ASIAN EDUCATIONAL INSTITUTE

(AN AUTONOMOUS COLLEGE)

B.A. SEMESTER -III (2025-26)

(Major Theory)

BA-MAJ-COMP-03: C PROGRAMMING

Total Marks: 70 | **Maximum Time: 3 Hrs.**

External Examination: 50 | **Minimum Pass Marks: 35%**

Internal Assessment: 20 | **Lectures to be delivered: 45-55 Hrs**

Credits: 4(03T+01P)

Instructions for Paper-Setter:

The question paper will consist of three sections: A, B, and C. Sections A and B will each contain four questions based on their respective sections of the syllabus and will carry 30% of the total marks each. Section C will comprise 6 to 12 short answer-type questions, covering the entire syllabus uniformly, and will carry the remaining 40% of the total marks.

Instructions for Candidates:

Candidates are required to attempt any two questions from each of Sections A and B, and all questions from Section C.

Course Outcomes:

- **Understand the Programming Process:** Define problems, develop algorithms, create
- flowcharts, write C code, compile, and debug programs effectively.
- **Demonstrate Knowledge of C Basics:** Explain the history of C, identify its basic structure,
- and utilize character sets, identifiers, keywords, constants, variables, and data types.
- **Apply Operators and Expressions:** Use arithmetic, unary, logical, relational, assignment, and conditional operators while understanding operator precedence and type conversion.
- **Implement Control Statements:** Develop programs using branching (if, if-else, switch), looping (for, while, do- while), and jump statements (break, continue, goto).

SECTION A

Programming Process: Problem definition, Algorithm development, Flowchart, Coding, Compilation and debugging..

Basic structure of C program: History of C, Structure of a C program, Character set, Identifiers and keywords, constants, variables, data types.

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Operators and expressions: Arithmetic, Unary, Logical, Relational operators, assignment operators, Conditional operators, Hierarchy of operations type conversion.

Control statements: Branching statements (if, if else, switch), loop statements (for, while and do-while), jump statements (break, continue, go to), nested control structures.

SECTION B

Functions: Library functions and user defined functions, prototype, definition and call, formal and actual arguments, local and global variables, methods of parameter passing to functions, recursion.

I/O functions: Formatted & unformatted console I/O functions.

Arrays: – One dimensional and Two dimensional arrays, Declaration, Initialization, Reading values into an array, displaying array contents. .

Strings: Input/output of strings, string handling functions (strlen, strcpy, strcmp, strcat&strrev)

Text/Reference Books:

5 E. Balagurusamy, Programming in C, Tata McGraw-Hill.
6 Kernighan and Ritchie, The C Programming Language, PHI.
7 Byron Gotfried, Programming in C.
8 Kamathane, Programming in C, Oxford University Press.

5 'ਸੀ' ਭਾਸ਼ਾ ਵਿਚ ਪ੍ਰੋਗਰਾਮਿੰਗ, Madaan publishing House, Patiala.

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ASIAN EDUCATIONAL INSTITUTE
(AN AUTONOMOUS COLLEGE)
B.A. SEMESTER -III (2025-26)
(Major Lab)

BA-MAJ-COMP.P-03: C PROGRAMMING LAB
Maximum Marks: 30 **Time Allowed: 3 hrs.**

Pass Percentage: 35%

Course Outcomes:

- Develop C programs, control program execution flow, implement string handling, manage input/output operations, and apply code reusability techniques.
- Understand fundamental concepts like data types, memory management, and file handling.
- Use control structures like if/else, loops, and switch statements to control the execution of their programs.
- Introduced to basic data structures like stacks, queues, and linked lists, and learn how to implement them in C.

i. Internal Assessment	30% Marks
ii. Viva Voce(External Evaluation)	30% Marks
iii. Project File, Development and Execution(External Evaluation)	30% Marks
iv. Attendance	10% Marks

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ASIAN EDUCATIONAL INSTITUTE

(AN AUTONOMOUS COLLEGE)

B.A. SEMESTER -III (2025-26)

(Minor Theory)

BA-MIN-COMP-03: PROGRAMMING USING C

Total Marks: 70

External Examination: 50

Internal Assessment: 20

Credits: 4(03T+01P)

Maximum Time: 3 Hrs.

