A. Course Handout

Institute/School/College Name	Chitkara University Institute of Engineering & Technology		
Department/Centre Name	Department of Computer Science & Engineering		
Programme Name	Bachelor of Engineering (B.E.)-Computer Science & Engineering		
Course Name	Problem Solving using Python Programming	Session	2021-2022
Course Code	CS140	Semester/Batch	1st/2021
Lecture/Tutorial (Per Week)	5-0-10	Course Credit	4
Course Coordinator Name	Er. Navjeet Kaur		

1. **Scope & Objective of the Course:**
   The main objectives of the course are:
   - Understanding the basics of python in order to solve any problem(s).
   - Design and develop GUI based python project.
2. **Course Learning Outcome:**
   CLO01: Demonstrate python lexical features, structures and flow control.
   CLO02: Use lists, tuples, and dictionaries in Python programs.
   CLO03: Use indexing and slicing to access data in Python programs.
   CLO04: Design loops and decision statements in Python.
   CLO05: Design functions and pass arguments in Python.

3. **Recommended Books (Reference Books/Text Books):**
   RB1: Lutz, Mark. Learning python." O'Reilly Media, Inc.", 2013.
   RB2: Zed A.Shaw,"Learn python the hard way", Pearson publications, 3rd edition
   RB3: Dierbach, Charles "Python, A Computational Problem-Solving Focus" Wiley(2015)

4. **Other readings & relevant websites:**

S.No.	Link of Journals, Magazines, websites and Research Papers
1.	https://www.codingninjas.com/
2.	https://www.python.org/
3.	http://www.tutorialspoint.com/python/
4.	https://www.codecademy.com/learn/python
5.	http://www.pyschools.com/
6.	https://www.codementor.io/learn-python-online

5. **Recommended Tools and Platforms:**
   Python IDLE, Anaconda, CodingNinjas(online platform)

6. **Course Plan:**
   a. **Lecture Plan**

Lecture No.	Topic(s)	Associated Coding Ninjas Modules
MODULE-1		
1-3	Introduction to python programming, Introduction to logic building and flowcharts.	Flow-Chart
4-9	Anaconda Installation, Running Python Programs , Writing Python Scripts with Jupyter Notebook.	Introduction to Python
10-19	Fundamentals: Data Types, Variables and literals, Blocks and Syntax Rules , Operators and Expressions, Assignment Statements , Expression Statements , Multiway Branching.	Introduction to Python

19-30	Looping, Decisions, Control Flow- Conditionals and loops, pattern designing.	Conditionals and Loops Pattern1 Pattern2 More on loops
31-39	Defining Functions , Scope Rules, Global Statements , Closures, Argument Matching , Passing Arguments, Recursive Functions, Lambda Expressions.	Functions
40-54	Array and Lists , Indexing and Slicing, References and Copies, List Comprehension, map, filter & reduce functions.	Array and Lists
55-63	Strings and its relative methods and properties	Strings
64-75	Tuples, Set and Dictionaries- introduction, methods and its relative properties	Tuples, Set and Dictionaries
MODULE-2		
76-81	Two Dimensional Lists	2D list
82-93	Searching & Sorting: Imports and Attributes , Creating Modules , Searching & Sorting, Namespaces , Reloading, Generating Random values.	Searching and sorting
94-102	Files and Directories, File I/O, File positioning, File operators	--
103-114	Introducing Widgets, Adding and Working with Widget, Displaying Text and Images With Label Widgets, Getting User Input With Entry Widgets,Displaying Clickable Buttons With Button Widgets, Controlling Layout With Geometry Managers, Using Events and Event Handlers.	--
115-120	Project on Coding Ninjas	--

7. Delivery/Instructional Resources

Module	Lecture No.	Topics	Web References	Audio-Video
Module 1	1-3	Introduction to python programming, Introduction to logic building and	https://www.w3schools.com/python/	https://www.youtube.com/watch?v=_uQrJ0TkZlc
	4-9	Anaconda Installation, Running Python Programs , Writing Python Scripts with Jupyter Notebook.	https://docs.anaconda.com/anaconda/navigator/tutorials/	https://www.youtube.com/watch?v=beh7GE4FdnM&t=485s
	10-19	Fundamentals: Data Types, Variables and literals, Blocks and Syntax Rules , Operators and Expressions, Assignment Statements , Expression Statements , Multiway Branching.	https://www.w3schools.com/python/python_datatypes.asp	
	19-30	Looping, Decisions, Control Flow- Conditionals and loops, pattern designing.	https://www.w3schools.com/python/python_for_loops.asp	

