MARUDHAR KESARI JAIN COLLEGE FOR WOMEN (AUTONOMOUS)

Vaniyambadi – 635 751

Department of Artificial Intelligence

for

Undergraduate Programme

Bachelor of Science in Artificial Intelligence

From the Academic Year 2024-25

CONTENT

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK FOR UNDERGRADUATE EDUCATION

1. Preamble

Bachelor of Artificial Intelligence is a 3 – Year Undergraduate Programme spread over six semesters. The course is designed to achieve a high degree of technical skills in Problem solving and Modern application development. The course develops requisite professional skills and problem solving along with developing the analytical abilities for pursuing a successful career in software industry and forms the required basics for further higher studies in Computer Science specifically in the area of Artificial Intelligence.

PROGRAMME OUTCOMES (PO)

Programme	**B.Sc. Artificial Intelligence**
Programme Code	**US01**
Duration	**3 years [UG]**
Programme Outcomes	**PO1:** Acquire knowledge in Artificial Intelligence to apply the knowledge in their day-to-day life for betterment of self and society. **PO2:** Develop critical, analytical thinking and problem-solving skills. **PO3:** Develop research related skills in defining the problem, formulate and test the hypothesis, analysis, interpret, and draw conclusion from data. **PO4**: Address and develop solutions for societal and environmental needs of local, regional and national development. **PO5:** Work independently and engage in lifelong learning and enduring proficient progress. **PO6:** Provoke employability and entrepreneurship among students along with ethics and Communication skills. **PO7:** Understand the importance of ethical behavior in business contexts and be able to recognize and address ethical dilemmas they may encounter in their professional careers. **PO8:** Prepared for lifelong learning and professional development, including the ability to adapt to changes in technology, business practices, and economic conditions throughout their careers.

Programme Specific Outcomes:	**PSO1:** Artificial Intelligence for Real-World Solutions Demonstrate the ability to apply Artificial Intelligence and computational techniques to analyze and solve complex real-world problems effectively. **PSO2:** Ethical and Ethical and Professional Practices Exhibit ethical responsibility in professional practices, ensuring compliance with cyber regulations, laws, and industry standards while designing and developing computing solutions. **PSO3:** Innovation and Entrepreneurship Apply innovative thinking and entrepreneurial strategies to develop and implement technology-driven solutions for societal and business challenges.

Eligibility for Admission:

Candidate seeking admission to the first year of the UG Degree Course should have passed the Higher Secondary Course Examination (Academic or Vocational) conducted by the Govt. of Tamilnadu with Mathematics / Business Mathematics / Statistics / Computer Science as a subject or an Examination of any other University accepted as equivalent thereto by the Syndicate subject to such other conditions as may be prescribed. Such candidates shall be permitted to take the B.Sc. Degree Examination of this University after the completion of the Course of three Academic Years in this University / Colleges affiliated to this University and shall qualify for the B.Sc. Degree.

Methods of Evaluation and Assessment

Methods of Evaluation		
Internal Evaluation		25 Marks
External Evaluation	End Semester Examination	75 Marks
	Total	**100 Marks**
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, short summary or overview	
Application (K3)	Suggest idea/concept with examples, suggest formulae, solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, finish a procedure in many steps, Differentiate Between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Semester - I						
Code	**Course Title**	**Hours Distribution**				**C**
		L	**T**	**P**	**S**	
24UFTA11	Tamil - 1	4	1	0	0	3
24UFEN11	English - 1	4	1	0	0	3
24UAIC11	CC – 1 Programming for Problem Solving	3	1	2	0	5
24UAIC12P	CC - 2 (Practical) Problem Solving using C	0	0	4	0	3
24UMAA13	EC - 1 AL I) Statistical Methods and their Applications I	3	1	0	0	3
24UAIS11	SEC – 1 NME Office Automation	1	0	1	0	2
24UAIS12	SEC – 2 Internet & Web Development	1	0	1	0	2
24UAIF11	FC Digital Computer Fundamentals	1	1	0	0	2
TOTAL					**30**	**23**

Semester - II						
Code	**Course Title**	**Hours Distribution**				**C**
		L	**T**	**P**	**S**	
24UFTA21	Tamil - 2	4	1	0	0	3
24UFEN21	English - 2	4	1	0	0	3
24UAIC21	CC - 3 Python Programming	3	1	2	0	5
24UAIP22P	CC - 4 (Practical) Python Programming Lab	0	0	4	0	2
24UMAA23	EC - 2 AL Statistical Methods and it's Applications-II	3	1	0	0	4
24UMAA23P	EC - 3 AL Statistical Methods and it's Applications –I& II Practical's	0	0	2	0	2
24UAIS21	SEC - 3 PHP Programming	1	0	1	0	2
24UAEC21	AEC – 1 Life Skill For Yoga	1	1	0	0	2
TOTAL					**30**	**23**

