



MAHATMA GANDHI UNIVERSITY, KERALA

Abstract

Bachelor of Science (Honours) Computer Science - Modifications to the Course Outcomes, Course Content and Question paper pattern for End Semester Evaluation (Theory) - Approved - Orders Issued.

ACA 16

No. 154/ACA 16/2025/MGU

Priyadarsini Hills, Dated: 07.01.2025

- Read:-*
1. U.O.No.5797/AC A16/2024/MGU, dated.27.06.2024.
 2. Minutes of the meeting of the Expert Committee in Computer Application (UG), held on 14.12.2024.
 3. Orders of the Vice Chancellor under Section 10(17), Chapter III of the Mahatma Gandhi University Act 1985, dated. 06.01.2025.

ORDER

The syllabi of various Honours Under Graduate Programmes coming under The MGU-UGP (Honours) Regulations, 2024, have been approved vide paper read as (1) above and published on the website of the University.

The Expert Committee in Computer Application (UG), discussed the need to modify the Course Outcomes, Course Content and Question Paper Pattern for End Semester Evaluation (Theory) of **MDC** type course in the **Second Semester** syllabus of Bachelor of Science (Honours) Computer Science programme and has submitted the following recommendations, vide paper read as (2) above.

Course Name :	Data Visualization using Python
Course Code :	MG2MDCCSC100
Course Type :	MDC

Course Outcomes (CO)

CO No.	Expected Course Outcome (Modified)	Learning Domains (Modified)	PO No. (Modified)	Page No.
1	Apply data visualization techniques to create and customize plots using Matplotlib and Seaborn for effective data representation.	A	1, 2	35
2	Understand interactive plotting with Plotly and principles of effective data visualization.	U	1	

Course Content

Module	Unit	Course Description (Modified)	Hrs	CO No.	Page No.
1	1.3	Introduction to Seaborn: Seaborn basics and advantages, Statistical plotting with Seaborn, Seaborn themes and aesthetics. Advanced Seaborn: Multi-plot grids, Categorical plots. Seaborn extensions: Swarm plots, Violin plots.	<i>No Change</i>	<i>No Change</i>	
2	2.1	Introduction to Plotly, Overview of Plotly library, Interactive plotting basics, Creating interactive charts and dashboards.	<i>No Change</i>	<i>No Change</i>	
	2.2	Customizing interactive plots, Plotly Express for rapid visualization, Plotly Dash for web-based applications.	<i>No Change</i>	<i>No Change</i>	
	2.3	Data Visualization Best Practices: Principles of effective visualization, Choosing the right chart type, Color theory and accessibility.	<i>No Change</i>	<i>No Change</i>	
	3.1	<p>Matplotlib-Basic Plotting and Customization Line Plot: Create a line plot showing the GDP growth of a country over 10 years. Customize the plot with appropriate labels for the axes, a title, and a legend.</p> <p>Scatter Plot: Plot the relationship between population growth and the unemployment rate for five countries. Use different colors for the points.</p> <p>Bar Plot: Create a bar plot displaying the average monthly income of workers in different industries (e.g., Agriculture, IT, Healthcare).</p> <p>Subplots: Create a figure with two subplots: A line plot for inflation rates over five years. A bar plot for annual budget allocations (Education, Defense, Healthcare).</p>	<i>No Change</i>	<i>No Change</i>	

	<p>Annotations: Add a text annotation to a scatter plot highlighting the point where the unemployment rate is the lowest.</p>		
<p style="text-align: center;">3</p>	<p>3.2</p> <p>Seaborn - Seaborn Basics and Statistical Plotting Themes: Use different Seaborn themes (e.g., "darkgrid", "whitegrid") to plot a histogram of household incomes.</p> <p>Categorical Plot: Create a bar plot showing the average expenditure on food, education, and healthcare by income groups (Low, Middle, High).</p> <p>Swarm Plot: Visualize the distribution of annual incomes in different sectors (e.g., Agriculture, Manufacturing, Services).</p> <p>Violin Plot: Plot a violin plot to show the distribution of exam scores in two different schools.</p> <p>Advanced Seaborn Multi-Plot Grids: Use FacetGrid to create plots showing monthly sales data for different years, with one subplot for each year.</p>	<p style="text-align: center;"><i>No Change</i></p>	<p style="text-align: center;"><i>No Change</i></p>
	<p>3.3</p> <p>Plotly Interactive Plotting :</p> <p>Basic Interactive Plot: Create an interactive line chart showing the import and export data of a country over a decade.</p> <p>Interactive Dashboard: Develop a simple dashboard with two charts: A bar chart showing state-wise GDP contributions. A line chart showing the GDP growth rate over time.</p> <p>Customizing Interactive Plots: Add dropdown menus to an interactive plot to switch between different datasets (e.g., Sales vs. Profits).</p>	<p style="text-align: center;"><i>No Change</i></p>	<p style="text-align: center;"><i>No Change</i></p>

Mode of Assessment

<u>End Semester Evaluation (Theory)</u> (Modified)		Page No.
<u>(Total Marks - 35 Marks / Duration - 1 Hr)</u>		37
<u>Part A</u> Very Short Answer Questions (Answer all)	5 x 2 = 10 Marks	
<u>Part B</u> Short Answer Questions (5 out of 7)	5 x 5 = 25 Marks	

Considering the emergency, sanction has been accorded by the Vice Chancellor, in exercise of the powers of the Academic Council vested upon him under Section 10(17), Chapter III of the Mahatma Gandhi University Act 1985, vide paper read as (3) above, to approve the said recommendations.

Hence, the Course Outcomes, Course Content and Question Paper Pattern for End Semester Evaluation (Theory) of the said course in the syllabus of the Bachelor of Science (Honours) Computer Science programme stands modified to this extent.

Orders are issued accordingly.

SHAJI K G

ASSISTANT REGISTRAR III
(ACADEMIC)
For REGISTRAR

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Section Officer