

## Lesson Plan

**Name of faculty** : Dr. Surender Kumar  
**Discipline** : Computer Engineering  
**Semester** : 5th  
**Subject** : Computer Programming Using Python  
**Lesson Plan Duration** : 16 Weeks  
**Work Load (Lectures/ Practicals) per week (in hours):** Lectures - 03, Practicals – 06

Week	Theory	Practical
	Topic (including assignment / test)	Topic
1st	<b>Introduction:</b> <ul style="list-style-type: none"> <li>▪ <b>Brief History of Python</b></li> <li>▪ <b>Python Versions</b></li> <li>▪ <b>Installing Python</b></li> <li>▪ <b>Environment Variables</b></li> <li>▪ <b>Executing Python from the Command Line</b></li> <li>▪ <b>IDLE</b></li> <li>▪ <b>Editing Python Files</b></li> <li>▪ <b>Python Documentation</b></li> <li>▪ <b>Getting Help</b></li> <li>▪ <b>Dynamic Types</b></li> <li>▪ <b>Python Reserved Words</b></li> <li>▪ <b>Naming Conventions</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Getting started with Python and IDLE in interactive and batch modes</b></li> </ul>
2 <sup>nd</sup>	<b>Basic Python Syntax</b> <ul style="list-style-type: none"> <li>▪ <b>Basic Syntax</b></li> <li>▪ <b>Comments</b></li> <li>▪ <b>String Values</b></li> <li>▪ <b>String Methods</b></li> <li>▪ <b>The format Method</b></li> <li>▪ <b>String Operators</b></li> <li>▪ <b>Numeric Data Types</b></li> <li>▪ <b>Conversion Functions</b></li> <li>▪ <b>Simple Output</b></li> <li>▪ <b>Simple Input</b></li> <li>▪ <b>The % Method</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>What are the following string methods do?</b> <ul style="list-style-type: none"> <li>• <b>lower</b></li> <li>• <b>count</b></li> <li>• <b>replace</b></li> </ul> </li> </ul>
3rd	<b>Language Components</b> <ul style="list-style-type: none"> <li>• <b>Indenting Requirements</b></li> <li>• <b>The if Statement</b></li> <li>• <b>Relational and Logical Operators</b></li> <li>• <b>Bit Wise Operators</b></li> <li>• <b>The while Loop</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Write instructions to perform each of the steps below</b> <ul style="list-style-type: none"> <li>(a) <b>Create a string containing at least five Words, and store it in a variable.</b></li> <li>(b) <b>Print out the string.</b></li> <li>(c) <b>Convert the string to a list of words</b></li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• break and continue</li> <li>• The for Loop</li> </ul>	<p>using the string split method.</p> <p>(d) Sort the list into reverse alphabetical order using some of the list methods (you might need to use <code>dir (list)</code> or <code>help (list)</code> to find appropriate methods).</p> <p>(e) Print out the sorted, reversed list of words.</p>
4 <sup>th</sup>	<b>Collections</b> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Lists</li> </ul>	<ul style="list-style-type: none"> <li>▪ Write a program to check whether a number is prime or not.</li> </ul>
5 <sup>th</sup>	<ul style="list-style-type: none"> <li>• Tuples</li> <li>• Sets</li> </ul>	<ul style="list-style-type: none"> <li>▪ Find all numbers which are multiple of 17, but not the multiple of 5, between 2000 and 2500?</li> </ul>
6 <sup>th</sup>	<ul style="list-style-type: none"> <li>• Dictionaries</li> </ul>	<ul style="list-style-type: none"> <li>▪ Find all numbers which are multiple of 17, but not the multiple of 5, between 2000 and 2500?</li> </ul>
7 <sup>th</sup>	<ul style="list-style-type: none"> <li>• Sorting Dictionaries</li> <li>• Copying Collections</li> </ul>	<ul style="list-style-type: none"> <li>▪ Swap two integer numbers using a temporary variable. Repeat the exercise using the code format: <code>a, b = b, a</code>. Verify your results in both the cases.</li> </ul>
8 <sup>th</sup>	<b>Functions</b> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Defining Your Own Functions</li> <li>• Parameters</li> <li>• Function Documentation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Find the largest of n numbers, using a user defined function <code>largest()</code>.</li> </ul>
9 <sup>th</sup>	<ul style="list-style-type: none"> <li>• Keyword and Optional Parameters</li> <li>• Passing Collections to a Function</li> <li>• Variable Number of Arguments</li> <li>• Scope</li> </ul>	<ul style="list-style-type: none"> <li>▪ Write a function <code>myReverse()</code> which receives a string as an input and returns the reverse of the string.</li> </ul>
10 <sup>th</sup>	<ul style="list-style-type: none"> <li>• Functions - "First Class Citizens"</li> <li>• Passing Functions to a Function</li> <li>• <code>map</code></li> <li>• <code>filter</code></li> <li>• Mapping Functions in a Dictionary</li> </ul>	<ul style="list-style-type: none"> <li>▪ Check if a given string is palindrome or not.</li> </ul>