L-Lecture **T-Tutorial** **P-Practical** **S-Seminar** **C-Credit**

Students must complete at least one online course (MOOC) from platforms like SWAYAM, NPTEL, or Nanmudalvan within the fifth semester. Additionally, engaging in a specified Self-learning Course is mandatory to qualify for the degree, and successful participation will be acknowledged with an extra credit of 2*.

1st YEAR: FIRST SEMESTER

Course Code	Course Name Core Course 1	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAIC11	CC-1 Programming for Problem Solving	Core	3	1	2	0	5	6	25	75	100

Learning Objectives	
LO1	Understand and develop algorithms to solve problems.
LO2	Learn the basics of a programming language such as syntax, data types, variables, control structures (loops, conditionals), functions, and basic I/O operations.
LO3	Use data structures like arrays, linked lists, and stacks to solve various problems
LO4	Cultivate problem-solving skills by practicing solving various types of problems, including mathematical, logical, and real-world problems.
LO5	Foster critical thinking skills by exploring different approaches to solving problems and evaluating their effectiveness.

Unit	Content	Hours
1	Introduction to Programming: Introduction to computers, Computer characteristics, Hardware vs software, Steps to develop a program, Software development life cycle, Structured programming, Types of programming languages, Introduction to c, Developing a c program, Console input and output functions, Error diagnostics, Debugging Techniques	18
2	Operators and Expressions: Identifiers and keywords, Data types, Constants, Variables, Declarations, Expressions, Statements, Arithmetic operators, Unary operators, Relational and logical operators, Assignment operators, Conditional operator Branching, if- else statement, switch statement, go to statement, Looping, while statement, do- while statement, for statement, Nested control structures, break statement, continue statement.	18
3	Arrays and Strings: Defining an array, Processing an array, Multidimensional arrays, Searching algorithm, Linear search, Sorting algorithm, Bubble sort algorithm, Strings, Defining a string, Initialization of strings, Reading and writing a string, Processing the strings.	18
4	Functions: Functions, Overview, Defining a function, Accessing a function, Function prototypes, Passing arguments to a function, Passing arrays to functions, Recursion. Pointers and Structures: Fundamentals, Pointer declarations, Passing pointers to functions	18

5	Pointers and one dimensional arrays, Dynamic memory allocation, Operations on pointers, Defining a structure, Processing a structure, Array of structures, Structures and pointers, Self-referential structures. File system, Types of file, working with files, File Handling, file operation.	18

CO	Course Outcomes
CO1	The student can understand the fundamentals of computer and program development process.
CO2	They can prepare innovative solution for the problem using branching and looping statements.
CO3	The student can decompose a problem into functions and synthesize a complete program using divide and conquer approach.
CO4	The Student will be able to formulate algorithms and programs using arrays, pointers and structures
CO5	The Student will be able to create a new application software to solve real world problems.
Textbooks:	
1	Problem Solving & Program Design in C Pearson Education India 7th edition Jeri R. Henly
2	Problem Solving with C Paperback – 30 April 2018 by M.T. Somashekara (Author), D. S. Guru (Author), K. S. Manjunatha (Author)
Reference Books:	
1	Yashavant Kanetkar, "Let Us C", 15thedition, 2016, Bpb Publications, ISBN:9788183331630
2	Herbert Schildit, "The Complete Reference C", 4th edition, 2017, McGraw Hill Education(India), 2017, ISBN:978007041183
3	Beulah Christalin Latha, Anuja Beatrice, Carolin Jeeva & Anita Sofia, Fundamentals of Computing and Programming, 1st edition, Pearson, 2018
4	Sumitabha Das, "Computer Fundamentals and C Programming",18thedition,2018, McGraw Hill Education(India),ISBN:9789387886070
5	Stephen G.Kochan, "Programming in C",4th edition,2015,ISBN:9789332554665,
Web resources:	
1	https://www.technologywithvivek.com/2023/09/Problem%20solving%20techniques%20kya%20hoti%20hai.html
2	http://aagasc.edu.in/cs/C-Notes.pdf