	21-39	Defining Functions , Scope Rules, Global Statements , Closures, Argument Matching , Passing Arguments, Recursive Functions, Lambda	https://www.w3schools.com/python/python_functions.asp	
	40-54	Lists , Indexing and Slicing, References and Copies, List Comprehension, map, filter & reduce functions.	https://www.learnpython.org/en/Map,_Filter,_Reduce https://book.pythontips.com/en/latest/map_filter.html	https://www.youtube.com/watch?v=9rLdQP3g4fw
	55-63	Strings and its relative methods and properties	https://www.w3schools.com/python/python_strings.asp	https://www.youtube.com/watch?v=Ctqi5Y4X-jA
	64-75	Tuples, Set and Dictionaries- introduction, methods and its relative properties	https://medium.com/@nishantbhushan10/python-lists-tuples-sets-dictionary-a9cbcac183e3	
Module 2	76-81	Two Dimensional Lists		https://www.youtube.com/watch?v=mYBK8tQP2TY
	82-93	Searching & Sorting: Imports and Attributes , Creating Modules , Searching & Sorting, Namespaces , Reloading, Generating Random values.	https://www.programiz.com/python-programming/modules https://www.w3schools.com/python/python_modules.asp https://www.w3schools.com/python/module_random.asp	
	94-102	Files and Directories, File I/O, File positioning, File operators		https://www.programiz.com/python-
	103-114	Introducing Widgets, Adding and Working with Widget, Displaying Text and Images With Label Widgets, Getting User Input With Entry	https://docs.python.org/3/library/tkinter.html	
	115-120	Project on Coding Ninjas	Available at Coding Ninjas	

8. Action plan for different types of learners

Slow Learners	Average Learners	Fast Learners
Remedial Classes	Doubt-sessions	Coding Competitions, Project

9. Evaluation Scheme & Components:

Module	Evaluation Component	Type of Component	No. of Assessments	Weightage of Component	Mode of Assessment
Module 1	Component 1	Coding Ninjas Asassignments	Weekly	20%	Online /Offline
	Component 2	Test	04	30%	Online /Offline

	Component 3	End Term Examination	01	50%	Online /Offline
	Total (Module 1)		**100%**		
Module 2	Component 1	Coding Ninjas Asassignments	Weekly	20%	Online /Offline
	Component 2	Test	04	30%	Online /Offline
	Component 3	End Term Examination	01	50%	Online /Offline
	Total (Module 2)		**100%**		
Total			**[Total (Module 1) +Total (Module 2)] / 2**		

**Out of 04 STs, the ERP system automatically picks the average marks of best 03 STs.

Details of Evaluation Components:

Module	Evaluation Component	Description	Syllabus Covered (%)	Timeline of Examination	Weight age (%)
Module 1	Component 1	Coding Ninjas Asassignments	-	End of Week (Module-wise)	20%
	Component 2	Test-1	25%	1st week of semester	30%
		Test-2	25%	2ndth week of semester	
		Test-3	25%	3rd week of semester	
		Test-4	25%	4th week of semester	
	Component 3	End Term Examination*	100%	At the end of Module	50%
	Total (Module 1)				**100%**
Module 2	Component 1	Coding Ninjas Asassignments	-	End of Week (Module-wise)	20%
	Component 2	Test-1	25%	1st week	30%
		Test-2	25%	2ndth week	
		Test-3	25%	3rd week	
		Test-4	25%	4th week	

	Component 3	End Term Examination*	100%	At the end of the semester	50%
	Total (Module 2)				**100%**

*As per Academic Guidelines minimum 75% attendance is required to become eligible for appearing in the End Semester Examination.

7. Syllabus of the Course:

Subject: Introduction to Python	**Subject Code:**CS201Q

S.No.	Topic (s)	No. of Lectures	Weightage %
1	Introduction to python programming, Applications in All Engineering Domains, Origin and intentions, Differences to other programming languages, Introduction to logic building and flowcharts. Anaconda Installation, Running Python Programs , Writing Python Scripts with Jupyter Notebook**.** Logic building, Algorithm and Flowchart**.** Fundamentals: Data Types, Variables and literals, Blocks and Syntax Rules , Operators and Expressions, Assignment Statements , Expression Statements , Multiway Branching. Looping, Decisions, Control Flow-Conditionals and loops, pattern designing.	**30**	**30%**
2	Lists , Indexing and Slicing, References and Copies, List Comprehension, map, filter & reduce functions. Strings and its relative methods and properties, Tuples, Set and Dictionaries- introduction, methods and its relative properties. Defining Functions , Scope Rules, Global Statements , Closures, Argument Matching , Passing Arguments, Recursive Functions, Lambda Expressions. Two Dimensional Lists	**48**	**40%**
3	Searching & Sorting: Imports and Attributes , Creating Modules , Searching & Sorting, Namespaces , Reloading, Generating Random values. Files and Directories, File I/O, File positioning, File operators. Introducing Widgets, Adding and Working with Widget, Displaying Text and Images With Label Widgets, Getting User Input With Entry Widgets,Displaying Clickable Buttons With Button Widgets, Controlling Layout With Geometry Managers, Using Events and Event Handlers.	**42**	**30%**

This Document is approved by:

Designation	**Name**	**Signature**
Course Coordinator	Er. Navjeet Kaur	
Program Head	Dr. Raj Gaurang Tiwari	
Dean	Dr. Meenu Khurana	
Date (DD/MM/YYYY)	18/09/2021	