

PERI

INSTITUTE OF TECHNOLOGY

(AUTONOMOUS)

Mannivakkam, Chennai – 600 048

(Approved by AICTE, Affiliated to Anna University & Accredited by NAAC)

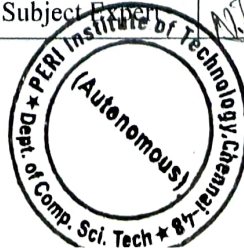
Date :14.08.2024

DEPARTMENT OF COMPUTER TECHNOLOGY

(Artificial Intelligence and Data Science)

1st BOARD OF STUDIES (BoS) Meeting

S.No	Name of the Member	Designation	Signature
1.	Dr. K. Kotteswari, HOD/IT	Chairman	K. Kotteswari 14/8/24
2.	Dr. M. Ezhilarasan, Professor, Department of Information Technology, Puducherry Technological University, Puducherry.	Subject Expert - University Nominee	[Signature]
3.	Dr.N.Kanya, Professor, Department of Information Technology, Dr MGR Educational & Research Institute, Chennai.	External Subject Expert – Outside the Parent University	N. Kanya
4.	Dr. S.Geetha, Professor, Department of Computer Science and Engineering, Dr MGR Educational & Research Institute, Chennai.	External Subject Expert – Outside the Parent University	S. Geetha
5.	Mr.Charles Godwin, HR Leader & Public Speaker ZOHO Corporation., Chennai.	Industrial Expert	Charles
6.	Mr.John Betson, Managing Director, JOKAR Creations Pvt Ltd., Chennai.	Alumnus	John Betson
7.	Ms.D.Vidhya	Internal Subject Expert	D. Vidhya
8.	Mr.S.Athirayan	Internal Subject Expert	S. Athirayan
9.	Ms.N.J.Nithya Nandhini	Internal Subject Expert	N. J. Nithya Nandhini



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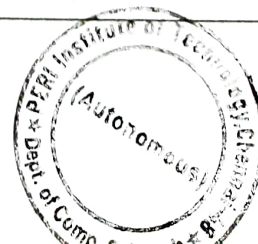
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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

BOARD OF STUDIES MEETING MINUTES

The first Board of Studies (BoS) meeting of the Department of Artificial Intelligence and Data Science was conducted on 14/08/2024 at 11.30 am (IST). The following members were present,

S.No	Name of the Faculty	Designation
1	Dr. K. Kotteswari, HOD/IT	Chairman
2	Dr. M. Ezhilarasan, Professor, Department of Information Technology, Puducherry Technological University, Puducherry.	Subject Expert - University Nominee
3	Dr.N.Kanya, Professor, Department of Information Technology, Dr MGR Educational & Research Institute, Chennai.	External Subject Expert – Outside the Parent University
4	Dr. S.Geetha, Professor, Department of Computer Science and Engineering, Dr MGR Educational & Research Institute, Chennai.	External Subject Expert – Outside the Parent University
5	Mr.Charles Godwin, HR Leader & Public Speaker ZOHO Corporation., Chennai.	Industrial Expert



6	Mr. John Betson, Managing Director, JOKAR Creations Pvt Ltd., Chennai.	Alumnus
7	Ms.D.Vidhya	Internal Subject Expert
8	Mr.S.Athirayan	Internal Subject Expert
9	Ms.N.J.Nithya Nandhini	Internal Subject Expert
10	All faculty members	Member

BOS 1.1 Welcome Address by the Faculty Head

- The first Board of Studies meeting of PERI Institute of Technology commenced with a welcome address by Mr. Vijayanarayanan, IT, Faculty Head.
- Principal and Vice Principal of PERI Institute of Technology, Faculty Heads, Faculty of AIDS department were present in the meeting.

BOS 1.2 Introduction About the Department

- A presentation was made by the Faculty Head about the department, highlighting the Vision and Missions of the Institution, Department level achievements, Faculty level achievements, Student achievements etc.,

BOS 1.3 Introduction about the Members of the Council

- The Board of Studies Members who were Subject Experts from outside the Parent University, University Nominee, Industrial Expert, and Post Graduate Meritorious Alumnus, were introduced by Faculty Head.

