Course Fee: Rs: 590/-

Eligibility:

12th
Or ITI Certificate (Two Years) after class 10
Or ITI Certificate (One Years) after class 10 with one year of experience post qualification. Or Successful completion of the second year of a Government recognized polytechnic engineering diploma course after class 10, Training of 'O' Level course concurrently during the third year of the said 3 years Polytechnic engineering diploma course.

Methodology:

- ✓ Teaching Mode: Self-Pace
- ✓ Access from anywhere anytime
- ✓ Content Access through e-learning portal
- ✓ Doubt Clearing Session
- ✓ Practical Oriented

Registration Link: http://nva.nielit.gov.in

Contact Details:

- Course coordinator Name: Sh. Raja Ram
- Email: rajaram@nielit.gov.in
- Mobile number: 7706009313

Contents:

Module: M3-R5.1 Python	
Introduction to Programming	
UNIT 1	The basic Model of computation, algorithms, flowcharts, Programming Languages, compilation, testing & debugging and documentation.
Algorithms and Flowcharts to Solve Problems	
UNIT 2	Flow Chart Symbols, Basic algorithms/flowcharts for sequential processing, decision based processing and iterative processing. Some examples like: Exchanging values of two variables, summation of a set of numbers, Decimal Base to Binary Base conversion, Reversing digits of an integer, GCD (Greatest Common Divisor) of two numbers, Test whether a number is prime, factorial computation, Fibonacci sequence, Evaluate 'sin x' as sum of a series, Reverse order of elements of an array, Find largest number in an array, Print elements of upper triangular matrix, etc.
Introduction to Python	
UNIT 3	Python Introduction, Technical Strength of Python, Introduction to Python Interpreter and program execution, Using Comments, Literals, Constants, Python's Built-in Data types, Numbers (Integers, Floats, Complex Numbers, Real, Sets), Strings (Slicing, Indexing, Concatenation, other operations on Strings), Accepting input from Console, printing statements, Simple 'Python' programs.
Operators, Expressions and Python Statements	
UNIT 4	Assignment statement, expressions, Arithmetic, Relational, Logical, Bitwise

	operators and their precedence, Conditional statements: if, if-else, if-elif-else; simple programs, Notion of iterative computation and control flow –range function, While Statement, For loop, break statement, Continue Statement, Pass statement, else, assert.
Sequence Data Types	
UNIT 5	Lists, tuples and dictionary, (Slicing, Indexing, Concatenation, other operations on Sequence datatype),concept of mutability, Examples to include finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary.
Functions	
UNIT 6	Top-down approach of problem solving, Modular programming and functions, Function parameters, Local variables, the Return statement, DocStrings, global statement, Default argument values, keyword arguments, VarArgs parameters. Library function-input(), eval(),print(), String Functions: count(), find(), rfind(), capitalize(), title(), lower(), upper(), swapcase(), islower(), isupper(), istitle(),replace(), strip(), lstrip(), rstrip(), aplit(), partition(), join(), isspace(), isalpha(), isdigit(), isalnum(), startswith(), endswith(), encode(), decode(), String: Slicing, Membership, Pattern Matching, Numeric Functions: eval(), max(), min(), pow(), round(), int(), random(), ceil(), floor(), sqrt(), Date & Time Functions, Recursion.
File Processing	
UNIT 7	Concept of Files, File opening in various modes and closing of a file, Reading from a file, Writing onto a file, File functions-open(), close(), read(), readline(), readlines(), write(), writelines(), tell(), seek(), Command Line arguments.
Scope and Modules	
UNIT 8	Scope of objects and Names, LEGB Rule Module Basics, Module Files as Namespaces, Import Model, Reloading Modules.
NumPy Basics	
UNIT 9	Introduction to NumPy, ndarray, datatypes, array attributes, array creation routines, Array From Existing Data, Array From Numerical Ranges, Indexing & Slicing.

Examination & Certification

Category	**Theory**	**Total**
M3-R5.1: Programming and Problem Solving through Python Language	01	100
Marks	100	100

After successful completion of the course, candidate will get an online certificate with the following Grading Scheme:

Marks Range	Grade	Certificate Type
85% and above	S	Graded
75-84%	A	Graded
65-74%	B	Graded
55-64%	C	Graded
50-54%	D	Graded
<50%	F	Participation
Attended the Course but not appeared in Examination	N	Participation