SEC3-N C-Programming And Financial Mathematics

1. Fundamentals of C – programming

1.1 Introduction to C, The character set.
1.2 Identifier and keywords. Data types, Constants.
1.3 Variables and arrays, Declarations.
1.4 Expressions, Statements, Symbolic constants, Operators and Expressions.

2. Data Input and Output

2.1 Preliminaries.
2.2 Single character input- the getchar() function
2.3 Single character output-the putchar() function
2.4 Entering input data- the scanf() function.
2.5 Writing output data- the printf function. Get and put functions.

3.Preparing, running a complete C Program and Control Statements

3.1 Preliminaries
3.2 The while statement
3.3 The do-while statement
3.4 The for statement, Nested loops
3.5 The if-else statement, the switch statement, the break statement, the continue statement, the comma operator, the go to statement.

4. Functions and Arrays:

4.1 Introduction to a function, defining a function, Accessing a function,
Passing arguments to a function.
4.2 Function prototypes, Recursion,
4.3 Defining an array, processing an array, Passing arrays to functions, Multidimensional Arrays, Arrays and strings.

5: Mathematical models in economics, recurrences, and the elements of finance

5.1 Introduction, a model of the market, market equilibrium and excise tax.
5.2 The first-order recurrence, limits, special cases, continuous compounding of interest.
5.3 Interest and capital growth, income generation, the interval of compounding.

6: The Cobweb model, and Introduction to optimization

6.1 Stability of market equilibrium, the general linear case and economic interpretation.
6.2 Marginal cost as a derivative, Profit maximization, critical points, optimization in an interval and infinite intervals.

7: The derivative in economics

71 Elasticity of demand, profit maximization again.
7.2 Competition versus monopoly, the efficient small firm, startup and break-even points.

8: Linear equations and the input-output model

8.1 Making money with matrices, a two-industry ‘economy’, arbitrage portfolios and state prices and IS-LM analysis.
8.2 An economy with many industries and the technology matrix.