



Teaching and Examination Scheme

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE(E)	PA (M)	PA (I)	ESE(V)		
3	0	2	4	70	30	20	30	150

Content:

Sr. No.	Content	Teaching Hours	Module Weightage (%)
1.	<p>Introduction to Data Visualization</p> <p>Acquiring and Visualizing Data, Simultaneous acquisition and visualization, Applications of Data Visualization, Keys factors of Data Visualization (Control of Presentation, Faster and Better JavaScript processing, Rise of HTML5, Lowering the implementation Bar)</p> <p>Exploring the Visual Data Spectrum: charting Primitives (Data Points, Line Charts, Bar Charts, Pie Charts, Area Charts), Exploring advanced Visualizations (Candlestick Charts, Bubble Charts, Surface Charts, Map Charts, Infographics).</p> <p>Making use of HTML5 CANVAS, Integrating SVG</p>	7	10%
2.	<p>Basics of Data Visualization - Tables</p> <p>Reading Data from Standard text files (.txt, .csv, XML), Displaying JSON content</p> <p>Outputting Basic Table Data (Building a table, Using Semantic Table, Configuring the columns), Assuring Maximum readability (Styling your table, Increasing readability, Adding dynamic Highlighting), Including computations, Using data tables library, relating data table to a chart</p>	8	20%
3.	<p>Visualizing data Programmatically</p> <p>Creating HTML5 CANVAS Charts (HTML5 Canvas basics, Linear interpolations, A simple column Chart, Adding animations),</p> <p>Google charts, Google Charts API Basics, A Basic bar chart, A basic Pie chart, Working with Chart Animations</p>	7	25%
4	<p>Introduction to D3.js</p> <p>Getting setup with D3, Making selections, changing selection's attribute (attr()), Changing methods, appending new elements, Putting all together, Selecting multiple elements with d3.selectall(),</p>	12	25%



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Syllabus for Integrated MSc, 9th Semester

Branch: Information Technology

Subject Name: Data Visualization

Subject Code: 1390504

	<p>Building Bar, charts with selections</p> <p>Data-joins; Conceptual overview of data joins, Enter and binding data, using a data join to make a Bar chart, Using anonymous functions to access bound data, finishing the rest of chart, storing data in objects</p> <p>Sizing charts and Axes (Linear scales, Using smart margin conventions, adding axes, Ordinal scales and axes),</p> <p>Loading and filtering External data : Building a graphic that uses all of the population distribution data, Data formats you can use with D3, Creating a server to upload your data, D3’s function for loading data, Dealing with Asynchronous requests, Loading and formatting Large Data Sets</p>		
5.	<p>Advanced Data Visualization</p> <p>Making charts interactive and Animated: Data joins, updates and exits, interactive buttons, Updating charts, Adding transactions, using keys</p> <p>Play Button: wrapping the update phase in a function, Adding a Play button to the page, Making the Play button go, user interrupt of the play sequence</p>	6	20%

Reference Books:

1. Jon Raasch, Graham Murray, Vadim Ogievetsky, Joseph Lowery, “JavaScript and jQuery for Data Analysis and Visualization”, WROX
2. Ritchie S. King, Visual story telling with D3” Pearson
3. A Julie Steele and Noah Iliinsky, Designing Data Visualizations: Representing Informational Relationships, O’Reilly
4. Andy Kirk, Data Visualization: A Successful Design Process, PAKT
5. Scott Murray, Interactive Data Visualization for Web, O’Reilly

Course Outcome:

After learning the course, the students should be able to:

No.	CO statement
CO-1	To understand various data visualization techniques
CO-2	Apply appropriate data visualization techniques to provide trends/insights for the given dataset.
CO-3	To understand basics of D3.js and Apply visualization tools / techniques for various data analysis tasks
CO-4	Given the application context for given data set, Design the information Dashboard for access information based on user criteria
CO-5	To get an overview of advanced data visualization techniques and applications