listening: Instructional videos, webinars on personal branding and networking and TED talks Reading: Manuals, Research papers or articles, Graphic narratives, AI tools used in reading Speaking: Participating in and conducting mock virtual meetings, focusing on presentation skills and etiquette. Mock networking events and Elevator Pitch Writing: E-Mails, drafting formal messages in social media handles, and Usage of AI prompts. Grammar: Adjectives, Verbs and Adverbs.		
Unit 5	ETHICAL AND GLOBAL PERSPECTIVES IN TECHNICAL COMMUNICATION	12
Listening: Podcasts, documentaries and webinars on digital ethics and cybersecurity. Reading: Articles on fundamental ethical principles and case studies. Speaking: Cultural sensitivity and representation cross-cultural communication strategies Mock meetings to practice global collaboration. Writing: Case study analysis reports on legal and ethical responsibilities. Proposals for implementing sustainable communication practices. Grammar: Reported Speech, Idioms and phrases and Loan words		
		TOTAL: 60
TEXTBOOKS		
1	Effective Technical Communication by M. Ashraf Rizvi (Author) 2nd Edition Paperback 2017	
2	Sylvan Barnet and Hugo Bedau, 'Critical Thinking Reading and Writing', Bedford/st. Martin's: Fifth Edition (June 28, 2004)	
3	Meenakshi Upadhyay, Arun Sharma – Verbal Ability and Reading Comprehension.	
4	Teaching Speaking: A Holistic Approach, Book by Anne Burns and Christine Chuen Meng Goh, Cambridge.	
REFERENCES		
1	Technical Communication: A Reader-Centered Approach" by Paul V. Anderson	
2	"Technical Writing: Process and Product" by Sharon J. Gerson and Steven M. Gerson	
3	"English for Engineers and Technologists: A Skill Approach" by Jeyanthi G. and Ramasamy P	
4	"A Handbook for Technical Writers and Editors" by M. Ragunathan and M. Sundararajan	
COURSE OUTCOMES: At the end of the course, learners will be able to		Bloom's Taxonomy Level
CO1	To create clear and successful technical publications, use core technical communication concepts.	K2
CO2	Modify technical communication to the requirements and expectations of various audiences.	K2
CO3	Use proper language and genres to effectively communicate technical knowledge.	K2
CO4	Use technology technologies to improve the generation, management, and dissemination of technical material.	K2
CO5	Navigate ethical quandaries and explore global views in technological communication methods.	K2

Prepared By



Head of Department

Department of Communication Technology

Jeppiaar Institute of Technology (Autonomous)

Verified by



 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Senguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

Approved By

PRINCIPAL



JEPPIAAR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

"Self-Belief | Self-Discipline | Self-Respect"

Kunnam, Sunguvarchatram, Sriperumbudur – 631 604.



DEPARTMENT OF INFORMATION TECHNOLOGY
AUTONOMOUS CURRICULUM & SYLLABUS R2024
CHOICE BASED CREDIT SYSTEM

SEMESTER III

[Signature]

Prepared By

Verified by

[Signature]

Head of the Department
Department of Information Technology
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur-631 604.

[Signature]
 Approved By

Principal
 Jeppiaar Institute of Technology (Autonomous)
 Kunnam, Sunguvarchatram, Sriperumbudur
 Chennai, Tamilnadu-631 604