Minimum Pass Marks: 35%

Lectures to be delivered: 45-55 Hrs

Instructions for Paper-Setter:

The question paper will consist of three sections: A, B, and C. Sections A and B will each contain four questions based on their respective sections of the syllabus and will carry 30% of the total marks each. Section C will comprise 6 to 12 short answer-type questions, covering the entire syllabus uniformly, and will carry the remaining 40% of the total marks.

Instructions for Candidates:

Candidates are required to attempt any two questions from each of Sections A and B, and all questions from Section C.

Course Outcomes:

- **Understand the Programming Process:** Define problems, develop algorithms, create
- flowcharts, write C code, compile, and debug programs effectively.
- **Demonstrate Knowledge of C Basics:** Explain the history of C, identify its basic structure,
- and utilize character sets, identifiers, keywords, constants, variables, and data types.
- **Apply Operators and Expressions:** Use arithmetic, unary, logical, relational, assignment, and conditional operators while understanding operator precedence and type conversion.
- **Implement Control Statements:** Develop programs using branching (if, if-else, switch), looping (for, while, do- while), and jump statements (break, continue, goto).

SECTION A

Programming Process: Problem definition, Algorithm development, Flowchart, Coding, Compilation and debugging..

Basic structure of C program: History of C, Structure of a C program, Character set, Identifiers and keywords, constants, variables, data types.

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Operators and expressions: Arithmetic, Unary, Logical, Relational operators, assignment operators, Conditional operators, Hierarchy of operations type conversion.

Control statements: Branching statements (if, if else, switch), loop statements (for, while and do-while), jump statements (break, continue, go to), nested control structures.

SECTION B

Functions: Library functions and user defined functions, prototype, definition and call, formal and actual arguments, local and global variables, methods of parameter passing to functions, recursion.

I/O functions: Formatted & unformatted console I/O functions.

Arrays: – One dimensional and Two dimensional arrays, Declaration, Initialization, Reading values into an array, displaying array contents. .

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ASIAN EDUCATIONAL INSTITUTE
(AN AUTONOMOUS COLLEGE)
B.A. SEMESTER -III (2025-26)
(Minor Lab)

BA-MIN-COMP.P-03: PROGRAMMING USING C LAB

Maximum Marks: 30

Pass Percentage: 35% **Time Allowed: 3 hrs.**

Course Outcomes:

- Develop C programs, control program execution flow, implement string handling, manage input/output operations, and apply code reusability techniques.
- Understand fundamental concepts like data types, memory management, and file handling.
- Use control structures like if/else, loops, and switch statements to control the execution of their programs.
- Introduced to basic data structures like stacks, queues, and linked lists, and learn how to implement them in C.

i. Internal Assessment	30% Marks
ii. Viva Voce(External Evaluation)	30% Marks
iii. Project File, Development and Execution(External Evaluation)	30% Marks
iv. Attendance	10% Marks

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Asian Educational Institute

(An Autonomous College)

B.A. Sem IV (Session 2025-26)

(Major theory)

BA-MAJ-COMP-04:DATABASE MANAEMENT SYSTEM

Total Marks: 70

External Marks: 50

Internal Assessment: 20

Credit: 04(03T+01P)

Maximum Time: 3 Hrs.

Minimum Pass Marks: 35%

Lectures to be delivered: 45-55 Hrs.

Instructions for the paper setter

The question paper will consist of three sections A, B and C. Each of sections A and B will have four questions from the respective sections of the syllabus and each question carry 7.5 marks. Section C will consist of one compulsory question having 10 parts of short-answer type covering the entire syllabus uniformly and each question will carry 2 marks.

Instructions for the candidates

Candidates are required to attempt two questions each from section A and B and the entire section C.

SECTION A

Traditional file procession system : Characteristics, limitation. Database : Definition, composition,

Database Management System : Definition, Characteristic advantages over traditional file processing system, Implication Database approach, Uses of database, DBA and its responsibilities Database schema, instance, DBMS architecture, data independence, mapping between different levels.

Database language : DDL, DML, DCL.

