Department of Liberal Education
Era University, Lucknow
Course Outline
Effective From: 2023-24

Name of the Program	**B.A. / B.Sc. (LIBERAL EDUCATION)**			**Year/ Semester:**	**1st / 1st**
Course Name	**Fundamentals of Computer and C Programming**	**Course Code:**	**CS101**	**Type:**	**Theory**
Credits	**05**			**Total Sessions Hours:**	**75 Hours**
Evaluation Spread	**Internal Continuous Assessment:**	**50 Marks**		**End Term Exam:**	**50 Marks**
Type of Course	○ Compulsory	◉ Core		○ Creative	○ Life Skill
Course Objectives	1. To describe the usage of computers and why computers are essential components in business and society 2. To aware the student with the basics of computer- Hardware, Software, Operating System, Communication Systems. Students need to be familiar with Office Tools – MS-Word, MS-Excel, and MS- Power Point. 3. To understand computer programming and its roles in problem solving, understand and develop well-structured programs using C language. 4. To help the students develop basic programs and logical implementations of mathematical equations.				
Course Outcomes (CO): *After the successful course completion, learners will develop following attributes:*					
Course Outcome (CO)	**Attributes**				
CO1	Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components.				
CO2	Able to deal with different input/output methods.				
CO3	Able to solve problems through computer programming.				
CO4	Understand the difference between an operating system and an application program, and what each is used for in a computer.				
Pedagogy	Interactive, discussion-bases, student-centered, presentation.				
Internal Evaluation Mode	Mid-term Examination: 20 Marks Activity: 10 Marks Class test: 05 Marks Online Test/Objective Test: 05 Marks Assignments/Presentation: 05 Marks Attendance: 05 Marks				
Session Details	**Topic**			**Hours**	**Mapped CO**
Unit 1	**Introduction to Computer:** Definition, Block Diagram of Computer, Characteristics of Computer, Classification of Computers, **Hardware:** Input/output Devices, Storage Devices (Memory). Basic Software Concepts: Definition, **Classification:** System Software, Application Software and Utilities. **Basics of Networks:** Network Types and Topologies **Introduction to Internet:** Basic Terminologies, URL, Search			15	CO1

	Engine, Internet Service Provider (ISP) and TCP/IP **Number System:** Number Conversion; Binary Number System, Decimal Number System, Octal Number System, Hexadecimal Number System. **Activity:** • Demonstration of Personal Computer • M.S. Word, M.S. Excel, M.S. Power Point		
Unit 2	**Overview of C Language:** History, Features of C Language, Structure of C Programs, Compilation and Execution of C Programs, Type of Errors, Debugging Techniques. **C Language Fundamentals:** C Character Set, Identifiers and Keywords, Modifiers, Data Types, and Sizes. Variables: Declaration and Initialization, Scope of Variables, Constants, Types of Constants, Typedef () and Type Conversion. **Operators:** Types of Operators, Unary and Binary Operators, Assignment, Arithmetic, Relational and Logical Operators, Increment and Decrement Operators, Conditional Operators and Bitwise Operators. **Expressions:** Type of Expression, Precedence, and order of Evaluation. **Activity:** • Programs on data types, variables declaration & initialization, scope of variables. • Programs on type conversion. • Programs on operators and expressions.	20	CO2, CO3
Unit 3	**Decision Control Statements:** if, if-else, Nested if-else, switch, break, continue, and goto statement. **Loops:** for, while, and do-while. **Arrays:** Defining Array, Types of Arrays, Declaration and Initialization of Linear and Multidimensional Arrays. **String:** Character Array, Arrays and Strings, String Manipulation. String Functions. **Activity:** • Programs on decision control statements and loops. • Programs on arrays (single and double dimension) • Programs on string operations.	20	CO3
Unit 4	**Functions:** Built-in and User-defined, Function declaration, Definition and Function call, Nesting of Functions, Parameter Passing, and Recursive Functions. **Pointers:** Introduction, Pointer Operators (&,*), Pointer Arithmetic, Call by Value and Call by Reference, Dynamic Memory Allocation, calloc() and malloc() Functions. **Structure:** Definition and Concept, Declaration and Initialization of Structure and Macros and C Preprocessors. **Activity:** • Programs on function and recursive function. • Programs on pointers. • Programs on structures.	20	CO4

CO-PO and PSO Mapping														
CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	2	1		2	1	3	2	3	2	1	1	3	1	2
CO2	1	2	1		2	1	1	2	1	2	2	1	2	2
CO3	3	1		1	1	2	2	1	3	1	1	2	2	3
CO4	2	2	1		1	3	2	2	2	1	2	1	1	2
Strong contribution-3,			***Average contribution-2 ,***				***Low contribution-1,***							

Suggested Readings:	
Text- Books	1. V. Rajaraman, "Fundamental of Computers", B.P.B. Publications, 3rd Edition, 2011. 2. P.K. Sinha, "Fundamental of Computers", B.P.B Publication, 6th Edition, 2008.
Reference Books	1. Programming in ANSI C, Balaguruswamy, Tata McGraw-Hill, 4th Edition, 2008. 2. Kernigham, Ritchie, "The C Programming Language", PHI, 1977, India, New Delhi. 3. Pointers in C, Yashwant Kanetkar, BPB Publication, 3rd Edition, 2003.
Para Text	**Unit 1:** • https://www.javatpoint.com/computer-fundamentals-tutorial **Unit 2:** • https://archive.nptel.ac.in/courses/106/105/106105171/ **Unit 3:** • https://onlinecourses.swayam2.ac.in/cec19_cs06/preview **Unit4:** • https://onlinecourses.nptel.ac.in/noc22_cs40/preview

Recapitulation & Examination Pattern

Internal Continuous Assessment:

Component	**Marks**	**Pattern**
Mid Semester	20	**Section A:** Contains **10** MCQs/Fill in the blanks/One Word Answer/ True-False type of questions. Each question carries **0.5 Marks.** **Section B:** Contains **07** descriptive questions out of which **05** questions are to be attempted. Each question carries **03 Marks**.
Activity	10	Will be decieded by subject teacher
Class Test	05	Contains **05 descriptive questions.** Each question carries **01** Mark.
Online Test/ Objective Test	05	Contains **10 multiple choice questions.** Each question carries **0.5** Marks.
Assignment/ Presentation	05	Assignment to be made on topics and instruction given by subject teacher
Attendance	05	As per policy
Total Marks	**50**	

Course created by: Dr. Mohd Haleem

Signature:

Approved by: Prof. Mansaf Alam

Signature: