Course: BTech   **Semester:** 4

Prerequisite: Basic knowledge of Programming and web applications

Rationale: This course provides a broad introduction to Python programming and development of web applications. Developing and using Python as a scripting language for automating tasks and data processing. Moreover Building and deploying web applications using popular Python frameworks such as Django and Flask

Teaching and Examination Scheme										

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
0	0	2	0	1	-	-	20	-	30	50

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Outcome

After Learning the Course the students shall be able to:
After Learning the Course the students shall be able to: 1. Demonstrate a strong understanding of Python programming language fundamentals, including syntax, data types, control structures, and functions. 2. Understand the basics of web development, including HTML, CSS, and JavaScript, and demonstrate the ability to create static web pages. 3. Design and implement RESTful APIs using Python for communication between the front-end and back-end components. 4. Identify and resolve issues in both front-end and back-end code, and optimize the performance of web applications. 5. Integrate AJAX techniques into Django applications to enable dynamic updates and improve interactivity without full page reloads.

List of Practical	
1.	**Set-1** 1. A program that converts temperatures from Fahrenheit to Celsius and vice versa. 2. A program that calculates the area and perimeter of a rectangle. 3. A program that generates a random password of a specified length. 4. A program that calculates the average of a list of numbers. 5. A program that checks if a given year is a leap year. 6. A program that calculates the factorial of a number. 7. A program that checks if a given string is a palindrome. 8. A program that sorts a list of numbers in ascending or descending order. 9. A program that generates a multiplication table for a given number. 10. A program that converts a given number from one base to another.
2.	**Set-2** 1. A program that models a bank account, with classes for the account, the customer, and the bank. 2. A program that simulates a school management system, with classes for the students, the teachers, and the courses. 3. A program that reads a text file and counts the number of words in it. 4. A program that reads a CSV file and calculates the average of the values in a specified column. 5. A program that reads an Excel file and prints the data in a tabular format.
3.	**Set-3** 1. A program that creates a simple web server and serves a static HTML page. 2. A program that creates a web application that allows users to register and login. 3. A program that creates a web application that allows users to upload and download files. 4. A program that creates a web application that displays data from a database in a tabular format. 5. A program that creates a web application that accepts user input and sends it to a server-side script for processing.
4.	**Set-4** 1. A program that creates a web application that uses a template engine to generate dynamicHTML pages. 2. A program that creates a web application that supports AJAX requests and updates the page without reloading. 3. A program that creates a web application that uses Django's built-in debugging features to troubleshoot errors and exceptions. 4. A program that creates a web application that implements user authentication and authorization. 5. A program that creates a web application that integrates with third-party APIs to provide additional functionality.
5.	**Set-5** 1. A program that creates a simple RESTful API that returns a list of users in JSON format. 2. A program that creates a RESTful API that allows users to create, read, update, and delete resources. 3. A program that creates a RESTful API that authenticates users using a JSON Web Token. 4. A program that creates a RESTful API that paginates the results of a query to improve performance. 5. A program that creates a RESTful API that supports data validation and error handling.

Miscellaneous

Exam Requirement

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.