# Course Outline

**Course Code** : MKT4721
**Course Title** : Customer Analytics & Visualization
**Semester** : Semester 2, AY 2025/2026
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## COURSE DESCRIPTION

Data visualization is a crucial skill for marketing analytics professionals to monitor customer performance, diagnose behavioral patterns, and refine data-driven strategies. This course equips you with the tools and techniques to understand customer data, design effective visualizations, and communicate analytical insights clearly and persuasively. You will learn not only how to visualize customer data but also how to frame and deliver data-driven stories that engage stakeholders and influence strategic decisions.

Through hands-on projects and guided learning, you will apply visualization and communication methods to real-world customer analytics applications such as customer base analysis, segmentation and targeting, and A/B testing. You will learn to evaluate visualizations using principles of analytical design, build compelling dashboards in Tableau, and tailor communication strategies for different managerial audiences. The course also explores diverse approaches for presenting customer insights and emphasizes how to adapt your message depending on audience, medium, and strategic purpose. By the end of the course, you will be able to transform raw customer data into meaningful insights and communicate them with clarity, credibility, and impact to support customer-centric, data-informed decision-making.

## LEARNING OUTCOMES

By the end of this course, you should be able to:
• Interpret and visualize common customer data to support decision-making.
• Design clear, accurate, and persuasive data visualizations using Tableau.
• Build interactive dashboards to analyze and communicate marketing performance.
• Evaluate visualization quality based on analytical and perceptual design principles.
• Tell compelling, data-driven stories for managerial audiences across applications such as campaigns, segmentation, and A/B testing.

## READINGS AND SOFTWARS

The class will primarily draw upon materials developed by the instructor, including lecture slides, in-class demonstrations, and case datasets. These materials are designed to provide hands-on exposure to visualization techniques and communication strategies most relevant to marketing analytics. The following readings are recommended (not required) for students who wish to deepen their understanding of visualization design and analytical communication.

- Knaflic, C. N. (2015). *Storytelling with data: A data visualization guide for business professionals.* Wiley.
- Wexler, S., Shaffer, J., & Cotgreave, A. (2017). *The big book of dashboards: Visualizing your data using real-world business scenarios.* Wiley.
- Wilke, C. O. (2019). *Fundamentals of data visualization: A primer on making informative and compelling figures.* O'Reilly Media.
- Milligan, J. N. (2025). *Learning Tableau 2025: Master Tableau's newest features to revolutionize your data storytelling with AI-enhanced insights.* Packt Publishing.
- Kriebel, R. (2018). *Practical Tableau: 100 Tips, Tutorials, and Strategies from a Tableau Zen Master.* Packt Publishing.
- Minto, B. (2021). *The pyramid principle: Logic in writing and thinking.* Pearson Education.
- Atkins, R. (2023). *The Art of Explanation: How to Communicate with Clarity and Confidence.* Hachette UK.
- Bergstrom, C. T., & West, J. D. (2021). Calling bullshit: The art of skepticism in a data-driven world. Penguin Random House.
- Hoyne, N. (2022). *Converted: The data-driven way to win customers' hearts.* Penguin Random House.

This course will primarily use Tableau Desktop (or Tableau Public) as the main platform for data visualization. Detailed instructions for installing Tableau will be provided before the start of the class. Please install Tableau before the first class to ensure you can participate in in-class exercises.

## ASSESSMENTS

| Component | Weightage |
|---|---|
| **In-class Activities** | **30%** |
| **Midterm Test** | **30%** |
| **Final Group Project** | **40%** |
| • Project Proposal | • 10% |
| • Project Report | • 15% |
| • Project Presentation | • 15% |
| **Total** | **100%** |

**In-class Activities (30%)**

Each class will conclude with an in-class activity where students will respond to specific questions and/or evaluate a visualization example. Each activity will account for 5% of the total course grade, up to a maximum of 30% overall.

**Midterm Test (30%)**

The midterm test will assess your understanding of the materials covered during the first six weeks. Please bring your laptop, as the test will include hands-on data visualization tasks. A sample test will be provided in advance to help you prepare. Unless special arrangements are made with proper justification and prior approval from the instructor, no make-up test will be allowed.

## Final Group Project (40%)

The final group project is designed to integrate the concepts and visualization techniques covered throughout the course. Each team will identify a real or simulated business problem that can be addressed through data visualization. Group membership will be finalized once the class size is confirmed. The project will be completed in three stages: a proposal, a final report, and a presentation.

- **Project Proposal (10%)**
  Submit a two-page proposal outlining your business question, data source, visualization goals, and preliminary design ideas.

- **Project Report (15%)**
  Prepare a detailed 5-page report showcasing your analysis, visualizations, and insights. The report should clearly explain the data, visualization design choices, key findings, and managerial implications.

- **Project Presentation (15%)**
  Deliver a short presentation demonstrating your project. Presentations should effectively communicate insights to a non-technical audience and highlight how visualization supports business decision-making.

The detailed guidelines for the final group project will be provided in the first class.

## Academic Honesty & Plagiarism

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. In case of any doubts, you should consult your instructor.

**Additional guidance is available at:**
- http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct
- http://nus.edu.sg/osa/resources/code-of-student-conduct

## TENTATIVE SCHEDULE

| Session | Lecture | Lab | Assignemnt |
|---|---|---|---|
| 1 | Introduction : Effective Visualization and Common Marketing Data | Overview of Tableau interface; connecting to multiple data sources; data types; extracts. | |
| 2 | Visual Principles : Selecting the Right Charts with Effective Design Elements | Building basic chart; marks and formatting; color and label best practices. | |
| 3 | Performance Insights : Comparing Results and Revealing Trends | Time-series analysis, comparison charts, reference lines, dynamic filters, parameters, highlight actions, and interactive tooltips. | |
| 4 | Exploring Heterogeneity: Distribution and Composition Analysis | Distribution and composition charts (histogram, box plot, scatter plot, tree map, stacked bar), set and group creation, calculated bins, density plots. | |
| 5 | Metric Design : Measuring and Montioring Business Perofrmance | Calculated fields, table calculations, Level-of-Detail (LOD) expressions. | |
| 6 | Dashboard Design : Creating Decision-Focused Marketing Dashboards | Layout containers, dashboard actions, filters and parameters across sheets, responsive design for users. | |
| Recess Week | | | |
| 7 | Midterm Test | | Project Proposal Due |
| 8 | Communication Mastery: Crafting Informative and Persuasive Presentation | Tableau Story feature; annotations, captions. | |
| 9 | Undestatanding Customer Base : Visualizing Retention, Cohorts, and Lifetime Value | Cohort heatmaps, date and period calculations, retention curves, CLV dashboards. | |
| 10 | Segmentation: Visualizing Customer Segments and Targeting Opportunities | Clustering, parameter-driven segmentation filter. | |
| 11 | Good Friday – No Class | | |
| 12 | Experiment Insights: A/B Testing, Lift Visualization, and Treatment Effect Heterogeneity | Control vs. treatment comparison, reference bands for confidence intervals. | |
| 13 | Final Presentation | | Project Report Due |

**Note: The schedule and content is tentative and subject to change.**