AMA105 PROBABILITY AND STATISTICS

Programme & Branch	(COMMON TO CSE,IT,CSBS)	Sem.	Category	L	T	P	Credit
Prerequisites		3	PC	3	0	0	3
Preamble	<ul style="list-style-type: none">➤ Determine the probability value of one-dimensional random variables.➤ Illustrate the concepts of covariance, correlation and regression.➤ Discuss the concept of testing of hypothesis for small and large samples.➤ Demonstrate the difference between the types of design to experiments.➤ Identify and interpret the control charts for variables and attributes						
Unit-I	ONE DIMENSIONAL RANDOM VARIABLES						9+3
Random variable – Discrete and continuous random variables – Moments – Moment generating functions – Binomial, Poisson, Geometric, Uniform, Exponential and Normal distributions.							
Unit-II	TWO DIMENSIONAL RANDOM VARIABLES						9+3
Joint distributions – Marginal and Conditional distributions – Covariance – Correlation and linear regression – Transformation of random variables.							
Unit-III	TESTING OF HYPOTHESIS						9+3
Sampling distributions – Estimation of parameters – Statistical hypothesis – Large sample tests based on Normal distribution for single mean and difference of means – Tests based on t, Chi-square and F distributions for mean, variance, and proportion – Contingency table (test for independent) – Goodness of fit.							
Unit-IV	DESIGN OF EXPERIMENTS						9+3
One way and Two-way classifications – Completely randomized design – Randomized block design – Latin square design.							
Unit-V	STATISTICAL QUALITY CONTROL						9+3
Control charts for measurements (\bar{x} and R charts) – Control charts for attributes (p, c and np charts) – Tolerance limits - Acceptance sampling.							
Total:60							

TEXTBOOK:

1. R.A. Johnson, I. Miller and J. Freund, "Miller and Freund's Probability and Statistics for Engineers", Pearson Education, Asia, 8th Edition, 2015.
2. J.S. Milton and J.C. Arnold, "Introduction to Probability and Statistics", Tata McGraw Hill, 4th Edition, 2007.

REFERENCES:

1. J.L. Devore, "Probability and Statistics for Engineering and the Sciences", Cengage Learning, New Delhi, 8th Edition, 2014.
2. S.M. Ross, "Introduction to Probability and Statistics for Engineers and Scientists", 3rd Edition, Elsevier, 2004.
3. A. Papoulis, and S. Unni Krishna pillai, Probability, "Random Variables and Stochastic Processes", McGraw Hill Education India, 4th Edition, New Delhi, 2010.
4. M.R. Spiegel, J. Schiller and R.A. Srinivasan, "Schaum's Outline of Theory and Problems of Probability and Statistics", Tata McGraw Hill Edition, 2004.
5. R.E.Walpole, R.H.Myers, S.L. Myers and K.Ye, "Probability and Statistics for Engineers and Scientists".Pearson Education, Asia, 9th Edition, 2012.

COURSEOUTCOMES:**At the end of the course, learners will be able to****Bloom's Taxonomy Level**

CO1	Understand the fundamental knowledge of modern probability theory and standard distributions.	K4
CO2	Categorize the probability models and function of random variables based on one and two dimensional random variables.	K2
CO3	Employ the concept of testing the hypothesis in real life problems.	K4

Prepared By



Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kumaramangalam, Sriperumbudur-631 604

PRINCIPAL
Approved By
Jeppiaar Institute of Technology (Autonomous)
Kumaramangalam, Sriperumbudur-631 604
Chennai, Tamilnadu-631 604

CO4	Implement the analysis of variance for real life problems.	K2
CO5	Apply the statistical quality control in engineering and management problems.	K2

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	-	2	2	3	1	2	2	2	2	3	3	3
CO2	3	2	-	-	3	3	3	1	2	2	2	2	3	3	3
CO3	3	-	1	-	2	2	2	1	2	2	2	2	3	3	3
CO4	3	2	1	1	2	2	2	1	2	2	2	2	3	3	3
CO5	3	2	1	-	2	2	2	1	2	2	2	1	3	3	3