BOS 1.4 To consider and approve the Curricula and Syllabi up to 2nd Semester of all the UG Courses, In the Faculty of AIDS, to be introduced in the Autonomous Institution with effect from the Academic Year 2024 – 2025 onwards

RESOLVED TO list the following Programmes in the Faculty of AIDS, with effect from the academic year 2024–2025.

- Listing the Number of Programmes, in the Faculty of AIDS, for the academic year 2024-2025 was informed to the members
 - B. Tech- Artificial Intelligence and Data Science



- B. Tech – Information Technology
- B. Tech – Computer Science and Business Systems

BOS 1.5 To consider and approve the Curricula and Syllabi all the UG Courses, In the Faculty of AIDS, to be introduced in the Autonomous Institution with effect from the Academic Year 2024 – 2025 onwards

RESOLVED TO APPROVE the Curricula and Syllabi for all the UG Courses upto 2nd Semester to be introduced in the Faculty of AIDS, in the autonomous Institution with effect from the academic year 2024–2025.

- The Curricula for all the UG Courses up to 2nd Semester were listed for approval by the Board of Studies Members.
- The Syllabi for all the UG Courses up to 2nd Semester were listed for approval by the Board of Studies Members.
- The curriculum for all the semesters stated above were to be taken up for discussion in the Faculty of AIDS Board of Studies meeting.

BOS 1.6 Suggestions from Members for the Programmes in the Faculty of AIDS, to be imparted in the Autonomous Institution with effect from the Academic Year 2024 – 2025.

The members made the following suggestions:

- Title can be given as Fundamentals of Computing instead of Fundamentals of Computers.
- Basic concepts like Evolution, Generation and types of computers can be removed.
- Generalized Looping Structure explanation can be included so that coding is easier for students. Recursive function concept
- Auxiliary devices and Driver installation topics can be removed plug and play strategy is used.
- Provide exposure to Google drive usage and online platforms.
- Advised to modify the title for the Semester I course as **Computer Technologies** instead of Computer **Applications**.
- Recommended to include IoT technology.
- Subjects like TOC should be included in Curriculum
- Guided to balance the course Credit value for PC and Elective papers.
- Advised to restructure the syllabus with only one unit for Fundamentals of Computing and Problem-solving techniques may be included in remaining units.
- Frame the curriculum in such a way that 30:70 ratio to computer science core and specialization courses.
- Evaluation for internal assessment may include other skill set such as paper presentation, quiz and participation in the events conducted other institutions.
- Events like Hackathon may also be considered for evaluation in addition to written test for evaluation.
- COE should attend the next BOS meeting



Resolutions in Meeting:

- **Agenda 1:** To discuss and finalize the course structure of I, II, III, IV, V, VI, VII and VIII B.E of R-24 (Autonomous) Regulations.
- **Resolutions:** Course Structure of B.Tech programme of R-24 (Autonomous) Regulations is approved with minor modifications by BoS.

The meeting came to end, with Chairperson thanking all the honorable Board of Studies Members for having spared their time with valuable inputs and participated in the Faculty of AIDS, First Board of Studies Meeting of PERI Institute of Technology, Mannivakkam, Chennai.

Enclosed:

Annexure 1:

Department of Artificial Intelligence and Data Science Curriculum.

Annexure 2:

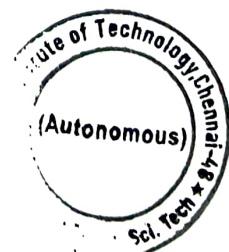
Semester - I Introduction to Programing for Problem Solving Syllabus

Annexure 3:

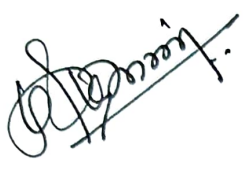
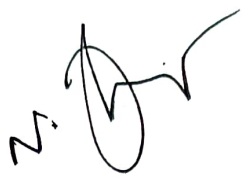
Semester -I Introduction to Advanced Computer Technologies Syllabus

Annexure 4:

Semester -I Basic Programing Lab syllabus



Members Attendance

 Dr. M. Ezhilarasan, Professor, Department of Information Technology, Puducherry Technological University, Puducherry.	 Dr.N.Kanya, Professor, Department of Information Technology, Dr MGR Educational & Research Institute, Chennai.	 Dr. S.Geetha, Professor, Department of Computer Science and Engineering, Dr MGR Educational & Research Institute, Chennai.
 Mr.Charles Godwin, HR Leader & Public Speaker ZOHO Corporation., Chennai.	 Mr.John Betson, Managing Director, JOKAR Creations Pvt Ltd., Chennai	 Ms.D.Vidhya Assistant Professor, PERI Institute of Technology Mannivakkam, Chennai.
 Mr.S.Athirayan Assistant Professor Department of Computer Science and Engineering PERI Institute of Technology Mannivakkam.	 Ms.N.J.Nithya Nandhini Assistant Professor Department of Computer Science and Engineering PERI Institute of Technology Mannivakkam. Chennai.	 Dr. K. Kotteswari, Assistant Professor & Head Department of Information Technology, PERI Institute of Technology Mannivakkam. Chennai. CHAIRMAN
Board of Studies Department of CT PERI Institute of Technology (A) Mannivakkam. Chennai-48		



Structure of UG Program

B.Tech-Artificial Intelligence and Data Science

S.No	Course Category	Credits Per Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1	HS	4	3						6	13
2	BS	8	10	4						22
3	ES	9	6							15
4	PC	3	5	20	15	14	16			73
5	PE				5	5	3	3		16
6	OE				3	3	3	3		12
7	EEC	1						4	10	15
8	MC	-						-	-	0
		25	24	24	23	22	22	10	16	
		Total								166



ANNEXURE - I

CURRICULUM



PERI INSTITUTE OF TECHNOLOGY

(AUTONOMOUS)

REGULATIONS 2024

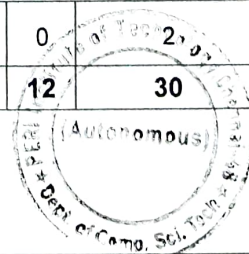
B.Tech- Artificial Intelligence and Data Science

SEMESTER - I

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Professional English - I	HSMC	2	0	0	2	2
2.		Engineering Mathematics - I	BSC	3	1	0	4	4
3.		Introduction to Advanced Computer Technologies	PC	3	0	0	3	3
4.		Fundamentals of programming for problem Solving	ESC	3	0	0	3	3
5.		Engineering Graphics and Design	ESC	2	0	4	6	4
6.		Personal and Professional Competencies for Engineers	HSMC	2	0	0	2	2
LAB INTEGRATED COURSE								
7.		Physics for Information Science	BSC	3	0	2	5	4
PRACTICALS								
8.		Basic Programming Lab	ESC	0	0	4	4	2
9.		English Laboratory	EEC	0	0	2	2	1
TOTAL				18	1	12	31	25

SEMESTER - II

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Professional English-II	HSMC	2	0	0	2	2
2.		Basic Electrical & Electronics Engineering	ESC	4	0	0	4	4
3.		Python Programming	PCC	3	0	0	3	3
4.		Tamil and Technology	HSMC	1	0	0	1	1
LAB INTEGRATED COURSE								
5.		Engineering Mathematics - II	BSC	3	0	2	5	4
6.		Engineering Chemistry	BSC	3	0	2	5	4
PRACTICALS								
7.		Python Programming Lab	PCC	0	0	4	4	2
8.		IDEA Lab Workshop	ESC	0	0	4	4	2
MANDATORY COURSE								
9.		Environmental Science and Engineering	BSC	2	0	0	2	2
TOTAL				18	0	12	30	24