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	2	2	2	2	3
CO2	3	3	2	3	2	3	2	3	3	3	2
CO3	3	3	2	3	3	2	2	3	3	3	2
CO4	3	3	2	3	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	2	3	3	3	2
Total	15	15	10	15	13	14	11	14	14	14	12
Average	3	3	2	3	3	3	2.2	3	3	3	2

3 – Strong, 2- Medium, 1- Low

1st YEAR: FIRST SEMESTER

Course Code	Course Name Core Course 2	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAIC12P	CC-2 Practical-Problem Solving using C	Core	0	0	4	0	3	4	25	75	100

Learning Objectives	
LO1	Understand the need for programming to solve computational problems
LO2	Encourage learners to collect relevant data and information related to the problem. This could involve research, interviews, observations, or data analysis.
LO3	Discover the basic programming constructs to prepare the program
LO4	Analyze and interpret data using array, functions and pointers
LO5	Recognize the bugs in the C Program

	List of Programs	Hours
I	1. Implementation of Basic C programs 2. Write a c program Add two complex number. 3. Simple computational problems using arithmetic expressions and operators 4. Program to print path from root node to destination node 5. Problem solving using branching and logical expressions 6. Iterative problems using Loops, while and for loops 7. Implementation of linear searching, bubble sort, and Matrix Manipulation using Arrays 8. Implementation of Text Processing using Strings 9. Find Square Root, numerical differentiation, numerical integration using functions and Recursion. 10. Implementation of basic file operations	60

CO	Course Outcomes
CO1	Translate given algorithms to a working and correct program
CO2	Identify and correct logical errors encountered at run time
CO3	Create iterative as well as recursive programs.
CO4	Represent data in arrays, strings and structures and manipulate them through a program.
CO5	Declare pointers of different types and use them in defining self-referential structures.
Textbooks:	
1	Verbal and nonverbal Reasoning by RS Agarwal from S Chand publications
2	Quantitative aptitude by R S Agarwal, S Chand Publications
3	Floyd, Thomas L, "Digital Computer Fundamentals", 10th Edition, University Book Stall, 1997
4	Peter Norton, "Introduction to Computers",4th Edition, TMH Ltd, New Delhi, 2001.
5	R.G. Dromey,"How to solve it by Computers", Pearson Publishers, New Delhi, 2007
Reference Books:	
1	Practical Electronics for Inventors, 4th Edition Paul Scherz , Dr. Simon Monk
2	Quantitative Aptitude by Competitive Examinations by Abhijit Guha 4 th edition 67.
3	Analytical and Logical reasoning By Sijwali B S
4	A Modern Approach To Verbal & Non Verbal Reasoning By R S Agarwal& Analytical and Logical reasoning for CAT and other management entrance test By Sijwali B S
5	Malvino, Paul Albert and Leach, Donald P, "Digital Principles and Applications", 4 th Edition, TMH, 2000.
6	Malvino, Paul Albert and Leach, Donald P, "Digital Computer Fundamentals", 3 rd Edition, TMH, 1995.
7	Bartee, Thomas C, "Digital Computer Fundamentals", 6th Edition, TMH, 1995.
Web resources:	
1	https://www.coursesidekick.com/mathematics/2831716/
2	https://byjus.com/maths/number-system/
3	https://www.sctevtservices.nic.in/docs/website/pdf/140294.pdf/
4	https://www.jsscacs.edu.in/sites/default/files/Department%20Files/Number%20System%20.pdf/
5	https://www.vedantu.com/maths/factorisation

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	2	2	2	2	3
CO2	3	3	2	3	2	3	2	3	3	3	2
CO3	3	3	2	3	3	2	2	3	3	3	2
CO4	3	3	2	3	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	2	3	3	3	2
Total	15	15	10	15	13	14	11	14	14	14	12
Average	3	3	2	3	3	3	2.2	3	3	3	2

3 – Strong, 2- Medium, 1- Low

1st YEAR: FIRST SEMESTER

Course Code	Course Name Allied	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UMAA13	**EC – 1 AL Statistical Methods And Their Applications -1**	**Core**	**2**	**1**	**1**	**0**	**3**	**4**	**25**	**75**	**100**

Learning Objectives	
LO1	Scope and diagrammatic representation of data
LO2	To know about Measures of Location
LO3	To gain knowledge on Measures of Dispersion
LO4	To understand the concept of Skewness
LO5	To understand the relationship between variables and forecasting the future values