1–Slight,2–Moderate,3–Substantial,BT-Bloom'sTaxonomy

ACS105 OBJECT ORIENTED PROGRAMMING								
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C	
		4	PC	3	0	0	3	
Preamble	<ul style="list-style-type: none">➤ To learn the basics of Object-Oriented Programming➤ To know the principles of inheritance and polymorphism➤ To learn the concepts of generic methods and generic collections.							
Unit 1	INTRODUCTION TO OOP AND JAVA						9	
Overview of OOP – Object oriented programming paradigms – Features of Object Oriented Programming – Java Buzzwords – Overview of Java – Data Types, Variables and Arrays – Operators – Control Statements – Programming Structures in Java – Defining classes in Java – Constructors- Methods -Access specifiers - Static members- JavaDoc comments								
Unit 2	INHERITANCE, PACKAGES AND INTERFACES						9	
Overloading Methods – Objects as Parameters – Returning Objects –Static, Nested and Inner Classes. Inheritance: Basics– Types of Inheritance -Super keyword -Method Overriding – Dynamic Method Dispatch –Abstract Classes – final with Inheritance. Packages and Interfaces: Packages – Packages and Member Access –Importing Packages – Interfaces.								
Unit 3	EXCEPTION HANDLING AND MULTITHREADING						9	
Exception Handling basics – Multiple catch Clauses – Nested try Statements – Java’s Built-in Exceptions – User defined Exception. Multithreaded Programming: Java Thread Model–Creating a Thread and Multiple Threads – Priorities – Synchronization – Inter Thread Communication- Suspending –Resuming, and Stopping Threads –Multithreading. Wrappers – Auto boxing.								
Unit 4	I/O, GENERICS, STRING HANDLING						9	
I/O Basics – Reading and Writing Console I/O – Reading and Writing Files. Generics: Generics								

Prepared By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)

Jeppiaar Institute of Technology (Autonomous)
Kunnam, Senguvarchatram, Sriperumbu
Chennai, Tamilnadu-631 604

Approved By

Programming – Generic classes – Generic Methods – Bounded Types – Restrictions and Limitations. Strings: Basic String class, methods and String Buffer Class.

Unit 5	JAVAFX EVENT HANDLING, CONTROLS AND COMPONENTS	9
JAVAFX Events and Controls: Event Basics – Handling Key and Mouse Events. Controls: Checkbox, ToggleButton – RadioButtons – ListView – ComboBox – ChoiceBox – Text Controls – ScrollPane. Layouts – FlowPane – HBox and VBox – BorderPane – StackPane – GridPane. Menus – Basics – Menu – Menu bars – MenuItem.		
		TOTAL: 45
TEXTBOOKS		
1	Herbert Schildt, -Java: The Complete Referencel, 11 th Edition, McGraw Hill Education, New Delhi, 2019	
2	Herbert Schildt, -Introducing JavaFX 8 Programmingl, 1 st Edition, McGraw Hill Education, New Delhi, 2015	
REFERENCES		
1	Cay S. Horstmann, -Core Java Fundamentalsl, Volume 1, 11 th Edition, Prentice Hall, 2018.	
COURSE OUTCOMES:		
At the end of the course, learners will be able to		Bloom's Taxonomy Level
CO1	Apply the concepts of classes and objects to solve simple problems	K3
CO2	Develop programs using inheritance and interfaces	K3
CO3	Make use of exception handling mechanisms and multithreaded model to solve real world problems	K3
CO4	Build Java applications with I/O packages, string classes, Collections and generics concepts	K3
CO5	Integrate the concepts of event handling and JavaFX components and controls for developing GUI based applications	K3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	3	1	3	-	-	-	3	2	2	2	3	1	2
CO2	2	1	3	2	1	-	-	-	2	1	1	3	3	3	2
CO3	3	3	1	2	2	-	-	-	3	2	1	2	3	1	3
CO4	3	1	2	2	2	-	-	-	1	2	1	3	3	1	1
CO5	1	1	2	3	2	-	-	-	3	2	1	2	3	3	3

Prepared By

Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Senguvarchatram, Sriperumbudur-631 604.

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Senguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

Approved By

ACS106 DATA STRUCTURES AND ALGORITHMS USING PYTHON							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		3	PC	3	0	0	3
Preamble	<ul style="list-style-type: none">➤ To understand the concepts of ADTs➤ To design linear data structures – lists, stacks, and queues➤ To understand sorting, searching, and hashing algorithms➤ To apply Tree and Graph structures						
Unit 1	ABSTRACT DATA TYPES					9	
Abstract Data Types (ADTs) – ADTs and classes – introduction to OOP – classes in Python – inheritance – namespaces – shallow and deep copying. Introduction to analysis of algorithms – asymptotic notations – divide & conquer – recursion – analyzing recursive algorithms							
Unit 2	LINEAR STRUCTURES					9	
List ADT – array-based implementations – linked list implementations – singly linked lists – circularly linked lists – doubly linked lists – Stack ADT – Queue ADT – double ended queues – applications							
Unit 3	SORTING AND SEARCHING					9	
Bubble sort – selection sort – insertion sort – merge sort – quick sort – analysis of sorting algorithms – linear search – binary search – hashing – hash functions – collision handling – load factors, rehashing, and efficiency							
Unit 4	TREE STRUCTURES					9	
Tree ADT – Binary Tree ADT – tree traversals – binary search trees – AVL trees – heaps – multi-way search trees							
Unit 5	GRAPH STRUCTURES					9	
Graph ADT – representations of graph – graph traversals – DAG – topological ordering – greedy algorithms – dynamic programming – shortest paths – minimum spanning trees – introduction to complexity classes and intractability							
TOTAL: 45							
TEXTBOOKS							
1	Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser, “Data Structures & Algorithms in Python”, An Indian Adaptation, John Wiley & Sons Inc., 2021						
REFERENCES							
1	Lee, Kent D., Hubbard, Steve, “Data Structures and Algorithms with Python” Springer Edition 2015						
2	Rance D. Nicaise, “Data Structures and Algorithms Using Python”, John Wiley & Sons, 2011						
3	Aho, Hopcroft, and Ullman, “Data Structures and Algorithms”, Pearson Education, 1983.						
4	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, “Introduction to Algorithms”, Second Edition, McGraw Hill, 2002.						
5	Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, Fourth Edition, Pearson Education, 2014						
COURSEOUTCOMES: At the end of the course, learners will be able to				Bloom’s Taxonomy Level			
CO1	Explain abstract data types			K2			
CO2	Design, implement, and analyze linear data			K3			

Prepared By

Verified by

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Sriperumbudur-631 604

Approved By

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnathur, Singuvarachattam, Sriperumbudur
Chennai, Tamilnadu-631 604

	structures, such as lists, queues, and stacks,	
CO3	Design, implement, and analyze efficient tree structures to meet requirements such as searching, indexing, and sorting	K3
CO4	Model problems as graph problems and implement efficient graph algorithms to solve them	K3
CO5	Analyze the given scenario and choose appropriate data structures for solving problems	K3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	2	3	1	-	-	-	2	-	2	1	1	1	1
CO2	2	3	2	2	2	-	-	-	2	-	2	2	3	2	2
CO3	2	2	3	2	3	-	-	-	3	-	2	2	3	2	2
CO4	3	3	3	3	1	-	-	-	3	-	2	2	3	2	3
CO5	1	2	1	2	1	-	-	-	-	-	-	-	-	-	-

AMB152 ENTREPRENEURSHIP AND INNOVATION

Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		3	PC	3	0	0	3
Preamble	<ul style="list-style-type: none">➤ Entrepreneurs are the innovators that stimulate job growth, economic growth and development that allows any country to compete with and in the global economy. India, being far more developed and forward-looking country than some of the third world countries, can provide lead to entrepreneurial development activities.➤ The purpose of exposing the students to Entrepreneurship is to motivate them to look at entrepreneurship as a viable, lucrative and preferred career.➤ Entrepreneurs require a foundation in several key areas in order to be successful. This course will focus on multiple topics including: opportunities and challenges for new ventures, benefits/drawbacks of entrepreneurship, strategic management and forms of business ownership, marketing strategies, venture finance and human resource management.						
Unit 1	INTRODUCTION TO ENTREPRENEURSHIP						9
Meaning, Definition and concept of Enterprise, Entrepreneurship and Entrepreneurship Development, Evolution of Entrepreneurship, Theories of Entrepreneurship. Characteristics and Skills of Entrepreneurship, Concepts of Entrepreneurship, Emerging trends: Internet & E-commerce, Corporate Entrepreneurship – Nature, Concepts and Sustainability							
Unit 2	ENTREPRENEURIAL COMPETENCY						9