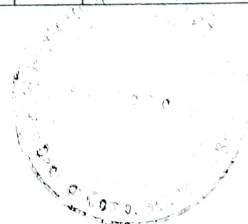


SEMESTER - III

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Probability and Statistics	BSC	3	1	0	4	4
2.		Python Programming	PC	3	0	0	3	3
3.		Data Structures	PC	3	0	0	3	3
4.		Principles of Artificial Intelligence	PC	3	0	0	3	3
5.		Operating Systems	PC	3	0	0	3	3
LAB INTEGRATED COURSE								
6.		Introduction to Data Science	PC	3	0	2	5	4
PRACTICALS								
7.		Operating Systems Lab	PC	0	0	4	4	2
8.		Data Structures Lab	PC	0	0	4	4	2
9.		Life Skill – I	L3	0	0	2	2	0
MANDATORY COURSE								
10.		Indian Constitution	BSC	2	0	0	2	0
TOTAL				20	1	12	33	24

SEMESTER - IV

SEMESTER - IV								
S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Object Oriented Programming using Java	PC	3	0	0	3	3
2.		Software Engineering	PC	3	0	0	3	3
3.		Design Analysis of Algorithms	PC	3	0	0	3	3
4.		Computer Networks	PC	3	0	0	3	3
5.		Professional Elective - I	PE	3	0	0	3	3
LAB INTEGRATED COURSE								
		Introduction to R Programming	PC	3	0	2	5	4
PRACTICALS								
7.		Java Programming Lab	PC	0	0	4	4	2
8.		Professional Elective – I Lab	PE	0	0	4	4	2
9.		Life Skill – II	L4	0	0	2	2	0
MANDATORY COURSE								
10.		Social Services	BSC	2	0	0	2	0
TOTAL				20	0	10	30	23

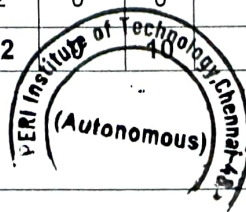


SEMESTER - V

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Database Management Systems	PC	3	0	0	3	3
2.		Cryptography & Network Security	PC	3	0	0	3	3
3.		Distributed Systems and Cloud Computing	PC	3	0	0	3	3
		Machine Learning	PC	3	0	0	3	3
4.		Professional Elective - II	PE	3	0	0	3	3
5.		Open Elective – I	OE	3	0	0	3	3
PRACTICALS								
7.		Database Management Systems Lab	PC	0	0	4	4	2
8.		Professional Elective- II Lab	PE	0	0	4	4	2
9.		Life Skill – III	L5	0	0	2	2	0
MANDATORY COURSE								
10.		Quantitative Aptitude – I / GRE TOFEL - I		2	0	0	2	0
11.		Essence of Indian Traditional Knowledge and Science	BSC	2	0	0	2	0
TOTAL				22	0	12	34	23

SEMESTER - VI

SEMESTER V								
S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Data Visualization	PC	3	0	0	3	3
2.		Social and Ethical Issues in AI	PC	3	0	0	3	3
3.		Big Data Analytics	PC	3	0	0	3	3
4.		Deep Learning	PC	3	0	0	3	3
5.		Professional Elective - III	PE	3	0	0	3	3
6.		Open Elective – II	OE	3	0	0	3	3
PRACTICALS								
7.		Professional Elective – III Lab	PC	0	0	4	4	2
8.		Data Visualization Lab	PC	0	0	4	4	2
9.		Life Skill – IV	L6	0	0	2	2	0
MANDATORY COURSE								
10.		Quantitative Aptitude – II / GRE TOFEL - II		2	0	0	2	0
11.		Behavioural Science and Psychology	BSC	2	0	0	2	0
TOTAL				22	0	12	32	22

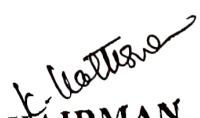


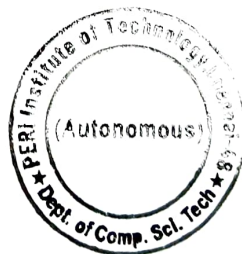
SEMESTER - VII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Professional Elective - IV	PE	3	0	0	3	3
2.		Open Elective -III	OE	3	0	0	3	3
PRACTICALS								
3.		Internship	EEC	0	0	5	5	4
TOTAL				6	0	5	11	10

SEMESTER - VIII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Elective - Management	HS	3	0	0	3	3
2.		Human Values and Ethics	HS	3	0	0	3	3
PRACTICALS								
3.		Internship	EEC	0	0	4	4	4
4.		Project Work	EEC	0	0	4	4	6
TOTAL				6	0	8	14	16


CHAIRMAN
 Board of Studies
 Department of CT
 PERI Institute of Technology (A)
 Mannivakkam, Ch.



