

SRI VENKATESWARA UNIVERSITY
BCA (ARTIFICIAL INTELLIGENCE) – W.E.F. 2023-24
SEMESTER – II

Sl. No.	Course	Name of the Subject	Total Marks	Internal Exam	Sem · End Exam	Teaching Hours	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Telugu / Hindi / Sanskrit / Tamil / Urdu)	100	25	75	4	3
3.	Skill Enhancement Course-1		50	---	50	2	2
4.	Skill Enhancement Course-2		50	---	50	2	2
5.	Major - Course 3	Fundamentals of Computers & Basics of Artificial Intelligence	100	25	75	3	3
6.	Major - Course 3	Fundamentals of Computers & Basics of Artificial Intelligence Practical course	50	---	50	2	1
7.	Major - Course 4	Programming in C	100	25	75	3	3
8.	Major - Course 4	Programming in C Practical course	50	---	50	2	1
9.	Minor		100	25	75	3	3
10.	Courses with Practicals		50	---	50	2	1

Programme: BCA ARTIFICIAL INTELLIGENCE Honours

(MAJOR)

II Semester Course Structure

W.E.F. AY 2023-24

Year	Semester	Paper	Title of the Course	No. of Hrs./ Week	No. of Credits
1	II	3	Fundamentals of Computers & Basics of Artificial Intelligence	3	3
			Fundamentals of Computers & Basics of Artificial Intelligence Practical course	2	1
		4	Programming in C	3	3
			Programming in C Practical course	2	1

SRI VENKATESWARA UNIVERSITY::TIRUPATI

BCA Artificial Intelligence Honours

Semester II

**3. Fundamentals of Computers & Basics of Artificial Intelligence
(w.e.f. 2023-24)**

Theory

Credits: 3

3 hrs/week

Learning Outcomes: Upon successful completion of the course, a student will be able to:

1. Understand the evolution and functionality of a Digital Computer.
2. Understand hardware and software components
3. Have exposure to Excel software package
4. Understand various functions & formulae used in data analysis, preparing charts etc.
5. Apply data analysis tools like pivot table, goal seek, scenarios etc.

UNIT I

Introduction to Computers: Characteristics and limitations of computer, types of computers, uses of computers, **Types of Hardware:** Input devices and output devices.

Memories: Primary memory, Secondary Memory, and cache memory

Software: Definition, types of Software: System software, Application software, Differences between System software and Application software.

UNIT II

Basics of Operating System: Operating Systems Objectives, functions, and types of Operating Systems (Simple Batch, Multi programmed, Distributed Systems, Real-Time Systems)

DOS: Features, Internal & External Commands.

MS Windows: Features of Windows OS, Components of windows (Taskbar, windows explorer, Desktop, Recycle Bin, My Computer, etc.,)

UNIT III

What is Artificial Intelligence: The AI Problems, The Underlying Assumption, What is an AI Technique, The Level of the Model, Criteria for Success.

Problems, Problem Spaces and Search: Defining the Problem as a State Space Search, Production Systems, Problem Characteristics, Production System Characteristics, Issues in the Design of Search Programs.

UNIT IV

Heuristic Search Techniques: Generate – and – Test, Hill Climbing, Best – first Search, Problem Reduction, Constraint Satisfaction, Means – ends Analysis.

UNIT V

Solving Problems by searching: Problem Solving Agents, Example problems: Toy problem and Real world problem, Search Strategies: Breadth first search, Uniform cost Search, Depth First search, Depth Limited Search.

III Reference

Text Books:

- Fundamentals Of Computers by Reema Thareja from Oxford University Press
- Elaine Rich, Kevin Knight, & Shivashankar B Nair, Artificial Intelligence, McGraw Hill, 3rd ed., 2009 (Unit-III & IV)
- Stuart J.Russell, Peter Norvig, “Artificial Intelligence A Modern Approach”, 3rd Edition, Pearson Education, 2019.(Unit-V)

Reference Books

- 1.Rajaraman, Introduction to Information Technology, PHI
- 2.Peter Norton, Introduction to Computers, Sixth edition, Tata McGraw Hill (2007).
- 3.Operating systems - Internals and Design Principles, W. Stallings, Pearson.
- 4.PC Software under Windows by Puneet Kumar AndSushil Bhardwaj From Kalyani Publishers.