Prepared By

Verified By

Head of the Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Sriperumbudur-631 604

Jeppiaar Institute of Technology (Autonomous)
Kannam Senguvarchatram, Sriperumbudur
Tamil Nadu - 631 604

Approved By

Meaning and concept of Entrepreneurial Competency, Developing Entrepreneurial Competencies, Entrepreneurial Motivation: Meaning and concept of Motivation, Entrepreneurship Development Program: Needs and Objectives of EDPs, Phases of EDPs, Evaluation of EDPs. Negotiations

Unit 3	GOVERNMENT INITIATIVES	9
Role of Government in promoting Entrepreneurship, MSME policy in India, Agencies for Policy Formulation and Implementation: DIC, SISI, EDII, NEDB, Financial Support System: Forms of Financial support, Sources of Financial support, Development Financial Institutions.		
Unit 4	INNOVATION & PROJECT MANAGEMENT	9
Design Thinking, Business Design, The Adoption of Innovations, Idea Management. Project Management: Concept, Features, Classification of projects, Issues in Project Management, Project Identification, Project Formulation, Project Design and Network Analysis, Project Evaluation, Project Appraisal, Project Report Preparation, Specimen of a Project Report.		
Unit 5	FORMS OF BUSINESS OWNERSHIP	9
Forms of Business Ownership, Issues in selecting forms of ownership, Environmental Analysis, identifying problems and opportunities, Defining Business Idea, Business Plan, Business Process, Women Entrepreneurship, Family Business.		

TOTAL: 45

TEXTBOOKS

1	Khanna, S. S., Entrepreneurial Development, S. Chand, New Delhi.2020
2	Kuratko, F. Donald, Richard M. Hodgetts, Entrepreneurship: Theory, Process, Practice, Thomson, 7ed,2020

REFERENCES

1	Entrepreneurship: Strategies and Resources, 3/E -: Marc Dollinger; Prentice Hall, 2017
2	Bringing New Technology to Market- Kathleen R. Allen, Prentice Hall, 2020
3	Entrepreneurship in Action, 2/E - Mary Coulter; Prentice Hall, 2021

COURSE OUTCOMES:

At the end of the course, learners will be able to

Bloom's Taxonomy Level

CO1	Have the ability to discern distinct entrepreneurial traits.	K3
CO2	Know the parameters to assess opportunities and constraints	K2
CO3	Understand the systematic process to select and screen a business idea	K2
CO4	Design strategies for successful implementation of ideas	K3
CO5	Analyze the way for write a business plan.	K4

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	-	-	-	-	-	-	-	-	-	-	1	1
CO2	-	-	2	-	-	-	-	-	-	-	-	-	-	2	2
CO3	-	2	-	-	-	-	1	-	-	-	-	-	-	1	1
CO4	-	3	-	-	-	-	-	-	-	-	-	-	-	1	1
CO5	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1

Prepared By

Head of Department

Verified By

Department of Information Technology

Jeppiaar Institute of Technology (Autonomous)

PRINCIPAL

Approved By

Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchettam, Sriperumbudur
Chennai, Tamilnadu-631 604