ANNEXURE - II to IV
SEMESTER – I SYLLABUS



Introduction to Advanced Computer Technologies		L	T	P	C
(Common to CSE,IT,CSBS,AI & DS,AI & ML,CS Programmes)		3	0	0	3
OBJECTIVES					
To make the student familiar with					
❖ the basics of Artificial Intelligence. ❖ key terminologies associated with Big Data ❖ the concepts of cloud computing. ❖ the fundamental aspects and principles of AR/VR technologies. ❖ the technologies and sources of Cyber Security. ❖ basic idea about IoT					
UNIT - I	ARTIFICIAL INTELLIGENCE	8			
Artificial Intelligence: Need for AI.- History of AI – Foundations of AI -The AI - Environment - Societal Influences of AI - Application Domains and Tools - Associated Technologies of AI - Future Prospects and challenges of AI.-Generative AI-Introduction.					CO1
UNIT - II	BIG DATA	8			
Big Data: Data Evolution - Terminologies - Definitions -Merits and Challenges - Big Data Components-Characteristics - Big Data Processing Frameworks - Big Data Applications – Tools for Big data Analytics.					CO2
UNIT - III	CLOUD COMPUTING	7			
Cloud Computing: Origins of Cloud computing – Cloud components – Essential characteristics –The vision of cloud computing – Characteristics, benefits, and Challenges- Introduction to AWS, MS-Azure, Google cloud.					CO3
UNIT - IV	VIRTUAL REALITY AND AUGMENTED REALITY	8			
Virtual Reality: Definition – Types of Head Mounted Displays – Tools for Virtual Reality – Applications of VR in Education and Industries - Augmented Reality: Definition - Tools for Augmented Reality – Hololens - Advantages and Challenges of AR - Applications of AR in Education, Industries - Mixed Reality.- Difference between AR & VR.					CO4
UNIT - V	CYBER SECURITY	8			
Cyber Security : CIA Triads –Data Privacy & Information Security -Cyber Crime – Classification of Cyber Crimes – Types of Cyber Attacks - Security Methods. Introduction to Block chain technology –Applications.					CO5
UNIT – VI	INTERNET OF THINGS	6			
Introduction to IoT – Definition and Characteristics of IoT – Physical and Logical Design of IoT – IoT Enabling technologies – IoT levels and deployment templates – Applications of IoT: Home Automation, Cities , Environment , Energy , Agriculture, Health care and Life.					CO6
TOTAL:45 PERIODS					



TEXT BOOKS

1. Artificial Intelligence A Modern Approach Third Edition, Stuart J. Russell and Peter Norvig, 2010.
2. P. Kaliraj, T. Devi, Big Data Applications in Industry 4.0, CRC Press, Taylor & Francis Group 2022.
3. Arshdeep Bagga, Vijay Madiseti, " Cloud Computing: A Hands-On Approach", Universities Press, 2014.

REFERENCE BOOKS

1. Fundamentals of Artificial Intelligence – K.R. Chowdhary, Springer 2020.
2. William Stallings, "Foundations of Modern Networking: SDN, NFV, QoE, IoT and Cloud", Pearson Education, 1st Edition, 2015.
3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing -A Practical Approach", Tata Mcgraw Hill, 2009.
4. John Vince, "Introduction to Virtual Reality", Springer-Verlag, 2004.
5. Anand Shinde, "Introduction to Cyber Security Guide to the World of Cyber Security", Notion Press, 2021.
6. Arshdeep Bahga, Vijay Madiseti, 'Internet of Things – A Hands on Approach', Orient Blackswan Private Limited - New Delhi; First Edition (1 January 2015)

COURSE OUTCOMES

Upon completion of the course, students will be able to

CO1	understand the basics of Artificial Intelligence
CO2	understand the key terminologies associated with Big Data
CO3	understand the basic concepts of cloud computing
CO4	impart the fundamental principles of AR/VR technologies
CO5	understand the concepts of cyber crime and information security
CO6	understand the basic concepts of IoT