V. Co-Curricular Activities:

a) Suggested Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

B. General

1. Group Discussion
2. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS: Some of the following suggested assessment methodologies could be adopted:

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports.
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

SEMESTER-II

COURSE 3: FUNDAMENTALS OF COMPUTERS & BASICS OF AI

Practical

Credits: 1

2 hrs/week

1. Demonstrating physical components of computer system
2. Demonstrating connecting peripherals to the computer system
3. Demonstrating the components of Windows Desktop
4. Demonstrating Recycle Bin
5. Demonstrating My Computer or Windows Explorer in Windows
6. State space search
7. Heuristic search
8. Toy problem

MODEL QUESTION PAPER
SEMESTER – II
COURSE 3: FUNDAMENTALS OF COMPUTERS AND ARTIFICIAL
INTELLIGENCE
(w.e.f. 2023-24)

Time :3Hrs

Max Marks 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

1. Short answer question from Unit-1
2. Short answer question from Unit-1
3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
12. Long answer question from Unit-1
13. Long answer question from Unit-2
14. Long answer question from Unit-2
15. Long answer question from Unit-3
16. Long answer question from Unit-3
17. Long answer question from Unit-4
18. Long answer question from Unit-4
19. Long answer question from Unit-5
20. Long answer question from Unit-5

Note: The question paper setter is requested to set question paper based on a model question paper and ensuring coverage across all units equally.

SRI VENKATESWARA UNIVERSITY::TIRUPATI

Common to all BCA Honours

**General/Data Science/Big Data/Artificial Intelligence/Cloud
Computing**

Semester-II

Course 4. Programming in C

(w.e.f. 2023-24)

Theory

Credits: 3

3 hrs/week

I. Learning Outcomes: Upon Successful Completion of The Course, A Student Will Be Able to:

1. Understand the evolution and functionality of a Digital Computer.
2. Apply logical skills to analyse a given problem
3. Develop an algorithm for solving a given problem.
4. Understand “C” language constructs like Iterative statements, Array processing, Pointers, etc.
5. Apply “C” language constructs to the algorithms to write a “C” language program.

II Syllabus

UNIT I

Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms, Flow Charts, Programming Languages – Generations of Programming Languages – Programming methodologies(paradigms) -

Introduction to C: Introduction– features of C – Structure of C Program – Writing the first C Program – Files used in C Program – Compiling and Executing C Programs.

UNIT II

Programming Constructs: Tokens – Using Comments – Basic Data Types in C – Variables – I/O Statements in C - Operators in C- Programming Examples.

Decision Control and Looping Statements: Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement

UNIT III

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multidimensional arrays.

Strings: Declaring and Initializing string variables, character and string handling functions.

UNIT IV

Functions: Introduction – Function declaration/ prototype – Function definition – function call – return statement – Categories of functions - Recursion - Parameter Passing techniques - Scope of variables – Storage Classes.

Pointers: Introduction to Pointers – declaring and initializing pointer Variables – accessing values using pointers - Pointer Arithmetic – Dynamic Memory Allocation.

UNIT V

Structures and Unions: Introduction – Structure definition - accessing structure members –Array of Structures - union definition – difference between structures and unions, Enumerated Data types.

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file – Command Line Arguments.

III. References:

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The „C“ Programming language” - Pearson publications.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. YashavantKanetkar - Let Us „C“ – BPB Publications.

IV. Recommended Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
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4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

B. General

1. Group Discussion
2. Try to solve MCQ“s available online.
3. Others

Semester-II
4. Programming in C

Practicals

Credits:1

2 hrs/week

List of suggested programs :

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate reflection of parameters in swapping of two integer values using **Call by Value & Call by Address**
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of two M X N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to calculate the salaries of all employees using **Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)** structure.
 - a. DA is 30 % of Basic Pay
 - b. HRA is 15% of Basic Pay
 - c. Deduction is 10% of (Basic Pay + DA)
 - d. Gross Salary = Basic Pay + DA+ HRA
 - e. Net Salary = Gross Salary - Deduction
13. Write a program to illustrate pointer arithmetic.
14. Write a program to read the data character by character from a file.

15. Write a program to create **Book (ISBN, Title, Author, Price, Pages, Publisher)** structure and store book details in a file and perform the following operations
 - a. Add book details
 - b. Search a book details for a given ISBN and display book details, if available
 - c. Update a book details using ISBN
 - d. Delete book details for a given ISBN and display list of remaining Books

MODEL QUESTION PAPER
SEMESTER – II
COURSE 4: PROGRAMMING IN C
(w.e.f. 2023-24)

Time :3Hrs

Max Marks 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

1. Short answer question from Unit-1
2. Short answer question from Unit-1
3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
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13. Long answer question from Unit-2
14. Long answer question from Unit-2
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16. Long answer question from Unit-3
17. Long answer question from Unit-4
18. Long answer question from Unit-4
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20. Long answer question from Unit-5

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