Keys : Super, candidate, primary, unique, foreign.

Entity relationship model : concepts, mapping cardinalities, entity relationship diagram, weak sets, strong entity sets, aggregation, generalization, converting ER diagram to tables.

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SECTION B

Normalization: Definition, Need, Process: Determinant, Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive dependency, Multivalued Dependency, Join Dependency, Types of Normal Forms, Merits and Demerits of Normalization.

Transaction & Concurrency Control: Concept of transaction, ACID properties, Serializibility, States of transaction, Concurrency Control – Locking techniques, time-stamp based protocols.

Database Security: Security requirements, database integrity, Granting & revoking privileges.

Reference Books:

1. JD Ullman, Garcia Molina, Database System: The Complete Book, Pearson Education.
2. Ramez Elmasri, Fundamentals of Database Systems, Pearson Education.
3. C.J Date, An Introduction to Database System, Pearson Education.
4. Parteek Bhatia, Database Management System.
5. Henry F. Korth, Database Sstem Concepts, Tata McGraw-Hill.

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Asian Educational Institute
(An Autonomous College)
B.A. Sem IV (Session 2025-26)
Subject Code: BA-MAJ-COMP(P)04

Major lab
DATABASE MANAGEMENT SYSTEM

Max. Marks : 30

Min. Pass Marks: 35%

Practical units to be conducted: 65-75

Time allowed: 3 Hours

The laboratory course will comprise of exercises to supplement what is learnt under Paper **DATABASE MANAGEMENT SYSTEM**

The break-up of marks for the practical will be as under:

Lab Record	:	05 marks
Viva Voce	:	10 marks
Programme Development and Execution	:	15 marks

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Asian Educational Institute

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B.A. Sem IV (Session 2025-26)

(Minor theory)

BA-MIN-COMP-04: FUNDAMENTALS OF DBMS

Total Marks: 70

External Marks: 50

Internal Assessment: 20

Credit: 04(03T+01P)

Maximum Time: 3 Hrs.

Minimum Pass Marks: 35%

Lectures to be delivered: 45-55 Hrs.

Instructions for the paper setter

The question paper will consist of three sections A, B and C. Each of sections A and B will have four questions from the respective sections of the syllabus and each question carry 7.5 marks. Section C will consist of one compulsory question having 10 parts of short-answer type covering the entire syllabus uniformly and each question will carry 2 marks.

Instructions for the candidates

Candidates are required to attempt two questions each from section A and B and the entire section C.

SECTION A

Traditional file procession system : Characteristics, limitation. Database : Definition, composition,

Database Management System : Definition, Characteristic advantages over traditional file processing system, Implication Database approach, Uses of database, DBA and its responsibilities Database schema, instance, DBMS architecture, data independence, mapping between different levels.

Database language : DDL, DML, DCL.

Keys : Super, candidate, primary, unique, foreign.

Entity relationship model : concepts, mapping cardinalities, entity relationship diagram, weak sets, strong entity sets, aggregation, generalization, converting ER diagram to tables.

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SECTION B

Normalization: Definition, Need, Process: Determinant, Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive dependency, Multivalued Dependency, Join Dependency, Types of Normal Forms, Merits and Demerits of Normalization.

Transaction & Concurrency Control: Concept of transaction, ACID properties, Serializibility, States of transaction, Concurrency Control – Locking techniques, time-stamp based protocols.

Database Security: Security requirements, database integrity, Granting & revoking privileges.

Reference Books:

1. JD Ullman, Garcia Molina, Database System: The Complete Book, Pearson Education.
2. Ramez Elmasri, Fundamentals of Database Systems, Pearson Education.
3. CJ Date, An Introduction to Database System, Pearson Education.
4. Parteek Bhatia, Database Management System.
5. Henry F. Korth, Database Sstem Concepts, Tata McGraw-Hill.

