PERI
INSTITUTE OF TECHNOLOGY
(AUTONOMOUS)
Mannivakkam, Chennai – 600 048
(Approved by AICTE, Affiliated to Anna University & Accredited by NAAC)

Date :10.08.2024

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(Artificial Intelligence and Machine Learning)
1st BOARD OF STUDIES (BoS) Meeting

S.No	Name of the member	Designation	Signature
1.	**Dr.S.Anu Priya,** HOD/AIML	Chairman	S.A 10/08/24
2.	**Dr. Dejey,** Associate Professor, Department of Computer Science and Engineering, Anna University, Chennai-600025.	Subject Expert - University Nominee	10/08/24
3.	**Dr. B. Rajesh Kanna** Head & Dean, Academics, Computer Science - Artificial Intelligence and Machine Learning, Rajiv Gandhi National Institute for Youth Development, Chennai.	External Subject Expert – Outside the Parent University	
4.	**Dr.Suresh Jaganathan,** Associate Professor, Computer Science and Engineering, SSN, Chennai.	External Subject Expert – Outside the Parent University	18/8/2024
5.	**Mr. Remi Jullian,** Automation Lead, Deloitte.	Industrial Expert	
6.	**Mr. K.C.Prasanth,** Data Engineer, Denodo Technologies, Chennai.	Alumnus	
7.	**Dr.R.Palson Kennedy**	Internal Subject Expert	
8.	**Ms.V.Vidhya**	Internal Subject Expert	10/8/24
9.	**Ms.D.Vidhya**	Internal Subject Expert	D. Vidhya 10/08/24

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

BOARD OF STUDIES MEETING MINUTES

The first Board of Studies (BoS) meeting of the Department of Computer Science and Engineering (Artificial Intelligence and Machine Learning) was conducted on 10/08/2024 at 2.00pm (IST). The following members were present,

S.No	Name of the Faculty	Designation
1	**Dr.S.Anu Priya,** Assistant Professor & Head, Department of Computer Science and Engineering (Artificial Intelligence and Machine Learning), PERI Institute of Technology, Mannivakkam, Chennai.	Chairman
2	**Dr. Dejey,** Associate Professor, Department of Computer Science and Engineering, Anna University, Chennai.	Subject Expert - University Nominee
3	**Dr. B. Rajesh Kanna,** Head & Dean, Academics, Computer Science -Artificial Intelligence and Machine Learning, Rajiv Gandhi National Institute for Youth Development, Chennai.	Subject Expert from outside the Parent University

PERI Institute of Technology, Chennai-48 (Autonomous) Dept. of Comp. Sci Engg

4	**Dr.Suresh Jaganathan,** Associate Professor, Computer Science and Engineering, SSN, Chennai.	Subject Expert from outside the Parent University
5	**Mr. Remi Jullian,** Automation Lead, Deloitte, Chennai.	Industrial Expert
6	**Mr. K.C.Prasanth,** Data Engineer, Denodo Technologies, Chennai.	Alumnus
7	**Dr.R.Palson Kennedy,** Principal, PERI Institute of Technology Mannivakkam, Chennai.	Internal Subject Expert
8	**Ms.V.Vidhya,** Assistant Professor, Department of Computer Science and Engineering, PERI Institute of Technology, Mannivakkam, Chennai.	Internal Subject Expert
9	**Ms.D.Vidhya,** Assistant Professor, Department of Computer Science and Engineering, PERI Institute of Technology, Mannivakkam, Chennai.	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 **Dr.S.Anu Priya** Computer Science and Engineering (Artificial Intelligence and Machine Learning), Faculty Head.

- Principal and Vice Principal of PERI Institute of Technology, Faculty Heads, Faculty of CSE 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, Chairman's Message

,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 Curriculum and Syllabi of the UG Course in the Faculty of CSE, to be introduced in the Autonomous Institution with effect from the Academic Year 2024 -2025 onwards

RESOLVED TO APPROVE the Curriculum and Syllabi of the UG Course up to 2nd Semester to be introduced in the Faculty of CSE, in the autonomous Institution with effect from the academic year 2024–2025.

- The Curriculum for the UG Course up to 2nd Semester was listed for approval by the Board of Studies Members.
- The Syllabi for the UG Course 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 CSE Board of Studies meeting.