Unit	Content	Hours
1	Introduction - Scope and Limitations of Statistical Methods - Classificationof Data –Tabulation of Data- Diagrammatic and Graphical Representation of Data.	12
2	Measures of Location: Arithmetic Mean, Median, Mode, and TheirProperties.	12
3	Measures of Dispersion: Range, Quartile Deviation, Mean Deviation, Standard Deviation.	12
4	Measures of Skewness: Karl Pearson’s, Bowley’s, and Kelly’s and Coefficient of Skewness .	12
5	Correlation: Karl Pearson – Spearman’s Rank Correlation	12

CO	Course Outcomes
CO1	Understand the statistical methods measures of location
CO2	Understand the statistical methods measures of dispersion
CO3	Apply the statistical methods of dispersion and location
CO4	Understand the concept of Skewness.
CO5	Understand the relationship between variables and fore casting the future values
Textbooks:	
1	Fundamental of Mathematical Statistics-S.C.Gupta&V.K.Kapoor-Sultan Chand
2	Fundamental of Applied Statistics- S.C.Gupta&V.K.Kapoor-Sultan Chand
3	Statistical Methods-Snedecor G.W.& Cochran W.G.oxford&+DII
4	Elements of Statistics -Mode.E.B.-Prentice Hall
5	Statistical Methods-Dr.S.P.Gupta-Sultan Chand & Sons
Reference Books:	
1	Gupta S.P.(2001),Statistical Methods ,Sultan Chand&Sons ,New Delhi.
2	Gupta. S. C. and Kapoor. V. K. Fundamentals of Applied Statistics, Sultan Chand & Sons, New Delhi
3	Pillai R. S. N. And Bagavathi. V. (2005), Statistics, S. Chand & Company Ltd., New Delhi.
4	Sancheti D. C. And Kapoor. V. K (2005), Statistics (7th Edition), Sultan Chand & Sons, New Delhi.
5	Arora P. N, Comprehensive Statistical Methods, Sultan Chand & Sons, New Delhi
6	Gupta S.P.(2001),Statistical Methods ,Sultan Chand&Sons ,New Delhi.
Web resources:	
1	https://nptel.ac.in/courses/111107105

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	3	2	2	3	3	2
CO2	3	3	3	3	3	2	3	3	3	3	3
CO3	3	3	2	3	2	3	2	3	2	3	2
CO4	2	3	3	3	3	3	3	3	3	3	3
CO5	2	2	3	3	3	3	2	2	3	3	2
Total	13	13	14	15	13	14	12	13	14	15	12
Average	2.6	2.6	2.8	3	2.6	2.8	2.4	2.6	2.8	3	2.4

3 – Strong, 2- Medium, 1- Low

1st YEAR: FIRST SEMESTER

Course Code	Course Name Skill Enhancement Course-1	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAIS11	SEC-1 Office Automation	SEC	1	0	1	0	2	2	25	75	100

Learning Objectives

LO1	Understand basic computer hardware components and their functions, Differentiate between operating systems like DOS, UNIX, and Windows.
LO2	Learn to open, save, and close documents, Master text editing, formatting, and document layout, and Use spell checker and printing features effectively.
LO3	Navigate Excel for data entry, formatting, and basic analysis. Understand formulas, charts, and financial statement preparation.
LO4	Learn about databases, sorting, indexing, and record retrieval Design and execute queries and reports using DBMS tools like MS Access.
LO5	Create and deliver engaging presentations using PowerPoint. Understand slide types, adding objects, transitions, and animations

Unit	Content	Hours
1	Introductory concepts: Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating Systems and it's features: DOS–UNIX–Windows. Introduction to Programming Languages.	6
2	Word Processing: Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, header and footers, numbering; printing Preview, options, merge.	6
3	Spreadsheets: Excel– opening, entering text and data, formatting, navigating; Formulas–entering, handling and copying; Charts–creating, formatting and printing, analysis tables, preparation of financial statements, introduction to data analytics.	6
4	Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding Programming environment in DBMS; Developing menu drive applications in query language(MS–Access).	6
5	Power point: Introduction to Power point - Features – Understanding slide typecasting & amp; viewing slides – creating slide shows. Applying special object – including objects & amp; pictures– Slide transition– Animation effects, audio inclusion, timers.	6