MAPPING OF COs WITH POs AND PSOs

COs	PROGRAM OUTCOMES (POs)												PROGRAM SPECIFIC OUTCOMES (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	2	2	-	2	2	-	-	2	2	2	2
CO2	3	-	-	-	2	2	-	-	2	-	-	2	2	2	2
CO3	3	-	-	-	2	2	-	2	2	-	-	2	2	2	2
CO4	3	-	-	-	2	2	-	-	2	-	-	2	2	1	2
CO5	3	-	-	-	2	2	-	2	2	-	-	2	2	2	2
CO6	3	-	-	-	2	2	-	-	1	-	2	2	2	1	2



FUNDAMENTALS OF PROGRAMMING FOR PROBLEM SOLVING		L	T	P	C
(Common to all Programmes)		3	0	0	3

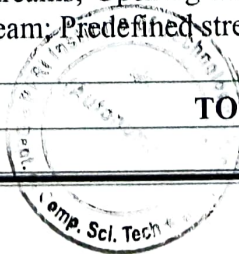
OBJECTIVES

- ❖ To understand basic functionality of computer system and Computer Codes.U/A
- ❖ To Explore the fundamental concepts of Software and problem solving.
- ❖ To develop simple programs using basic constructs in C.
- ❖ To Solve advanced problems using derived data types in C. A
- ❖ To resolve complex problems using functions and user defined data types. A
- ❖ To understand about dynamic memory management and File handling. U

U
U/A
A
U

UNIT – I	Building Blocks of a Computer& Computer Codes	7
Basic organization of a computer System-Five basic operations of a computer-Basic processor and Memory Architecture- Number system-Different types of number systems(decimal, binary, octal, hexadecimal)-importance of binary number system-Conversion of Numbers-Popular Computer codes(ASCII, Unicode).		CO1
UNIT – II	Introduction to Software& Programing Fundamentals	8
System Software -OS Fundamentals-translator Programs-compilers-assemblers-interpretors- Application Software-Introduction to Microsoft packages(Ms-Word, Excel and Power point). The problem solving aspect-Top down design-Implementation of Algorithm- Algorithm - Pseudo code - Flow Chart Exchanging the values of two variables-factorial of a given number-Factoring methods-Greatest common divisor- computing nth Fibonacci number		CO2
UNIT – III	Exploring Basic concepts of C	8
Introduction to C programming - Structure of a C program - Data Types – Constants- Keywords-Operators-Precedence and Associativity-Expressions - Input / Output statements, Assignment statements - Decision making statements - Switch statement - Looping statements - Preprocessor directives.		CO3
UNIT – IV	Derived Data types	8
Introduction to Arrays: Declaration, Initialization -One dimensional array -Two dimensional arrays -Searching- linear and binary search.-String manipulation- length, compare, concatenate, and copy -Pointers -Pointer arithmetic -Arrays and pointers - Array of pointers.		CO4
UNIT – V	Functions and User defined data types	7
Modular programming - Function prototype, function definition, function call, Built-in functions (string functions, math functions) -Parameter passing: Pass by value, Pass by reference -Recursion. Structure - Defining a structure - Accessing a structure variable - Operations on structure members - Nested structures -Array of structures – Self-referential Structure- Introduction to linked list -Union.		CO5
UNIT – VI	Dynamic Memory allocation and Files	7
Memory Allocation: Function - malloc() , calloc() , realloc() , free().File Management in C: Introduction, Defining and opening a file, closing a file, Input/output and Error Handling on Files. Files vs. streams; Opening and closing a stream, open modes-Reading and writing to/from a stream; Predefined streams: stdin, stdout and stderr		CO6

TOTAL:45 PERIODS



TEXT BOOKS

1. Fundamentals of Computers by E Balagurusamy, Tata McGraw Hill Education Pvt. Ltd, New Delhi , 2009
2. Computer Concepts and Programming in C, R.S. Salaria, Khanna Publishing, 2019.