BOS 1.5 Suggestions from Members for the Programme in the Faculty of CSE, to be imparted in the Autonomous Institution with effect from the Academic Year 2024 – 2025.

The members made the following suggestions:

- First semester course 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.
- Suggested to include Scratch software to create and practice simple coding.
- Generalized Looping Structure explanation can be included so that coding is easier for students. Recursive function concept as well can be included.
- Topics can be included to provide the knowledge about Google drive usage in the course Fundamentals of computing.
- Advised to modify the title for the Semester I course as **Introduction to Advanced Computer Technologies** instead of Advanced **Computer Applications.**

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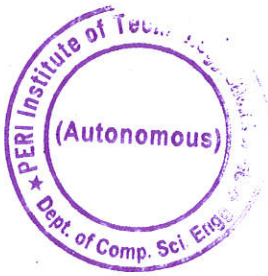
- Suggested to explore any two technologies rather than mixing up all technologies in the course Introduction to Advanced Computer Applications.
- Guided to reduce the course Credit value for fundamental courses and include more core credit value in curriculum.
- Advised to restructure the syllabus with only one unit for Fundamentals of Computing and Problem solving techniques may be included in remaining units.
- Suggested about the credit values that are assigned to open elective courses can be reduced from 12 credits to 6 credits.
- Additional Practical oriented courses with smaller credit values can be incorporated in the curriculum.
- Advised to introduce Online courses in the curriculum from II year onwards.

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.
- **Resolution:** Course Structure of B.E 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 CSE, First Board of Studies Meeting of PERI Institute of Technology, Mannivakkam, Chennai.



Enclosed:

Annexure 1:

Department of Computer Science and Engineering (Artificial Intelligence and Machine learning) Curriculum.

Annexure 2:

Semester - I Introduction to Programming for Problem Solving Syllabus

Annexure 3:

Semester -I Introduction to Advanced Computer Technologies Syllabus

Annexure 4:

Semester -I Basic Programming Lab syllabus

Annexure 5:

Semester – II Python Programming

Annexure 6:

Semester – II Python Programming Lab

Members Attendance

Dr. Dejey, Associate Professor, Department of Computer Science and Engineering, Anna University, Chennai. Dr. DEJEY Associate Professor Department of Computer Science and Engineering College of Engineering, Guindy, Anna University, Chennai-600 025.	**Dr. B. Rajesh Kanna,** Head & Dean, Academics, Computer Science Artificial Intelligence and Machine Learning, Rajiv Gandhi National Institute for Youth Development, Chennai.	**Dr.Suresh Jaganathan,** Associate Professor, Computer Science and Engineering, SSN, Chennai.
Mr. Remi Jullian, Automation Lead, Deloitte, Chennai.	**Mr. K.C.Prasanth,** Data Engineer, Denodo Technologies, Chennai.	**Dr.R.Palson Kennedy,** Principal, PERI Institute of Technology, Mannivakkam, Chennai.
Ms.V.Vidhya, Assistant Professor, Department of Computer Science and Engineering, PERI Institute of Technology, Mannivakkam, Chennai.	**Ms.D.Vidhya,** Assistant Professor, Department of Computer Science and Engineering, PERI Institute of Technology, Mannivakkam, Chennai.	**Dr.S.AnuPriya,** Assistant professor & Head, Department of Computer Science and Engineering, PERI Institute of Technology, Mannivakkam, Chennai.

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CHAIRMAN
Board of Studies
Department of CSE (AIML)
PERI Institute of Technology
(An Autonomous Institution)
Mannivakkam, Chennai - 48.