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Asian Educational Institute
(An Autonomous College)
B.A. Sem IV (Session 2025-26)

Subject Code: BA-MIN-COMP (P)-04

Minor lab
FUNDAMENTALS OF DBMS

Max. Marks : 30
Min. Pass Marks: 35%

Practical units to be conducted: 65-75
Time allowed: 3 Hours

The laboratory course will comprise of exercises to supplement what is learnt under Paper **FUNDAMENTALS OF DBMS**

The break-up of marks for the practical will be as under:

Lab Record	:	05 marks
Viva Voce	:	10 marks
Programme Development and Execution	:	15 marks

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ASIAN EDUCATIONAL INSTITUTE
(AN AUTONOMOUS COLLEGE)
BA SEM-III (SESSION:2025-26)
BA-SEC- 03: Data Analytics Using MS. Excel-II

Total Marks: 100

External Examination: 70

Internal Assessment: 30

Credits: 3

Maximum Time: 3 Hrs.

Minimum Pass Marks: 35%

Lectures to be delivered: 55-60Hrs

L:1 T:0 P: 4

INSTRUCTIONS FOR INTERNAL EVALUATOR

The course instructor will give 5-10 Lab assignments based on the course contents. Each assignment will carry minimum weightage of 10% of the total marks allotted for Internal Assessment such that sum of the maximum marks for all assignments given during the semester is equal to the total marks allotted for internal assessment.

INSTRUCTIONS FOR THE UNIVERSITY EXAMINER

The examiner will give due weightage to practical work, Lab records and viva-voce of the student while awarding marks to the student during end-semester final practical examination.

INSTRUCTIONS FOR STUDENTS

For Internal Assessment: Students are required to submit all the assignments given by the course instructor from time-to-time during the semester. The total marks obtained by the student in the internal assessment will be the sum of marks obtained in each assignment.

For University Examination: Students will appear for the end-semester final practical examination and evaluation will be done on the basis of Practical work, Lab records and viva-voce of the student.

COURSE OBJECTIVES

This course provides basic understanding to the fundamentals of Excel, develop proficiency in Excel for data manipulation and analysis, learn to clean and prepare data for analysis, create effective data visualizations, apply advanced Excel functions and features to solve complex problems.

Course Contents

Activity 1: Introduction to Excel: Overview of Microsoft Excel, understanding the Excel interface, setting up the workspace and preferences, basic data entry and formatting.

Activity 2: Basic Excel Functions and Formulas: Understanding Excel formulas and functions, basic arithmetic functions (SUM, AVERAGE, MIN, MAX), text functions (CONCATENATE, LEFT, RIGHT, MID), logical functions (IF, AND, OR, NOT).

Activity 3: Data Cleaning and Preparation: Importing data from various sources, data cleaning techniques: removing duplicates, handling missing values, data validation, text functions for data cleaning.

Activity 4: Data Manipulation and Transformation: Sorting and filtering data, using tables and structured references, using lookup functions (VLOOKUP, HLOOKUP, INDEX-MATCH), working with Pivot Tables for data summarization. Activity 5: Basic Data Analysis Techniques: Descriptive statistics in Excel: mean, median, mode, standard deviation, and variance, frequency distributions, using Excel's Data Analysis Tool pack.

Activity 6: Introduction to Data Visualization: Principles of data visualization, creating basic charts in Excel: bar charts, line charts, pie charts, customizing charts for better clarity.

Activity 7: Advanced Data Visualization Techniques: Creating advanced charts: scatter plots, histograms, box plots, Introduction to Pivot Charts, using sparklines for data trends.

Activity 8: Advanced Excel Functions: Advanced functions: SUMIFS, COUNTIFS, AVERAGEIFS, array formulas, performing scenario analysis and what-if analysis, using Solver for optimization problems.

Activity 9: Working with Macros: Introduction to Excel macros, recording and running macros, basic VBA programming for Excel, automating repetitive tasks.

Recommended Texts

1 For Open Source: Documentation Team, LibreOffice. Getting Started with LibreOffice 6.0. Australia, Friends of OpenDocument, Incorporated, 2019.

2. For Proprietary: Working in Microsoft Office-Richard Mansfield-Tata McGraw Hill Education

The breakup of marks for the course:

i.	**Internal Assessment**	**30 Marks**
ii.	**Viva Voce (External Evaluation)**	**30 Marks**
iii.	**Lab Record, Program Development and Execution(External Evaluation)**	**30 Marks**
iv.	**Lab Attendance**	**10 Marks**