REFERENCE BOOKS

1. How to solve it by a computer –R.G.Dromey, Pearson Education ,2007
2. Let Us C: Authentic guide to C programming language , Yashavant Kanetkar, BPB Publications 2022.
3. Programming in ANSI C, E Balagurusamy, Tata McGraw Hill Education Pvt. Ltd 2024.
4. Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., New Delhi.

COURSE OUTCOMES

Upon completion of the course, students will be able to

- | | |
|-----|--|
| CO1 | explain the basic functionality of computer system and Computer Codes. |
| CO2 | think about the logic of any problem and can write algorithm, draw flow chart as well. |
| CO3 | develop simple programs using basic constructs in C. |
| CO4 | solve advanced problems using derived data types in C. |
| CO5 | resolve complex problems using functions and user defined data types. |
| CO6 | do dynamic memory management and File handling. |

MAPPING OF COs WITH POs AND PSOs

COs	PROGRAM OUTCOMES (POs)												PROGRAM SPECIFIC OUTCOMES (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	2	2	-	-	-	-	-	2	2	-	-
CO2	2	-	-	-	2	-	-	-	-	-	-	2	2	-	-
CO3	2	-	-	-	-	-	-	-	-	-	-	-	2	-	2
CO4	2	-	-	-	2	-	-	-	2	-	-	2	2	2	-
CO5	2	-	-	-	2	-	-	-	2	-	-	2	2	2	-
CO6	2	-	-	-	-	-	-	-	2	-	2	3	2	-	2



BASIC PROGRAMMING LAB

L T P C

0 0 4 2

(Common to all branches of B.E. / B. Tech -Excluding ECE and EEE Programmes)

COURSE OBJECTIVES:

- Be familiar with OS and Software installation.
- Be familiar with the use of Office software.
- Be exposed to presentation and visualization tools.
- Be exposed to problem solving techniques and flow charts.
- Learn to write C programs.

LIST OF EXPERIMENTS:

1. Assembling the computer and Installation of Operating Systems
2. Creating A Word Document and Text Manipulation
3. Problem formulation, Problem Solving and Flowcharts
4. Creation of Spread Sheets in MS-Excel
5. C Programming using Simple statements and expressions
6. Scientific problem solving using decision making and looping.
7. Simple programming for one dimensional and two dimensional arrays.
8. Solving problems using String functions
9. Programs with user defined functions – Includes Parameter Passing
10. Program using Recursive Function
11. Program using structures and unions.

TOTAL: 30 PERIODS

COURSE OUTCOMES:

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

CO1: Demonstrate knowledge on peripherals and Installation of OS and Softwares

CO2: Demonstrate different types of text manipulation in MS office

CO3:.. Apply good programming design methods

CO4:.. Design and implement C programs for simple applications.

CO5: Develop recursive programs.

CO6: Develop programs using structures and Union



LIST OF EQUIPMENTS FOR A BATCH OF 30 STUDENTS:

Systems with Windows/Linux Operating System with C compiler-30 Nos

SEMESTER – II SYLLABUS



COURSE OBJECTIVES:

- To learn the fundamentals of Python
- 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.
- To use Python Modules and Packages

UNIT I FUNDAMENTALS OF PYTHON

8

Introduction to Python –Setting up Python environment-Working in python - Python interpreter and interactive mode – Input / Output: input(), raw_input(), print() -Writing a first program in Python –Keywords and Variables - Data types: Constants, Numbers - int, float, complex, Boolean, string and list.

UNIT II CONTROL FLOW, ITERATION

8

Boolean values – operators – types of operators, Precedence of operators – Conditions: conditional (if), alternative (if-else), chained conditional (if-elif-else), nested conditions (nested if); Iteration: while and for loop - state, while, for, break, continue, pass – nested loops.

UNIT III FUNCTIONS

8

Function: function definition and function call – def keyword - self keyword - Fruitful functions: return values, parameters, different types of arguments - local and global scope - function composition – Recursion.

UNIT IV STRINGS, LISTS

8

Strings: String and Characters – indexing – String traversal - String slices, immutability, string functions and methods - Lists: Creating list – Indexing – Negative indexing - list operations, list slices, list methods, loop in list, mutability, aliasing, cloning lists.