ANNEXURE - I
CURRICULUM

PERI INSTITUTE OF TECHNOLOGY

(AUTONOMOUS)

REGULATIONS 2024

B.E. COMPUTER SCIENCE AND ENGINEERING

(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

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	PCC	3	0	0	3	3
4.		Fundamentals of Programming for Problem Solving	ESC	3	0	0	3	3
5.		Basic Electrical & Electronics Engineering	ESC	4	0	0	4	4
6.		Personal and Professional Competencies for Engineers	HSMC	2	0	0	2	2
LAB INTEGRATED COURSE								
7.		Engineering Chemistry	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	**20**	**1**	**8**	**29**	**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
3.		Engineering Graphics and Design	ESC	2	0	4	6	4
4.		Python Programming	PCC	3	0	0	3	3
5.		Tamil and Technology	HSMC	1	0	0	1	1
LAB INTEGRATED COURSE								
6.		Physics for Information Science	BSC	3	0	2	5	4
		Engineering Mathematics – II	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	**16**	**0**	**16**	**32**	**24**

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SEMESTER - III

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Discrete Mathematics	BSC	3	1	0	4	4
2.		Objected Oriented Programming using Java	PCC	3	0	0	3	3
3.		Data Structures	PCC	3	0	0	3	3
4.		Principles of Artificial Intelligence	PCC	3	0	0	3	3
5.		Computer Architecture	PCC	3	0	0	3	3
PRACTICALS								
6.		Java Programming Lab	PCC	0	0	4	4	2
7.		Data Structures Lab	PCC	0	0	4	4	2
8.		Life Skill – I	L3	0	0	2	2	0
MANDATORY COURSE								
9.		Indian Constitution	BSC	2	0	0	2	0
			TOTAL	17	1	10	28	20

SEMESTER - IV

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Mathematical Concepts for AI	BSC	3	1	0	4	4
2.		Software Engineering	PCC	3	0	0	3	3
3.		Design Analysis of Algorithms	PCC	3	0	0	3	3
4.		Computer Networks	PCC	3	0	0	3	3
5.		Professional Elective - I	PEC	3	0	0	3	3
LAB INTEGRATED COURSE								
		Operating Systems	PCC	3	0	2	5	4
PRACTICALS								
6.		Networks Lab	PCC	0	0	4	4	2
7.		Professional Elective – I Lab	PEC	0	0	4	4	2
8.		Life Skill – II	L4	0	0	2	2	0
MANDATORY COURSE								
9.		Social Services	BSC	2	0	0	2	0
			TOTAL	20	1	12	33	24

SEMESTER - V

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Introduction to Machine Learning	PCC	3	0	0	3	3
2.		Database Management Systems	PCC	3	0	0	3	3
3.		Theory of Computation	PCC	3	0	0	3	3
4.		Data and Visual Analytics in AI	PCC	3	0	0	3	3
5.		Professional Elective - II	PEC	3	0	2	5	4
PRACTICALS								
6.		Database Management Systems Lab	PCC	0	0	4	4	2
7.		Machine Learning Lab	PCC	0	0	4	4	2
8.		Life Skill – III	L5	0	0	2	2	0
MANDATORY COURSE								
9.		Quantitative Aptitude – I / GRE TOFEL - I		2	0	0	2	0
10.		Essence of Indian Traditional Knowledge and Science	BSC	2	0	0	2	0
			TOTAL	**19**	**0**	**12**	**31**	**20**

SEMESTER - VI

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Deep Learning	PCC	3	0	0	3	3
2.		Natural Language Processing	PCC	3	0	0	3	3
3.		Soft Computing	PCC	3	0	0	3	3
4.		Object Oriented Analysis and Design	PCC	3	0	0	3	3
5.		Professional Elective - III	PEC	3	0	2	5	4
6.		Open Elective – II	OEC	3	0	0	3	3
PRACTICALS								
7.		Object Oriented Analysis and Design Lab	PCC	0	0	4	4	2
8.		Innovative Project Lab for Computer Engineers	EEC	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**	**34**	**23**

SEMESTER - VII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Professional Elective - IV	PEC	3	0	2	5	4
2.		Open Elective -III	OEC	3	0	0	3	3
PRACTICALS								
3.		Internship / Project Phase - I	EEC	0	0	5	5	4
			TOTAL	**6**	**0**	**7**	**13**	**11**

SEMESTER - VIII

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.		Elective - Management	HSC	3	0	0	3	3
2.		Human Values and Ethics	HSC	3	0	0	3	3
PRACTICALS								
3.		Project Work – Phase II	EEC	0	0	8	8	10
			TOTAL	**6**	**0**	**8**	**14**	**16**