CO	Course Outcomes
CO1	Possess the knowledge on the basics of computers and its components
CO2	Gain knowledge in Creating Documents, spreadsheets and presentations.
CO3	Demonstrate an understanding of different automation tools.
CO4	Learn the concepts of Database and implement the Query in Database.
CO5	Utilize the automation tools for documentation, calculation and presentation purpose.
Textbooks:	
1	Peter Norton, "Introduction to Computers"–Tata McGraw - Hill.
2	Archana Kumar "Computer Basics with Office Automation'' January 2019 Edition, Dream Tech Publication
3	"Computer Fundamentals and Office Automation " Vishal Sharma, Vision Publications
4	Computer Fundamentals and Office Automation (English, Paperback, Dr. R. Deepalakshmi) Charulatha Publications Private Limited ,Edition 2019
Reference Books:	
1	Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, "Microsoft 2003", Tata McGrawHill.
2	"Office Automation: Concepts and Tools" Springer-Verlag Berlin and Heidelberg Co. 1985 edition
Web resources:	
1	https://www.udemy.com/course/office-automation-certificate-course/
2	https://www.javatpoint.com/automation-tools/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	2	2	2	3	2	3	3	2
CO2	3	2	2	3	3	3	2	2	3	3	3
CO3	3	2	2	3	3	3	2	2	3	3	3
CO4	3	2	2	3	3	3	3	2	2	2	3
CO5	3	2	2	3	3	3	2	2	3	3	2
Total	15	11	10	14	14	14	12	10	14	14	13
Average	3	2	2	3	3	3	2	2	3	3	3

3 – Strong, 2- Medium, 1- Low

1st YEAR: FIRST SEMESTER

Course Code	Course Name Skill Enhancement Course-2	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAIS12	SEC-2 Internet And Web Development	Core	1	0	1	0	2	2	25	75	100

Learning Objectives	
LO1	To introduce the fundamentals of Internet and internet connections, networking.
LO2	Learning about internet technology and threats.
LO3	To introduce the fundamentals of HTML, and the principles of web design.
LO4	To Learn how to apply CSS rules to HTML elements to control their appearance, such as color, size, font, spacing, and positioning.
LO5	To construct basic websites using HTML and Cascading Style Sheets**.**

Unit	Content	Hours
1	Introduction to Internet-How does internet works. -History of Internet- Concept of WWW, Internet and WWW.Types of Internet Connection (Dial Up connection, Direct Connection & Broad Band Connection, VPN)- Internet vs Web, Web Servers, Webpage Addresses (URL's)-Use of the Internet and Benefits of Internet-Introduction to Web technologies. Types of search engines-Difference between search engine and web browser.	6
2	Internet Technology And Threats: TCP/IP–Internet Technology and Protocol. Packet switching technology, Internet Protocols: TCP/IP, Router, Internet Addressing. HTTP Protocol: Request and Response. Features of latest version of Web. Introduction of Internet threats: History Of worms And Virus - Types of Threats on Internet. Issues of Threats on Internet. Protecting Computer from virus • Firewall.	6
3	Introduction of HTML-HTML Basic Formatting Tags-Working with Text, organizing text in HTML Working with Links and URL. Creating Tables Working with Images. Working with Lists, Hyperlinks and Frames. Working with Forms, Interactive Elements.	6
4	Introduction to CSS: Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS, Overview and features of latest version of CSS. CSS lists, CSS tables.	6
5	HTML &CSS Exercises: Practical sessions-To create login page-To create a hyperlink for webpage navigation -Student table creation- student registration form-create a order and un order list Create a dynamic navigation bar.	6

CO	Course Outcomes
CO1	The Students will able to understand the concepts basic of internet.
CO2	The Students will develop an understanding of internet technology and online threats.
CO3	To introduce the fundamentals of HTML, and the principles of web design.
CO4	The students will able to apply CSS rules to HTML elements such as color, size, font, spacing, and positioning.
CO5	The students will be able to construct basic web page design using HTML & CSS.
Textbooks:	
1	HTML and CSS QuickStart Guide: The Simplified Beginners Guide to Developing a Strong Coding Foundation, Building Responsive Websites, and Mastering ... of Modern Web Design (QuickStart Guides) 2021 by David Durocher (Author).
2	Textbook Of Web Design With HTML & CSS (Paperback, Nishant Katiyar, Dr. Kapil Saxena, Dr. Rakesh Kumar Bhujade, Dr. Sachin Kamley),2020.
3	Web Design With HTML &CSS : HTML & CSS Complete Beginner's Guide Paperback– 31 October 2021by Prem Kumar (Author).
Reference Books:	
1	HTML & CSS: THE COMPLETE REFERENCE fifth edition by Thomas Powell (Author).2017
2	Head First HTML and CSS by Elizabeth Robson and Eric Freeman published in 2012
Web resources:	
1	https://www.tutorialspoint.com/internet_technologies/internet/
2	https://www.w3schools.com/html/html_css/
3	https://www.codecademy.com/
4	https://www.geeksforgeeks.org/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	2	2
CO2	3	3	3	3	2	3	3	2	2	2	2
CO3	3	3	3	3	3	2	2	2	3	3	3
CO4	3	3	3	3	3	2	2	2	3	3	3
CO5	3	3	3	3	3	2	2	3	3	3	2
Total	15	15	15	15	14	12	12	12	14	13	12
Average	3	3	3	3	3	2	2	2	3	3	2

