Amrita University MBA Programme Amritapuri Data Management and Visualization

Introduction This course introduces the basic concepts of data analytics for understanding the importance of collecting, validating, managing and presenting data. The course helps to lay strong foundations on the tools and techniques for data management and visualization and aims to integrate them with those from allied management disciplines.

Data management includes all aspects of data planning, handling, analysis, documentation and storage, and takes place during all stages of a study. The objective is to create a reliable data base containing high quality data. Data management is a too often neglected part of study design and includes:

- Planning the data needs of the study
- Data collection
- Data entry
- Data validation and checking
- Data manipulation
- Data files
- Data documentation

Each of these processes requires thought and time; each requires painstaking attention to detail. The main element of data management are database files. Database files contain text, numerical, images, and other data in machine readable form. Such files should be viewed as part of a database management systems (DBMs) which allows for a broad range of data functions, including data entry, checking, updating, documentation, and analysis.

Visualization Data visualizations, also known as data graphics, can be best explained by quoting Edward Tufte: “Data graphics visually display measured quantities by means of the combined use of points, lines, a coordinate system, numbers, symbols, words, shading, and color.”

A common misconception is that data visualizations are the same as information graphics (infographics). It is important to understand that data visualizations always communicate a message by visualizing quantifiable data objectively, while infographics can be used to communicate any information at all (usually with a specific goal); regardless of whether it is quantifiable or not.

Creating a data visualization is more than simply translating a table of data into a visualization. Data visualizations should communicate data in the most effective way; to truly reveal the data they should be quick, accurate, and powerful. Creating visuals can easily summarize and communicate data to other people - making even the largest or most complicated sets of data understandable.

Teaching Methods The classroom activity will consist of lectures and case discussions. Individual/Group assignments and presentations will complement the classroom discussions in enhancing the understanding of the subject.

Expectation from the Students

The students are expected to prepare well in advance from the relevant references assigned before attending the sessions to make the classroom activity more meaningful and fruitful. Each student is expected to possess a copy of the prescribed textbook.
Your submissions related to assignments, case studies and projects should be emailed to: sureshasbam@gmail.com

**Attendance** Class attendance is required and there is no substitute for missed sessions. More than two absences will attract penalties in the class participation component of evaluation. ASB policy on attendance will be applicable for the duration of the course.

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**Amrita University MBA Programme Amritapuri**

**Evaluation Scheme**

<table>
<thead>
<tr>
<th>Component Weightage (in %)</th>
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<tbody>
<tr>
<td>Attendance 10</td>
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<tr>
<td>Assignments / Quizzes 10</td>
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<tr>
<td>Class Participation / Case discussions 20</td>
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<tr>
<td>Midterm exam/Term Paper 25</td>
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<td>Endterm exam 35</td>
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</tbody>
</table>

**Textbooks and Reference**

2. Laumans J., An introduction to Visualizing data
3. Fry B, Visualizing Data ebook
4. Iliinsky, N. and Steele, J. Designing Data Visualizations O’REILLY ebook
5. Hammond, R. From Data Management to Data Analysis to Visualization, www.online mag.net


**Videos**
1. The best stats you've ever seen | Hans Rosling https://www.youtube.com/watch?v=hVimVzgtD6w

2. The beauty of data visualization - David McCandless https://www.youtube.com/watch?v=5Zg-C8AAIGg

3. The Art of Data Visualization | Off Book | PBS Digital Studios https://www.youtube.com/watch?v=AdSZJzb-aX8

4. I Like Pretty Graphs: Best Practices for Data Visualization Assignments https://www.youtube.com/watch?v=pD_OvRlH0aY

5. Talk Data to Me: Data Visualization Best Practices https://www.youtube.com/watch?v=GnMSjSWDQNk

6. Designing Data Visualizations with Noah Iliinsky, https://www.youtube.com/watch?v=R-oIkI7bUU8

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**SESSIONS PLAN**

<table>
<thead>
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<th>Topic</th>
<th>Reading</th>
<th>Chapter</th>
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<tr>
<td>1</td>
<td>Introduction, course content and expectation</td>
<td>Video 1</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Foundation</td>
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<td></td>
<td>Concepts</td>
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<td></td>
<td>Data Visualization and Management Page 3</td>
<td>Making sense with Data 1 (Discussion on the descriptive statistics, measures of central tendency, deviation)</td>
<td>Reading 6</td>
</tr>
<tr>
<td>3</td>
<td>Foundation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Concepts</td>
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<tr>
<td></td>
<td>Making sense with Data 1 (Discussion on the descriptive statistics, measures of central tendency, deviation)</td>
<td>Reading 6</td>
<td></td>
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<tr>
<td>4</td>
<td>History of Data</td>
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</tr>
<tr>
<td></td>
<td>Visualization</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*A Brief History of Data Visualization, Michael Friendly Psychology Department and Statistical Consulting*
5 Introduction to Data Visualization

An introduction to VISUALIZING DATA by Joel Laumans

Reading 2

4 An introduction to VISUALIZING DATA by Joel Laumans

Mid Term Examination (Term Paper)

13 Tableau basics

Formatting and Annotations

14 Spatial Analysis and Geo Coding

15 Calculation Field, Look up functions

16 Using Parameters

Dashboards

17 Tableau in action

Connecting with Tableau Online, Tableau Server and Mobile App

18 Connecting with Tableau Online, Tableau Server and Mobile App

19 Connecting Tableau to Google Analytics and Facebook Analytics

20 Motion Charts

21 Tableau Server Configuration, Installation, Authorization, Permission,

22 Security

23 Project Presentation

24 Wrap up session