AHS102 – SKILL ENHANCEMENT -I							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		3	HS	2	0	0	1
Preamble	<ul style="list-style-type: none">To categorize, apply and use thought process to distinguish between concepts of Quantitative methods.To educate and enrich the students on quantitative ability, reasoning ability, and verbal ability.To learn about various aspects of soft skills and learn ways to develop personalityUnderstand the importance and type of communication in personal and professional environmentTo create awareness on Human Centered Approach.						
Unit 1	NUMERICAL COMPUTATION						6
Number System- Divisibility Rules- Problems on Numbers- H.C.F. and L.C.M. of Numbers- Decimal Fractions & Simplification.							
Unit 2	NUMERICAL ESTIMATION & DATA INTERPRETATION-I						6
Averages - Problems on Ages - Data interpretation: Tabulation- Bar Graphs.							
Unit 3	INTRODUCTION TO SOFT SKILLS						6
<ul style="list-style-type: none">Soft Skills: Personal, Professional and Social skillsCommunication Skills: Verbal, Nonverbal, and Written CommunicationCommunication Today: Significance of Communication, Vitality of the Communication Process, Virtues of Listening, Fundamentals of Good Listening, responding after listening, need for Intercultural Communication, Communicating Digital World.							
Unit 4	PERSONALITY SKILLS						6
<ul style="list-style-type: none">Personality Development: Knowing Yourself, Positive Thinking, Physical Fitness, Positive attitude, Integrity and HonestyEmotional Intelligence: Meaning and Definition, need for Emotional Intelligence, Components of Emotional Intelligence, Competencies of Emotional Intelligence, Skills to Develop Emotional IntelligenceStress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress, Principles and Techniques for Time Management.							
Unit 5	DESIGN THINKING						6
HOW MIGHT ‘WE’ Revisiting Wheel of Life – Balancing Priorities – Project Update – QBL Application in Balancing Priorities – Handling Conflicts – Leveraging Constraints – Respond Vs. React – Importance of Teamwork – Project Assignment.							
Total:30							
COURSE OUTCOMES: At the end of the course, learners will be able to						Bloom's Taxonomy Level	


Prepared By

Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Senguvarchatram, Sriperumbudur-631 604.

Principal
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Senguvarchatram, Sriperumbudur-631 604.
Chennai, Tamilnadu-631 604.

Use their logical thinking and analytical abilities to solve Quantitative aptitude questions from company specific and other competitive tests.	K3
Have an awareness of how design thinking can be applied in a wide range of contexts, from the personal to global. Investigate and think creatively about design problems and opportunities.	K4
REFERENCES:	
1.	Quantitative Aptitude for Competitive Exams by R. S. Agarwal.
2.	Quantum CAT by Sarvesh Verma.
3.	The Design of Business: Why Design Thinking is the Next Competitive Advantage, by Roger Martin Thinking in Systems, Donella Meadows.


Prepared By


Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sungar, Chattram, Sriperumbi
Chennai, Tamilnadu 631 604


PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sungar, Chattram, Sriperumbi
Chennai, Tamilnadu 631 604
Approved By

AMC108 ENVIRONMENTAL ENGINEERING AND SUSTAINABILITY							
Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		3	BS	3	0	0	0
Preamble	<ul style="list-style-type: none">➤ To introduce the basic concepts of environment, ecosystems and biodiversity and emphasize on the biodiversity of India and its conservation.➤ To impart knowledge on the causes, effects and control or prevention measures of environmental pollution and natural disasters.➤ To facilitate the understanding of global and Indian scenario of renewable and nonrenewable resources, causes of their degradation and measures to preserve them.➤ To familiarize the concept of sustainable development goals and appreciate the interdependence of economic and social aspects of sustainability, recognize and analyze climate changes, concept of carbon credit and the challenges of environmental management.➤ To inculcate and embrace sustainability practices and develop a broader understanding on green materials, energy cycles and analyze the role of sustainable urbanization.						
Unit 1	ENVIRONMENT AND BIODIVERSITY					6	
Definition, scope and importance of environment – need for public awareness. Eco-system and Energy flow– ecological succession. Types of biodiversity: genetic, species and ecosystem diversity– values of biodiversity, India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ.							
Unit 2	ENVIRONMENTAL POLLUTION					6	
Causes, Effects and Preventive measures of Water, Soil, Air and Noise Pollutions. Solid, Hazardous and E-Waste management. Case studies on Occupational Health and Safety Management system (OHASMS). Environmental protection, Environmental protection acts							
Unit 3	RENEWABLE SOURCES OF ENERGY					6	
Energy management and conservation, New Energy Sources: Need of new sources. Different types new energy sources. Applications of- Hydrogen energy, Ocean energy resources, Tidal energy conversion. Concept, origin and power plants of geothermal energy.							
Unit 4	SUSTAINABILITY AND MANAGEMENT					6	
Development , GDP ,Sustainability- concept, needs and challenges-economic, social and aspects of sustainability-from unsustainability to sustainability-millennium development goals, and protocols-Sustainable Development Goals-targets, indicators and intervention areas Climate change- Global, Regional and local environmental issues and possible solutions-case studies. Concept of Carbon Credit, Carbon Footprint. Environmental management in industry-A case study.							
Unit 5	SUSTAINABILITY PRACTICES					6	
Zero waste and R concept, Circular economy, ISO 14000 Series, Material Life cycle assessment, Environmental Impact Assessment. Sustainable habitat: Green buildings, Green materials, Energy efficiency, Sustainable transports. Sustainable energy: Non-conventional Sources, Energy Cycles carbon cycle, emission and sequestration, Green Engineering: Sustainable urbanization- Socio economical and technological change.							