3 – Strong, 2- Medium, 1- Low

1st YEAR: FIRST SEMESTER

Course Code	Course Name Foundation Course	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAIF11	FC- Digital Computer Fundamentals	Foundation	1	1	0	0	2	2	25	75	100

Learning Objectives

LO1	Identify the logic gates and their functionality
LO2	Perform number conversions from one system to another system
LO3	Design basic electronic circuits (combinational circuits)
LO4	Perform a comparative analysis of the components of different memory units
LO5	Perform number conversions

Unit	Content	Hours
1	Divisibility, LCM, HCF- Numbers, Decimals, Fractions, Powers -Profit, Loss - Simple interest and Compound interest -Speed, Distance, Time.	6
2	Coding, Decoding, Series-missing number, odd one out, Cause and Effect, Blood relations	6
3	Number System And Codes: Decimal Numbers, Binary Numbers, Decimal to Binary Conversions, Binary Arithmetic, 1's and 2's complements of Binary Numbers, Signed Numbers, Arithmetic Operations with Signed numbers, Hexadecimal Numbers, Octal Numbers, Digital Codes, Error Detection Codes	6
4	Logic Gates: The Inverter, The AND gate, The OR gate, The NAND gate, NOR gate, The Exclusive–OR gate and Exclusive-NOR gate; Boolean Algebra and Logic Simplification – Boolean Operations and Expressions, De Morgan's Theorems, The Karnaugh Map, SOP Minimizations.	6
5	Factoring Methods: Finding the square root of a number, the smallest Divisor of an integer, the greatest common divisor of two integers, computing the prime factors of an integer, raising a number to a large power.	6

CO	Course Outcomes
CO1	Identify the logic gates and their functionality
CO2	Perform number conversions from one system to another system
CO3	Design basic electronic circuits (combinational circuits)
CO4	Perform a comparative analysis of the components of different memory units
CO5	Perform number conversions
Textbooks:	
1	R.G.Dromey, "How to Solve it by Computer", Pearson Education India, 2008.
2	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, "Introduction to Algorithms",3rd Edition, The MIT Press Cambridge, Massachusetts London, England, 2008
3	Brain M. Kernighan, and Dennis M. Ritchie, "The C Programming Language", 2 nd edition, Princeton HallSoftware Series, 2012
Reference Books:	
1	Steven S. Skiena, "The Algorithm Design Module", 2nd Edition, Springer-Verlag London Limited, 2008
2	Donald E. Knuth, The Art of Computer Programming", Volume 1: Fundamental Algorithms, 3rd Edition, Addison Wesley Longman, 1997
3	Donald E. Knuth, The Art of Computer Programming", Volume 2: Semi numerical Algorithms, 3 rd Edition, Addison Wesley Longman, 1998
4	Greg Perry and Dean Miller, "C programming Absolute Beginner's Guide", 3rd edition, Pearson Education, Inc, 2014
Web resources:	
1	https://www.geeksforgeeks.org/number-series-in-quantitative-aptitude/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	2	2
CO2	3	3	3	3	2	3	3	2	2	2	2
CO3	3	3	3	3	3	2	2	2	3	3	3
CO4	3	3	3	3	3	2	2	2	3	3	2
CO5	3	3	3	3	3	2	2	3	3	3	3
Total	15	15	15	15	14	12	12	12	14	13	12
Average	3	3	3	3	3	2	2	2	3	3	2

3 – Strong, 2- Medium, 1- Low

1st YEAR: SECOND SEMESTER

Course Code	Course Name Core Course	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAIC21	**Python Programming**	**Core**	**3**	**1**	**2**	**0**	**5**	**6**	**25**	**75**	**100**

Learning Objectives	
LO1	To understand the concepts of Python programming.
LO2	Understanding Decision and Looping statements.
LO3	To impart knowledge on functions, strings and modules.
LO4	To impart knowledge on list, set, tuples and dictionaries.
LO5	To know the file handling concepts.