UNIT V TUPLE, DICTIONARY & FILES

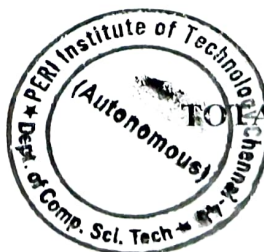
7

Tuple: Creating a Tuple – Tuple assignment, operations and methods – slicing in tuple - tuple as return value – difference between list and tuple - Dictionaries: Syntax – Keys / Values – accessing - operations and methods; Files – types of files - text files, modes in files - reading and writing files.

UNIT VI EXCEPTION HANDLING, MODULES AND PACKAGES

6

Exception: errors and exceptions, handling exceptions, format operator; command line arguments, modules, packages; Illustrative programs.



TOTAL: 45 PERIODS

COURSE OUTCOMES:

Upon completion of the course, students will be able to

- CO1:** understand the fundamentals of Python.
- CO2:** develop and execute simple Python programs.
- CO3:** write python programs using conditionals and loops.
- CO4:** decompose a Python program into functions.
- CO5:** represent compound data using Python lists, tuples, dictionaries etc.
- CO6:** read and write data from/to files in Python programs.

TEXT BOOKS:

1. Allen B. Downey, "Think Python : How to Think like a Computer Scientist", 2nd Edition, O'Reilly Publishers, 2016.
2. Paul Deitel and Harvey Deitel, "Python for Programmers", Pearson Education, 1st Edition, 2021

REFERENCES:

1. John V Guttag, Introduction to Computation and Programming Using Python: With Applications to Computational Modeling and Understanding Data", Third Edition, MIT Press 2021
2. Eric Matthes, "Python Crash Course, A Hands - on Project Based Introduction to Programming", 2nd Edition, No Starch Press, 2019.
3. Martin C. Brown, "Python: The Complete Reference", 4th Edition, Mc-Graw Hill, 2018.
4. <https://www.python.org>

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	2	-	-	-	-	-	2	2	3	3	-
2	3	3	3	3	2	-	-	-	-	-	2	2	3	-	-
3	3	3	3	3	2	-	-	-	-	-	2	-	3	-	-
4	2	2	-	2	2	-	-	-	-	-	1	-	3	-	-
5	1	2	-	-	1	-	-	-	-	-	1	-	2	-	-
6	2	2	-	-	2	-	-	-	-	-	1	-	2	-	-



PYTHON PROGRAMMING LABORATORY

L T P C
0 0 3 2

Course Objective:

- 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 files concepts in python.
- To do error handling in exception.
- To practice modules in python.

1. Programming using simple statements and expressions
 - exchange the values of two variables
 - circulate the values of n variables
 - distance between two points
2. Problems using Conditionals and Iterative loops.
 - Voter's age validation
 - Marks range validation (0-100)
 - Pattern program using nested loop
3. Programs using Functions to find
 - square root
 - GCD
 - Factorial and Fibonacci series using recursion.
4. Programs to handle string
 - String reverse & Palindrome
 - Character count & replacing a character
5. Programs to implement Lists
 - simple sorting
 - sum of numbers in the list
 - searching data
6. Programs using tuple – slicing and traversal of tuple
7. Maintaining students details using dictionary
8. Program for File handling - copy from one file to another, word count in a file.
9. Program to implement error handling
10. Program to implement modules in python.

Course Outcomes:

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

- CO1:** develop and execute simple Python programs
CO2: implement programs in Python using conditionals and loops for solving problems.
CO3: deploy functions to decompose a Python program.
CO4: process compound data using lists, tuple and dictionary.
CO5: handle file operations and exception.
CO6: utilize Python modules and packages.



CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	2	-	-	-	-	-	2	2	3	3	-
2	3	3	3	3	2	-	-	-	-	-	2	2	3	-	-
3	3	3	3	3	2	-	-	-	-	-	2	-	3	-	-
4	2	2	-	2	2	-	-	-	-	-	1	-	3	-	-
5	1	2	-	-	1	-	-	-	-	-	1	-	2	-	-
6	2	2	-	-	2	-	-	-	-	-	1	-	2	-	-