Prepared By

Verified By

Head of the Department

Department of Information Technology

Jeppiaar Institute of Technology (Autonomous)

Kunnam, Sripurambudur, Sriperumbudur-631 604

PRINCIPAL

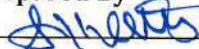
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sripurambudur, Sriperumbudur-631 604
Chennai, Tamil Nadu

Approved By

TOTAL: 30	
TEXTBOOKS	
1	Anubha Kaushik and C. P. Kaushik's "Perspectives in Environmental Studies", 6th Edition, New Age International Publishers ,2018.
2	Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, 2016
3	Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education, 2004.
4	Allen, D. T. and Shonnard, D. R., Sustainability Engineering: Concepts, Design and Case Studies, Prentice Hall
5	Bradley. A.S; Adebayo, A.O., Maria, P. Engineering applications in sustainable design and development, Cengage learning.
6	Environment Impact Assessment Guidelines, Notification of Government of India, 2006.
REFERENCES	
1	R.K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Enviro Media. 38 . edition 2010.
2	Cunningham, W.P. Cooper, T.H. Gorhani, 'Environmental Encyclopedia', Jaico Publ., House, Mumbai, 2001.
3	Dharmendra S. Sengar, 'Environmental law', Prentice hall of India PVT. LTD, New Delhi, 2007.
4	Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, Third Edition, 2015.
COURSEOUTCOMES:	
At the end of the course, learners will be able to	
	Bloom's Taxonomy Level
CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
CO2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
CO3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
CO4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	-	2	2	3	1	2	2	2	2	3	3	3
CO2	3	2	-	-	3	3	3	1	2	2	2	2	3	3	3
CO3	3	-	1	-	2	2	2	1	2	2	2	2	3	3	3
CO4	3	2	1	1	2	2	2	1	2	2	2	2	3	3	3
CO5	3	2	1	-	2	2	2	1	2	2	2	1	3	3	3

Prepared By



Head of Department

Department of Information Technology

Jeppiaar Institute of Technology (Autonomous)

Verified by

Approved By

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Senguvarchatram, Sriperumbudur
Chennai, Tamilnadu-631 604

ACS303 OBJECT ORIENTED PROGRAMMING LABORATORY

Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		4	PC	0	0	4	2
Preamble	<ul style="list-style-type: none"> ➤ To build software development skills using java programming for real-world applications. ➤ To understand and apply the concepts of classes, packages, interfaces, inheritance, exception handling and file processing. ➤ To develop applications using generic programming and event handling. 						

LIST OF EXPERIMENTS

1. Solve problems by using sequential search, binary search, and quadratic sorting algorithms (selection, insertion)
2. Develop stack and queue data structures using classes and objects.
3. Develop a java application with an Employee class with Emp_name, Emp_id, Address, Mail_id, Mobile_no as members. Inherit the classes, Programmer, Assistant Professor, Associate Professor and Professor from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club funds. Generate pay slips for the employees with their gross and net salary.
4. Write a Java Program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea() that prints the area of the given shape.
5. Solve the above problem using an interface.
6. Implement exception handling and creation of user defined exceptions.
7. Write a java program that implements a multi-threaded application that has three threads. First thread generates a random integer every 1 second and if the value is even, the second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of the cube of the number.
8. Write a program to perform file operations.
9. Develop applications to demonstrate the features of generics classes.
10. Develop applications using JavaFX controls, layouts and menus.
11. Develop a mini project for any application using Java concepts.