Unit	Content	Hours
1	Basics of Python Programming: History of Python-Features of Python-Literal-Constants-Variables - Identifiers - Keywords-Built - in Data Types-Output Statements - Input Statements- Comments - Indentation-Operators- Expressions-Type conversions. Python Arrays: Defining and Processing Arrays - Array methods.	18
2	Control Statements: Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. Jump Statements: break, continue and pass statements	18
3	Functions: Function Definition Function Call Variable Scope and its Life time Return Statement. Function Arguments: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments. Python Strings: String operations mutable Strings-Built in String Methods and Functions-String Comparison. Modules: import statement - The Python module - dir() function - Modules and Namespace - Defining our own modules.	18
4	Python Sets & Lists: Creating a Sets & types - Creating a list-Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple - Nested tuples - Difference between lists and tuples. Dictionaries: Creating, Accessing, Updating and Deleting Elements in a Dictionary - Dictionary Functions and Methods - Difference between Lists and Dictionaries.	18
5	Python File Handling: Types of files in Python - Opening and Closing files-Reading and Writing files: write () and write lines () methods-append() method - read() and readlines()methods - with keyword-Splitting words - File methods -File Positions-Renaming and deleting files.	18

CO	Course Outcomes
CO1	Learn the basics of python, Do simple programs on python, Learn how to use an array.
CO2	Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements.
CO3	Illustrate Concept of, function arguments
CO4	Illustrate and implement the concept of Sets, Tuples, List and Dictionaries
CO5	Understand usage of File handlings in python.
Textbooks:	
1	Ashok Kamthaneet.al,Programming and Problem Sovling with Python, 2nd Edition,TMH
2	ReemaThareja, "Python Programming using problem solving approach", First Edition, 2017,Oxford University Press
Reference Books:	
1	VamsiKurama,"Python Programming:A Modern Approach",Pearson Education.
2	Mark Lutz,"Learning Python", Orielly.
3	Adam Stew arts,"Python Programming",Online
4	Fabio Nelli,"Python Data Analytics",A Press
5	Kenneth A. Lambert,"Fundamentals of Python
Web resources:	
1	https://www.programiz.com/python-programming
2	https://www.guru99.com/python-tutorials.html
3	https://www.w3schools.com/python/python_intro.asp
4	https://www.geeksforgeeks.org/python-programming-language/
5	https://en.wikipedia.org/wiki/Python_(programming_language)
6	https://infytq.infosys.com/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	2	2	2	2	3
CO2	3	3	2	3	2	3	2	3	3	3	2
CO3	2	3	2	3	3	2	2	3	3	3	2
CO4	3	2	2	3	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	2	3	3	3	2
Total	14	14	10	15	13	14	11	14	14	14	12
Average	3	3	2	3	3	3	2.2	3	3	3	2

3 – Strong, 2- Medium, 1- Low

1st YEAR: SECOND SEMESTER

Course Code	Course Name Core Course	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAIC22P	**Python Programming Lab**	**Core Practical**	**0**	**0**	**4**	**0**	**2**	**4**	**25**	**75**	**100**

Learning Objectives	
LO1	To understand the concepts of Python programming.
LO2	Understanding Decision and Looping statements.
LO3	To impart knowledge on functions, strings and modules.
LO4	To impart knowledge on list,set, tuples,and dictionaries.
LO5	To know the file handling concepts.

	List of Programs	**Hours**
I	1. Write a program to check if a number belongs to the Fibonacci Sequence. 2. Write a program to solve Quadratic Equations. 3. Write a program to find the sum of n Natural Numbers. 4. Write a program to display Multiplication Tables. 5. Write a program to check if a given number is a Prime Number or Not 6. Write a program to implement a Sequential Search. 7. Write a program to create a Calculator. 8. Write a program to explore String Functions. 9. Write a program to implement Selection Sort. 10. Write a program to implement Stack. 11. Write a program to demonstrate usage of Basic Regular Expression. 12. Write a Python Program to find the area of a triangle given all three sides. 13. Write a program to demonstrate use of Advanced Regular Expressions for Data Validation. 14. Write a program to demonstrate the use of LIST. 15. Write a program to demonstrate use of Dictionaries. 16. Write a program to Create SQLite database and Perform Operations on Tables. 17. Write a program to demonstrate Exceptions in Python. 18. Write a program to drawing Line Chart and Bar Chart using Mat plot lib. 19. Write a program to draw Histogram and Pie Chart using Mat plot lib.	60