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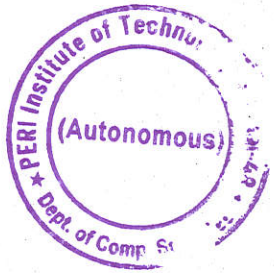
B.E. COMPUTER SCIENCE AND ENGINEERING (ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

LIST OF PROFESSIONAL ELECTIVES: VERTICALS

Sno	PE1 Emerging Technologies	PE2 Full Stack Development	PE3 Data Science	PE4 Cloud Computing & Data Center Technologies	PE5 Creative Media	PE6 Artificial Intelligence
1	Advanced Python Programming	Web Application Security	Big Data Analytics	Virtualization	Multimedia and Animation	Knowledge Engineering
2	Augmented Reality / Virtual Reality	Java Full Stack	Data Exploration and Visualization	Cloud Services Management	Game Development	Soft Computing
3	UI and UX Design	App Development	Advanced Database Management System	Security and Privacy in Cloud	UI and UX Design	Neural Networks and Deep Learning
4	Machine Learning	UI and UX Design	Image and Video Analytics	Storage Technologies	Digital marketing	Generative AI Fundamentals
5	Embedded Systems and IoT	Software Testing and Automation	Data Science using Python (NPTEL)	DevOps	Multimedia Data Compression	Game Theory



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Department of Computer Science and Engineering
(Artificial Intelligence And Machine Learning)

OPEN ELECTIVE COURSES: VERTICALS

Vertical I	Vertical II	Vertical III	Vertical IV
Open Elective offered by Electronics and communication Engineering	**Open Elective offered by Civil Engineering**	**Open Elective offered by Mechanical Engineering**	**Open Elective offered by Electrical and Electronics Engineering**
Microcontroller and Embedded System	Civil Engineering Drawing Laboratory	AutoCAD	Electrical CAD
Advanced Embedded System and IoT	Civil Engineering Modelling Laboratory I	Solid Works	Design Implementation and Commissioning of Solar and Wind Energy Systems
VLSI Design and MEMS Technology	Computational Structural Analysis Laboratory	ANSYS	PLC and SCADA Systems
Digital Design by using VHDL/Verilog	Plan Analysis & Design of Structure		Electrical Vehicle Design
	HVAC		

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ANNEXURE - II to IV

SEMESTER – I SYLLABUS

	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. U
- To develop simple programs using basic constructs in C. U/A
- 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

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-interpreters- 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. Programing in ANSI C, E Bala gurusamy, Tata McGraw Hill Education Pvt. Ltd 2024.
4. Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., NewDelhi.

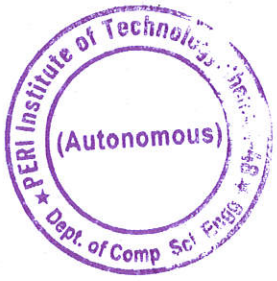
COURSE OUTCOMES

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



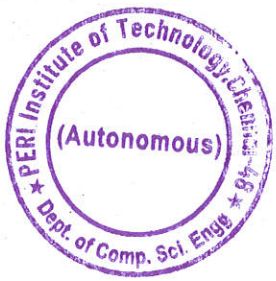
	Introduction to Advanced Computer Technologies	L	T	P	C
	(Common to CSE,IT,CSBS,AI & DS,AI & ML,CS Programmes)	3	0	0	3

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 Madisetti, " 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 Madisetti, '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

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

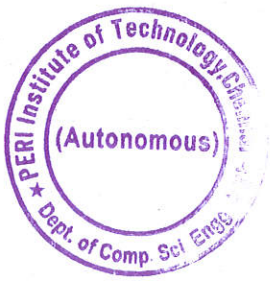
CO4:. Design and implement C programs for simple applications.

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



ANNEXURE - V & VI
SEMESTER – II SYLLABUS

PYTHON PROGRAMMING

L T P C
3 0 0 3

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.

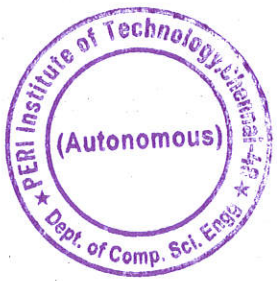
TEXT BOOKS:

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	-	-

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