TOTAL: 60

COURSE OUTCOMES:		Bloom's Taxonomy Level
At the end of the course, learners will be able to		
CO1	Design and develop java programs using object oriented programming concepts	K3
CO2	Develop simple applications using object oriented concepts such as package, exceptions	K2
CO3	Implement multithreading, and generics concepts.	K3
CO4	Create GUIs and event driven programming applications for real world problems	K3
CO5	Implement and deploy web applications using Java	K4

Prepared By

Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)
Sriperumbudur-631 604

Approved By
Principal
Jeppiaar Institute of Technology (I)
Kunnam, Sunguvarchatram, Sriperumbudur-631 604
Chennai, Tamilnadu-631

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	2	1	-	-	-	-	1	2	2	2	1	2	3
CO2	2	1	3	1	-	-	-	-	2	3	3	2	1	3	1
CO3	2	2	1	2	1	-	-	-	1	2	1	3	2	3	2
CO4	2	2	1	3	-	-	-	-	3	1	1	1	2	1	2
CO5	1	3	3	1	3	-	-	-	1	1	1	1	2	1	2

ACS304 DATA STRUCTURES AND ALGORITHMS LABORATORY

Programme & Branch	B.Tech & IT	Sem.	Category	L	T	P	C
		3	PC	0	0	4	2
Preamble	<ul style="list-style-type: none">➤ To implement ADTs in Python➤ To design and implement linear data structures – lists, stacks, and queues➤ To implement sorting, searching and hashing algorithms➤ To solve problems using tree and graph structures						
1. Implement simple ADTs as Python classes							
2. Implement recursive algorithms in Python							
3. Implement List ADT using Python arrays							
4. Linked list implementations of List							
5. Implementation of Stack and Queue ADTs							
6. Applications of List, Stack and Queue ADTs							
7. Implementation of sorting and searching algorithms							
8. Implementation of Hash tables							
9. Tree representation and traversal algorithms							
10. Implementation of Binary Search Trees							
11. Implementation of Heaps							
12. Graph representation and Traversal algorithms							
13. Implementation of single source shortest path algorithm							
14. Implementation of minimum spanning tree algorithms							
TOTAL: 60							
COURSEOUTCOMES: At the end of the course, learners will be able to				Bloom's Taxonomy Level			
CO1	Implement ADTs as Python classes			K3			
CO2	Design, implement, and analyse linear data structures, such as lists, queues, and stacks, according to the needs of different applications			K4			
CO3	Design, implement, and analyse efficient tree structures to meet requirements such as searching, indexing, and sorting			K4			
CO4	Model problems as graph problems and implement efficient graph algorithms to solve them			K3			
CO5	Analyze the given scenario and choose appropriate data structures for solving problems			K3			

Prepared By



Head of Department
Department of Information Technology
Jeppiaar Institute of Technology (Autonomous)

Verified by

Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchattam, Sriperumbudur
Chennai, Tamilnadu-631 604

Approved By



Principal

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	1	1	-	-	-	2	3	1	2	1	2	1
CO2	3	3	2	-	1	-	-	-	2	3	1	2	2	2	1
CO3	2	2	2	1	1	-	-	-	2	3	1	2	1	3	1
CO4	3	1	2	1	1	-	-	-	2	3	1	2	1	3	1
CO5	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-

Prepared By

Head of the Department
Department of Information Technology
Verified by
Jeppiaar Institute of Technology (Autonomous)
Kilnagam, Sunguvarchattram, Sriperumbudur-631 604

PRINCIPAL
Jeppiaar Institute of Technology (Autonomous)
Kunnam, Sunguvarchattram, Sriperumbudur
Approved By
Chemurai, Tamilnadu-631 604