CO	Course Outcomes
CO1	Learn the basics of python,Do simple programs on python, Learn how to use an array.
CO2	Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements.
CO3	Illustrate Concept of, function arguments
CO4	Illustrate and implement the concept of Sets, Tuples, List and Dictionaries
CO5	Understand usage of File handlings in python.
Textbooks:	
1	Ashok Kamthaneet.al,Programming and Problem Sovling with Python, 2nd Edition,TMH
2	ReemaThareja, "Python Programming using problem solving approach", First Edition, 2017,Oxford University Press
Reference Books:	
1	VamsiKurama,"Python Programming:A Modern Approach",Pearson Education
2	Mark Lutz,"Learning Python", Orielly.
3	Adam Stew arts,"Python Programming",Online
4	Fabio Nelli,"Python Data Analytics",A Press
5	Kenneth A. Lambert,"Fundamentals of Python
Web resources:	
1	https://www.programiz.com/python-programming
2	https://www.guru99.com/python-tutorials.html
3	https://www.w3schools.com/python/python_intro.asp
4	https://www.geeksforgeeks.org/python-programming-language/
5	https://en.wikipedia.org/wiki/Python_(programming_language)
6	https://infytq.infosys.com/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	2	2	2	2	3
CO2	3	3	2	3	2	3	2	3	3	3	2
CO3	2	3	2	3	3	2	2	3	3	3	2
CO4	3	2	2	3	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	2	3	3	3	2
Total	14	14	10	15	13	14	11	14	14	14	12
Average	3	3	2	3	3	3	2.2	3	3	3	2

3 – Strong, 2- Medium, 1- Low

1st YEAR: SECOND SEMESTER

Course Code	Course Name Core Course	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAIS21	**PHP Programming**	**SEC**	**1**	**0**	**1**	**0**	**2**	**2**	**25**	**75**	**100**

Learning Objectives	
LO1	Learn how to take a static website and turn it into a dynamic website run from a database using PHP and MySQL.
LO2	Analyze the basic structure of a PHP web application and be able to install and maintain the web server, compile, and run a simple web application
LO3	PHP can generate dynamic page content and can create, open, read, write, delete, and close files on the server.
LO4	Understand the concepts of forms and files.
LO5	Create dynamic Web sites using PHP and MySQL.

Unit	Content	Hours
1	PHP : Introduction – installing & configuring PHP – Lexical structure – Basic syntax of PHP – programming in web environment – Common PHP Script Elements – Using Variables – Constants – Data types – Operators – Statements – Using Functions	6
2	Control structures: Decisions and Loop Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping with Html, PHP If, Else and Else if, PHP Switch, PHP While Loops, PHP For Loops.	6
3	Strings: String constant-printing strings-accessing individual's characters – comparing strings- concatenating strings-manipulating & searching strings – regular expressions. Array: Associative array – identifying elements of an array – storing data in arrays – multidimensional arrays – extracting multiple values – arrays and variable conversion – traversing- sorting.	6
4	Advanced PHP : Introduction to advanced PHP concept – Working With Forms – Processing Forms – Form Validation – Files: File and Directory Handling – Including Files – File Access	6
5	PHP and SQL database: PHP and LDAP – PHP Connectivity – Sending and receiving emails – Retrieving data from MySQL – Manipulating data in MySQL using PHP	6

CO	Course Outcomes
CO1	Describe about the basic concepts of PHP
CO2	Explain control structures.
CO3	Understand the concept of arrays and strings.
CO4	Understand the concepts of forms and files.
CO5	Create dynamic Web sites using PHP and MySQL.
Textbooks:	
1	PHP, a beginner guide
2	PHP and MYSQL Web development, Luke welling, 2003
Reference Books:	
1	Web Programming, Chris Bates, Wiley India, New Delhi, Third Edition, Reprint 2011
2	MySQL Bible: Steve Suchring, John Wiley sons, Mumbai, First Edition 2002
3	Programming PHP, Rasmus Lerdorf and Levin Tatroe, O'Reilly Publications 2002, Mumbai
Web resources:	
1	https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/
2	https://www.cplusplus.com/doc/tutorial/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	-	1	2	-	1	3	-
CO2	2	3	3	3	-	-	2	-	1	3	-
CO3	1	3	3	3	-	1	2	-	1	3	1
CO4	1	3	3	3	-	-	1	-	_	3	1
CO5	1	3	3	3	-	1	1	-	_	3	2
Total	8	15	15	15	0	3	8	0	3	15	4
Average	1.6	3	3	3	0	0.6	1.6	0	0.6	3	0.8

3 – Strong, 2- Medium, 1- Low