	<ul style="list-style-type: none"> <li>• Lambda</li> <li>• Inner Functions</li> <li>• Closures</li> </ul>	
11 <sup>th</sup>	<b>Modules</b> <ul style="list-style-type: none"> <li>• Modules</li> <li>• Standard Modules - sys</li> <li>• Standard Modules - math</li> <li>• Standard Modules – time</li> <li>• The dir Function</li> </ul>	<ul style="list-style-type: none"> <li>▪ WAP to convert Celsius to Fahrenheit</li> </ul>
12 <sup>th</sup>	<b>Exceptions</b> <ul style="list-style-type: none"> <li>• Errors</li> <li>• Runtime Errors</li> <li>• The Exception Model</li> <li>• Exception Hierarchy</li> <li>• Handling Multiple Exceptions</li> <li>• Raise</li> <li>• assert</li> </ul>	<ul style="list-style-type: none"> <li>▪ Find the ASCII value of a character</li> </ul>
13 <sup>th</sup>	<b>Input and Output</b> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Data Streams</li> <li>• Creating Your Own Data Streams</li> <li>• Access Modes</li> <li>• Writing Data to a File</li> <li>• Reading Data From a File</li> <li>• Additional File Methods</li> <li>• Using Pipes as Data Streams</li> <li>• Handling IO Exceptions</li> </ul>	<ul style="list-style-type: none"> <li>▪ WAP for simple calculator</li> </ul>
14 <sup>th</sup>	<b>Classes in Python</b> <ul style="list-style-type: none"> <li>• Classes in Python</li> <li>• Principles of Object Orientation</li> <li>• Creating Classes</li> <li>• Instance Methods</li> <li>• File Organization</li> <li>• Special Methods</li> <li>• Class Variables</li> <li>• Inheritance</li> <li>• Polymorphism</li> </ul>	<ul style="list-style-type: none"> <li>▪ REVISION &amp; PRACTICE</li> </ul>

<b>15<sup>th</sup></b>	<b>Regular Expressions</b> <ul style="list-style-type: none"><li>• <b>Introduction</b></li><li>• <b>Simple Character Matches</b></li><li>• <b>Special Characters</b></li><li>• <b>Character Classes</b></li><li>• <b>Quantifiers</b></li><li>• <b>The Dot Character</b></li><li>• <b>Greedy Matches</b></li><li>• <b>Grouping</b></li><li>• <b>Matching at Beginning or End</b></li><li>• <b>Match Objects</b></li><li>• <b>Substituting</b></li><li>• <b>Splitting a String</b></li><li>• <b>Compiling Regular Expressions</b></li><li>• <b>Flags</b></li></ul>	<ul style="list-style-type: none"><li>▪ <b>REVISION &amp; PRACTICE</b></li></ul>
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